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Supplement, THE BRITISH JOURNAL OF PHOTOGRAPHY, December 29, 1911.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY

PUBLISHED WEEKLY.

## VOL. LVIII.

1911.

176147
24. 11. 22.

HENRY GREENWOOD & CO., PUBLISHERS, 24, WELLINGTON STREET, STRAND, LONDON, ENGLAND.
SALES AGENTS:—NEW YORK, U.S.A., GEORGE MURPHY, INC., 57, EAST NINTH STREET.
CANADA: THE UNITED PHOTOGRAPHIC STORES, LTD., TORONTO AND MONTREAL.
MELBOURNE: KODAK (AUSTRALASIA), LTD., HARRINGTONS, LTD., J. W. SMALL & CO., WATSON & SONS, AND GORDON & GOTCH.
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# INDEX.

*Throughout the Index the following abbreviations are used to indicate the nature of the references:—*

**(Pat.) Patent News.** **(Cor.) Correspondence.** **(Soc.) Societies' Meetings.** **(Rev.) Review or Trade Notice.** **(Ans.) Answers** **(Anal.) Analecta.**

*The Index includes several Sub-Indexes—*

**Bankruptcies, Companies Registered, Exhibitions, Names, New Trade, Obituary, Patents (Authors of),**

*which are placed in their alphabetical positions.*

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## SUPPLEMENTS.

PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION. Congress Group. Issue of May 19th. KEY TO THE CONGRESS GROUP. Issue of May 26th.

HENRY GREENWOOD & CO., PUBLISHERS,
24, WELLINGTON STREET, STRAND, IN THE COUNTY OF LONDON.—December 29, 1911.
Printed by Love & Malcomson, Ltd. Dane Street, High Holborn, in the same County.

# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2644. Vol. LVIII. FRIDAY, JANUARY 6, 1911. Price Twopence.

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## SUMMARY.

The need of keeping stock of plates in a dry condition is emphasised in a note on page 2.

Further correspondence on Sunday work in photographic studios will be found on page 12.

An appeal for better conditions for the photographer's printer is made on page 13.

A hint on the prevention of frozen water-pipes is given on page 1.

Two further papers on time development recently read before the Royal Photographic Society are reprinted this week. (P. 3.)

Attempts are proposed in Russia for the regulation of the platinum mining industry, with a view to benefit the producers. (P. 6.)

Mr. S. G. Kimber has retired from the secretaryship of the Southampton Camera Club, the success of which body in the past has so largely been the result of his untiring efforts. (P. 11.)

An analysis of the photographic patents published in 1910 affords some indication of the progress of photographic invention. (P. 1.)

Some lessons may be derived from the work of the early miniature painters. (P. 2.)

Further notes on printing on the metal in half-tone block-making figure under "Photo-Mechanical Notes." (P. 6.)

At the Royal Photographic Society on Tuesday last Dr. C. Atkin Swan gave a lively account of his methods of Alpine photography. (P. 11.)

Mechanism for a rapid bromide printer is described under "Patents of the Week." (P. 8.)

A concluding review of the photographs shown at the Scottish Salon is given on page 7.

### "Colour-Photography" Supplement.

Some notes on the perception of colour are deserving of study in view of the often contradictory opinions expressed in regard to colour photographs. (P. 1.)

Mr. Howard Farmer, in a recent paper in "Penrose's Annual," refers to the conditions for the reproduction of Autochromes on paper. (P. 3.)

The use of a locket, or case, suitable for small Autochrome transparencies, is a hint which the professional photographer might well take. (P. 4.)

An optical filter-plate has been suggested. (P. 4.)

A French worker revives the suggestion of a white backing card when exposing Autochromes. (P. 7.)

## EX CATHEDRA

**Frost Bursts.** "As the days lengthen so the cold strengthens," says an old proverb, and it is not likely that spring will arrive before the usual number of water pipes have been fractured by the frost. It may seem somewhat late in the day to draw attention to the precautions necessary to prevent burst pipes or to minimise the damage which may arise from them, but there are always those who procrastinate, even among photographers. Except in newly erected buildings, past experience has probably led to covering all outside pipes with felt, sacking, or some other non-conductor of heat or cold, but it is always advisable to overhaul this to see that no portion has been displaced. The next thing is to locate the shut-off tap for the whole premises and to see that it is well oiled and in good order, so that in case of a burst the water may be instantaneously cut off. In case of frost it is advisable to examine all pipes and to see if there is any sign of a fracture so that it may be repaired *before* the thaw comes. If possible it is advisable to shut off the main supply and to turn on all taps and allow the pipes to empty themselves at night. Where this is not possible owing to there being a cistern which would have to be emptied also, the risk may be reduced by allowing a small stream to run from the taps all night, but in cases of hard frost there is a possibility of the water freezing in the sink, and the remedy being worse than the disease. An excellent plan which we have found to work well is to place two or three small lamps near the entrance of the pipes into the building, so that the heat is conducted outside and retained by the felt covering. A lamp with a one-inch wick will warm several yards of pipe sufficiently to prevent freezing. It is very advisable to have a tap fitted as nearly as possible to the cistern so that in case of a burst the flow of water may be stopped before much damage is done and while the split is repaired.

* * *

**The Patents of a Year.** Some time ago we gave a short analysis of the photographic patents of 1909, and a comparison of this with a similar analysis for 1910 is rather interesting. The total is greater for 1910, as the subjects dealt with number 215 as against 181 for the previous year. As might be expected, cinematography heads the list, the number having increased from fifty-two to fifty-nine, though the percentage is practically the same. In 1909, next to cinematography came daylight development with seventeen patents, but in 1910 the total drops to only four, which rather suggests that tanks for development have reached the point beyond which there is no need for further improvement. Screen plate patents have also dropped from thirteen to six, while colour work generally has advanced from four to six in spite of the fact that results do not show much progress. Camera patents are the same as before, twelve, but it is worth noting that eight of the twelve for 1910 are concerned with reflex cameras. The most remarkable increase seems to be in connection with printing methods and apparatus, the specifications for which total twenty-five. Process work is also very active with seventeen patents. while twelve concerning the projection lantern and its accessories suggest a revival of interest in projection work. Lens patents drop from seven in 1909 to four in 1910, while shutters increase from five to eight. Phototelegraphy also shows increased attention, as the patents have increased from four to six, but stereoscopy shows a drop from seven to five. It should be remembered that the information derivable from a study of the published patents is a little behind the time, for publication usually does not take place until after the article is introduced to the market. We can therefore, to some extent, check the conclusions suggested by what we know of facts. For example, the increase in colour patents can be discounted in view of the obvious fact that practically no new processes have been introduced, while we know that in other cases progress has been made even though the patents are fewer. Generally, however, the figures seem to very fairly indicate the directions in which photographic interests are tending.

* * *

**Damp Spots.** A correspondent has sent us some plates by a first-class maker which he says were covered with semi-transparent spots upon development. He says that they were stored with other plates of smaller sizes and the same age which are perfectly clean, and asks us whether we can locate the trouble. This is quite easy to do. The spots are caused by damp. The whole-plates on which they occur are packed with tissue paper separators, and these we found to be quite moist; the half- and quarter-plates have the usual card slip separators at the edges only. Such trouble can be avoided by storing in a dry place, and it may be well to recall the experiments made by Mr. Howard Farmer many years ago, when it was demonstrated that a plate exposed immediately after being dried gave not only a negative of better quality but gained appreciably in sensitiveness. If we are to have a continuance of the damp weather which we have now endured for many weeks, it would be worth while for the photographer whose consumption of plates is not rapid, to keep his stock in a calcium box, which may be conveniently adapted from a tin trunk or uniform case by putting an enamelled dish with a pound or two of commercial chloride of calcium in the bottom. When the calcium shows signs of becoming damp the dish should be taken out and placed on a gas stove. The contents will liquefy and should be kept stirred until dry, and while warm replaced in the box. Such a box is not only useful for drying plates or paper, but may be used for drying wet negatives and carbon tissue.

* * *

**More Light.** The attractive fronts and lavish display of electric light shown by the many "electric theatres" throughout the country causes one to draw comparisons between them and the poorly illuminated showcases of most photographers, even those who cultivate an evening business. The new and cheap class of photographers seems to appreciate the value of a bright-looking show, but some of the older ones who are feeling the pinch of competition apparently do not. One of our friends who was complaining of dull times was illuminating his windows with a single metallic filament lamp in each, so that one hardly realised that the premises were open for business, while his cheap rival was using at least twenty times the volume of light. Brightness need not mean vulgarity, and the general public is not yet educated up to the point of regarding dingy draperies as the hall mark of high art.

## LESSONS FROM THE EARLY MINIATURISTS.

Now that the Christmas rush is over a little more leisure may be expected, and many of our readers might do worse than look up in the nearest public library to which they have access some of the works on various pictorial arts. There are many such books, volumes in some cases which being out of print are not readily purchasable, and in others which are too expensive in proportion to their usefulness, and the reference department of a public library affords a capital means of consulting them. Leonardo da Vinci's Treatise on Painting, for example, contains many excellent hints on lighting the head and managing the background, hints to which we hope to refer again at an early date. We have been reading Davenport's little book on "Miniatures," and found many points which are of interest to the modern producer of the small portrait, for there is no doubt that the photographer of to-day occupies the place which in the sixteenth, seventeenth, and particularly the eighteenth centuries was taken by the miniature painter. Here, for instance, is one such point: Nicholas Hilliard, who painted for Henry VIII. and for Queen Elizabeth, was asked by Sir Philip Sidney whether it were possible to show in a miniature whether a man were tall or short. Hilliard explained how this could be done, and among other quaint reasons he says: "a little man hath also commonly short legs and thighs in comparison to his bulke of body or head; but though the head be as great as the tall man's, yet shall his form, and face, and countenance be far, otherwise, easy enough to discern. The tall man hath commonly low shoulders, long shanks, thighs, arms, hands, and feet." It is apparent that "likeness" was secured not only by studying the face and expression but also by observing the characteristics of the body and its individuality of pose.

Another interesting, though somewhat curious, point in all the early miniatures is the absence of shadows in the face. The lighting is flat, and the portrait depends for its verisimilitude on truth of line and colour alone. This emphasis of line and absence of shadow is noticeable in the work of Holbein. Hilliard recalls a conversation with Queen Elizabeth: "when first I came in her Highness' presence to draw, who after showing me how she noticed great difference of shadowing in the works of sundry nations, and that the Italians, who had the name to be the cunningest and to draw best, shadowed not, requiring of me the reason of it, seeing that best to show oneself needeth no shadow of place but rather the open light. To which I granted and affirmed that shadows in pictures were indeed caused by the shadow of the place, or coming in of the light at some small or high window, which many workmen (i.e., painters) covet to work in for ease to their sight and to give unto them a grosser line and maketh the work imboss well and show very well afar off, which to Limning work needeth not because it is viewed of necessity in hand, near unto the eye." After this explanation the Queen chose to sit for her portrait in an open alley of the garden where there was no shadow from trees or any other object. This suggestion that for small work a more delicate lighting, and consequently softer contrasts, is appropriate, reserving forcible effects of light and shade for larger pictures, is worth bearing in mind. Workers of cultivated perception know that there is usually one size which best suits a picture, and that, if over enlarged, loss of effectiveness results. The matter is undoubtedly one which will bear thinking about.

Notwithstanding his advocacy of the open light Hilliard did not blind himself to the value of shadow in pictorial work, for he allows that "if a very well favoured woman stands in a place where there is great shadow, yet showeth she lovely, not because of the shadow, but because of her sweet favour consisting in the line or proportion, even that little which the light scarcely showeth greatly pleaseth, moving the desire to see more." This quality in a shadow which shows just enough to make the beholder want to see more is a very desirable one in portraiture as in other kinds of pictorial work, though naturally it is chiefly to be found in portraits which are predominatingly dark. Much of the work of Crooke and of Furley Lewis occurs to us at once as exemplifying the finely mysterious quality of well managed shadows. In too many portraits this quality is lost because the darkness is obtained by the use of too strong a negative, that is, a negative over-developed for the selected printing process, the shadows becoming clogged instead of transparent. The darkness of the background, whether it be a painted ground or a dark space behind the sitter, and the strength of light on the face and figure must be adjusted in relation to each other, and, as a rule, development may be shorter than in cases where the light and shade of the picture is in a high key.

# TIME DEVELOPMENT.

(Papers read before the Royal Photographic Society.)

## VARIATION OF TEMPERATURE COEFFICIENT FOR DIFFERENT PLATES.

I HAVE been too much engaged in other matters to do more experimental work in time development since the paper I read a year ago.

Probably the most important point is whether the *temp. coeff.* is to be taken as an attribute of the developer alone, or of the plate and the developer taken together. In testing a developer for its *temp. coeff.* I have almost always done it with at least two, and up to four, different plates, and in the majority of cases the different plates showed but little difference in the resulting *temp. coeff.*

The following are examples of this:—

| Metol-quinol, No Bromide. | |
|---|---|
| Eastman Rapid | 2.02 |
| Paget extra-Special Rapid | 2.0 |
| Imperial Special Sensitive | 1.94 |

| Pyro-Soda, Manual Formula, No Bromide. | |
|---|---|
| Ilford Ordinary | 1.48 |
| Paget Ortho | 1.45 |

| Kodak Powders. | |
|---|---|
| Ilford Zenith | 1.82 |
| Paget XXX | 1.85 |
| Seed 26 | 1.8 |

But in a few cases there has been a perplexing variation between different plates, of which the following is a moderate example:—

| Metol-quinol. | |
|---|---|
| Swift | 1.75 |
| Imperial Special Sensitive | 1.76 |
| Eastman Ortho | 1.86 |
| Wratten Ordinary | 1.9 |

Once or twice I have found even greater variations, but have not (by further trials with the same plates) traced these variations to their true cause. whether due to error of observation or to a chemical variation in the plate itself.

In one instance, where a larger variation than the above was found in a pyro-soda developer without bromide, four brands of plates being tested, another test was made with the same plates, but with a normal amount of bromide added to the developer, and in this second trial the temperature coefficient for the four plates came practically alike. In this case, however, the developer had been made up some time and had perhaps deteriorated.

In testing hydroquinone for its temperature coefficient, the variations with different plates and different brands of developer were entirely perplexing.

My general observation leads me to think that (as is the case with the Watkins factor) there is far more variation when a developer without bromide is used than when bromide is added to the developer. I have certainly formed an impression (not supported by direct evidence) that plate-makers sometimes add some form of free restrainer (whether bromide or not I cannot say) to their emulsions, and that these brands are apt to cause perplexing variations both in the Watkins factor and in the temperature coefficient when other plates are compared with them and a developer without bromide used. It is, of course, possible that the variation may be due to the gelatine used, but in this case we would expect the particular plate to have (relatively to other plates) a uniformly higher or lower temperature coefficient with all developers. My trials are all made by variations of time of appearance, not of measured results, and the temperature coefficient is for 10 deg. C., equal to 18 deg. F.

ALFRED WATKINS, F.R.P.S.

## INVESTIGATIONS ON THE TEMPERATURE COEFFICIENT OF A PYRO-SODA DEVELOPER.

THE temperature coefficient (which will be represented in the following paper by the letters T.C.) is the ratio of the times required to produce the same amount of reduction by the developer at temperature 10 deg. C. apart.

By its use we are enabled—if the correct time of development for a desired degree of contrast be known at any one temperature—to calculate the time necessary to produce a similar degree of contrast at any other temperature: and generally to construct for the particular plate and developer with which we are concerned a complete table of the times of development at different temperatures necessary to produce such a degree of contrast as may be desired.

As an example:—If we are using a plate and a developer whose T.C. with that plate is 1.67, and we know that at 16 deg. C. a development of 5.3 minutes will give us the result we desire; then if we wish to know for how long we must develop at 20 deg. C. to obtain a negative of similar character, the calculation is made as follows:—

From the log. of the known time we subtract the log. of the T.C. multiplied by the temperature difference and divided by ten, the result is the log. of the time required.

Thus in the example given our data are: log. 5.3 = 0.7243, log. 1.67 = 0.2227, and the temperature difference = 4 deg.

$$\begin{array}{lll} \text{log. } 5.3 & . \; . \; . & 0.7243 \\ -\frac{4}{10}\ 0.2227 & . \; . & \underline{0.0891} \\ & & 0.6352 = \text{log. } 4.31 \end{array}$$

Therefore 4 *minutes* 20 *seconds* is the required time.

If we wish to know the time required at a *lower* temperature the fraction of the log. of the T.C. is *added* instead of subtracted.

The pyro-soda developer used was that known as the standard Hurter and Driffield pyro-soda as described in their papers in the "Photographic Journal," April 28, 1898, p. 288, and January 31, 1903, containing when of full strength:—

8 pyro,
40 crystallized sodium carbonate,
40 sodium sulphite,

in 1,000 parts of solution.

In the tables in this paper when used of full strength it is indicated as H.D. Dev., when of half or quarter strength by the symbols $\frac{\text{H.D.}}{}$ Dev. or $\frac{\text{H.D.}}{4}$ Dev. respectively.

The practical method adopted was based on the Watkins Principle:—

$$T_D = WT_a$$

when $T_D$ is the time for a density D, $T_a$ is the time of appearance and W the Watkins Factor. That is to say, that the time of appearance is an index of the rate of reaction of the developer.

A barred screen was prepared by gumming strips of lantern slide binding across a quarter-plate of clear glass, the distance between the bars being as wide as the bars themselves. Behind this in a suitable dark-slide a quarter-plate was exposed at one or more metres from a standard candle for such a time as was found to bring the $T_a$ on development within one minute.

After exposure the plate was cut up lengthways into six slips and then across the middle so as to make twelve pieces, each of which had received a similar exposure.

The developing was done in very thin copper troughs arranged to float on the surface of a water bath containing about 16 litres, the temperature of which could be quickly varied by running in hot or cold water from the service pipes of the laboratory. Arrangements were made for rocking these troughs, for the warming or cooling of the developer, and for noting the temperature of the developer and the water bath.

The $T_a$ was noted with a stop watch, and a light filtered through canary fabric and green glass was found most useful for the observations. As a rule, a number of observations were made at each temperature, and the mean values taken.

The points on which information seemed desirable were:—

1. Does dilution affect the T.C.?
2. Does the T.C. vary with different plates?
3. What is the effect of bromide on the T.C.?

### I.—DILUTION OF DEVELOPER.

An Imperial Ordinary Plate (Batch 1696) developed with $\frac{\text{H.D.}}{2}$ Dev.

| Exposure. | Temperature. | Time of Appearance | T.C. |
|---|---|---|---|
| 5 C.M.S. | 17·5°C. | 30 sec. | By log. method |
| 5 " | 17·5° | 30 " | 1·72 |
| 5 " | 25° | 20 " | |
| 5 " | 25° | 20 " | |

When the two temperatures, as in the above case, are not 10 deg. C. apart, the T.C. for 10 deg. C. is obtained by the following simple logarithmic calculation:—

$$\frac{(\log.\ T_a - \log.\ t_a) \times 10}{T^\circ - t^\circ} = \text{log. of T.C. for 10 C.}$$

in above case

$$\log.\ 30 = 1{\cdot}4771$$
$$\log.\ 20 = 1{\cdot}3010$$
$$\cdot 1761$$
$$10$$
$$1{\cdot}761 \div 7{\cdot}5 = \cdot 2348$$
$$= \text{log of } 1.72.$$

Another plate of the same batch was given an equal exposure and developed with a developer of half the above strength, that is with $\frac{\text{H.D.}}{4}$ Dev. Three pairs of observations gave numbers which worked out to a T.C. of 1.75.

It appears, then, that in the case of a quick developing plate, dilution of the developer does not affect the temperature coefficient.

As an example of a slow developing plate of a quite different class, a Barnet Extra Rapid (B 9919) was taken, which gave

with $\frac{\text{H.D.}}{2}$ Dev. T.C. = 2·0

with $\frac{\text{H.D.}}{4}$ Dev. T.C. = 1·97

These two numbers are practically the same, and show that in this class of plate also dilution of the developer has no effect on the T.C.

These experiments confirm the view of Watkins that dilution, though altering the time of appearance, does not affect the value of the temperature coefficient.

### II.—DOES THE T.C. FOR THIS DEVELOPER VARY WITH DIFFERENT PLATES?

It had been pointed out by Sheppard and Mees* that the T.C. of some developers varied with different emulsions, and it seemed advisable to test the question on the more popular plates, selecting those of various developing speeds.

The following were therefore selected for experiment as being representative of the various classes of plates which are in most demand at present:—

| Development Speed. | Name of Plate. |
|---|---|
| Quick ... ... ... | Imperial Ordinary<br>Wratten Instantaneous. |
| Medium quick ... ... | Ilford Empress. |
| Medium ... ... ... | Imperial Special Rapid. |
| Medium slow ... ... | Ilford Special Rapid. |
| Slow ... ... ... | Wellington Extra Speed.<br>Barnet Extra Rapid. |
| Very slow ... ... | Monarch. |

and the T.C. of each plate was ascertained from a considerable number of experiments such as are summarised in the following table showing the series referring to an—

Imperial Ordinary Plate (1696).

| No. of Slips. | Dev. | Exposure. | Range of Temp. | T.C. |
|---|---|---|---|---|
| 2 | $\frac{\text{H.D.}}{2}$ | 20 C.M.S. | 15°–25° C. | 1·67 |
| 4 | " | 5 " | 17·5–25° | 1·72 |
| 4 | " | 1·25 " | 17·5–28° | 1·67 |
| 4 | " | 1·25 " | 18–28° | 1·73 |
| 6 | $\frac{\text{H.D.}}{4}$ | 5 " | 15—25° | 1·75 |
| | | | | 8·54 |

$$\frac{8{\cdot}54}{5} = 1{\cdot}71$$

Average T.C.

It will be noticed that the different values obtained only vary about 2.3 per cent. from the mean or average value which indicates as high an accuracy as can be expected from "time of appearance" methods.

Similar series of experiments were made on the remaining plates of the list, and the temperature coefficients obtained are set out in the following table:—

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* Investigations on the Theory of the Photographic Process, p. 91, "Photographic Journal."

Temperature coefficient for 10 deg. C. of the H. and D. Standard Pyro Soda Developer with various plates.

| Dev. Speed. | Name of Plate. | Batch No. | T.C. |
|---|---|---|---|
| Q | Imperial Ordinary ... ... | 1696 | 1·71 |
|  | Wratten Instantaneous ... | 873J | 1·68 |
| MG | Ilford Empress ... ... | 4863 | 1·55 |
| M | Imperial Special Rapid ... | 3170B | 1·76 |
| MS | Ilford Special Rapid ... ... | 4887 | 1·85 |
| S | Wellington 'Xtra Speedy ... | 4175cc. | 1·99 |
|  | Barnet Extra Rapid ... ... | B9919 | 2·01 |
| VS | Monarch ... ... ... | 4903 | 1·9 |

It appears, therefore, that the T.C. of the H.D. Pyro Soda Developer varies considerably with the plate, and generally that the slower developer a plate is the higher is its temperature coefficient.

It has been suggested by Watkins that the group of plates with the higher temperature coefficient of about two may contain free bromide in the emulsion; this has not yet been directly proved: the results, however, obtained in the next portion of this paper rather point in the same direction, and it will be a matter for further research when time permits.

### III.—The Effect of Bromide on the Temperature Coefficient.

Watkins pointed out in his paper read before this society in November, 1909, that the presence of bromide altered the temperature coefficient, but in what way, and in what degree was not stated; and, as it seemed that very little was known on the matter, the following work was undertaken, and has led to some unexpected results.

Several series of experiments were carried out in the manner set forth in the former part of this paper, but with increasing quantities of potassium bromide in the developer.

In the first place two plates of a totally different type—the Imperial Ordinary as a quick developer, and the Barnet Extra Rapid as a slow developer—were taken, and a series of determinations of the T.C. were made with a gradually increasing quantity of potassium bromide in the $\frac{\text{H.D.}}{2}$ Developer.

The results as regards the Imperial Ordinary plate are set out in the following table:—

Effect of Bromide on Temperature Coefficient.

Imperial ordinary. — $\frac{\text{H.D.}}{2}$ Dev. + bromide.

| c.c. of 1 per cent. Sol. KBr in 100 c.c. $\frac{\text{H.D.}}{2}$ Dev. | Temperature coefficient. |
|---|---|
| c.c. |  |
| — | 1·71 |
| 5·0 | 1·84 |
| 7·5 | 1·89 |
| 10·0 | 2·02 |
| 15·0 | 2·08 |
| 20·0 | 2·25 |
| 40·0 | 2·20 |
| 80·0 | 2·19 |

These results show that the addition of potassium bromide to the developer raises the T.C., and that the increase of bromide up to 20 cc. causes a fairly regular increase of the T.C.

The last two figures are not very reliable, as, with the increase of bromide, the developed bars become lighter coloured, and the T is very difficult to observe.

A series of similar experiments were now made on the Barnet Extra Rapid, which, it will be remembered, is a plate of the slow developing class, with a T.C. in the unbromided developer of 2.

Effect of Bromide on Temperature Coefficient.

Barnet Extra Rapid.— $\frac{\text{H.D.}}{2}$ Dev. + Bromide.

| c.c. of 1 per cent. Sol. KBr in 100 c.c. $\frac{\text{H D.}}{2}$ Dev. | Temperature coefficient. |
|---|---|
| c.c. |  |
| 0 | 2·00 |
| 0 | 2·04 |
| 5 | 2·00 |
| 10 | 2.00 |
| 10 | 2·00 |
| 20 | 2·21 |
| 40 | 2·36 |

Showing that the addition of KBr up to 10 cc. of 1 per cent. sol. in 100 cc. of this developer has NO EFFECT on the T.C. of this plate.

The whole of the eight representative plates were now tested for their T.C. with a developer containing 10 cc. of 1 per cent. KBr Sol. in 100 cc.; the percentage composition of such a developer being:—

|  |  |  |
|---|---|---|
| Pyro ... ... | 0·4 grams | in 100 c c. |
| Na Carb + aq. | 2·0 ,, |  |
| Na Sulphite ... | 2·0 ,, |  |
| KBr ... ... | 0·1 ,, |  |

and the results obtained are shown in the last column of the following table:—

Temperature Coefficients for 10 deg. C. of representative plates.

(A) with the H.D. pyro-soda developer, and

(B) with the same developer containing 0.1 per cent. of potassium bromide.

| Name of Plate. | A. T.C. no bromide. | B. T.C. with bromide. |
|---|---|---|
| Imperial Ordinary ... ... | 1·71 | 2·02 |
| Wratten Instantaneous ... | 1·68 | 2·09 |
| Ilford Empress ... ... | 1·55 | 2·09 |
| Imperial Special Rapid ... | 1·76 | 2·15 |
| Ilford Special Rapid ... | 1·85 | 2·24 |
| Wellington 'Xtra Speedy . | 1·99 | 2·09 |
| Barnet Extra Rapid ... | 2·01 | 2·01 |
| Monarch ... ... ... | 1·9 | — |

Showing that with this Bromided Developer the Temperature Coefficient was practically 2 for all the plates in the list, though it varied widely with the plain Hurter and Driffield Pyro-Soda Developer.

These experiments show that Watkins has good grounds for claiming a constancy in the Temperature Coefficient of his Thermo Pyro Soda Developer with various plates as used in his latest system of Thermo-time Development.

### Summary.

It appears to be established by the foregoing experiments, for the particular developer and plates used:—

1. Dilution of the Developer does not affect the Temperature Coefficient.

2. The Temperature Coefficient of the Hurter and Driffield Standard Pyro Soda Developer varies with the plate used, and that the slow developing plates tend to show a higher temperature coefficient than the plates which are quick developing.

3. That the addition of bromide to the developer increases the T.C. of a plate which has in a non-bromided developer a low T.C., while in the case of plates whose T.C. in a non-

bromided developer is already 2. there is no further rise in the T. C. until more than 0.1 per cent. of bromide is added to the developer.

4. That a Pyro Soda Bromided Developer of the following composition:—

| | | |
|---|---|---|
| Pyro | 0·4 | in 100 parts |
| Sodium carbonate + aq. | 2·0 | |
| Sodium sulphite | 2·0 | |
| KBr | 0·1 | |

has a Temperature Coefficient of about 2. which is practically invariable with all the plates of very different kinds which have been tried.

W. B. Ferguson, M.A., K.C., F.R.P.S.

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## THE PRESENT POSITION OF PLATINUM.

"The Times." in its Financial Supplement of Friday last, publishes the following interesting account of the present natural and commercial conditions which govern the price of platinum metal:—

"The price of platinum has lately attained to the high level of £8 per oz. for refined, a figure which it has only once before touched—namely, in 1906. The recent advance is attributable to causes similar to those which operated in that year. Consumption continues to expand steadily as the result of the more widespread utilisation of the metal in connection with the steadily growing electric lighting industry, the jewellery manufacturing industry, and the chemical, dental, and photographic trades, while new uses are continually being discovered which, though comparatively small individually, have a cumulative effect that cannot be despised. A typical example of such new uses is to be found in the motor-car manufacturing industry, where the unique qualities of platinum have gained for it a use which even high prices do not seem sufficient to discourage. The world's annual consumption of the metal has been estimated at between 350,000 oz. and 375,000 oz., of which, however, roughly, one-third is represented by metal recovered from scrap and remarketed. Practically the whole of the 350,000 oz. or 370,000 oz. is consumed in the four principal markets, France absorbing about 40 per cent., Germany and the United States of America each 26 per cent., and Great Britain 7 per cent., the small balance remaining being consumed in Russia, which is practically the sole source of supply. It may be observed that those figures do not tally with the official statistics of the Russian Government, the production and exports being annually under-stated, it is estimated, to the extent of about 100,000 oz. This discrepancy is accounted for by metal stolen by the miners and smuggled out of the country, so that it does not appear in the statistics. This smuggling has become quite an industry, so firmly rooted that producers despair of being able to stamp it out.

"Supplies from Russia.

"As already indicated, practically the only source of supply of platinum is Russia, the bulk of the metal being obtained by placer mining from the alluvial sands of the Ural Mountains. Small quantities are obtained from other Continental countries from time to time, but the largest producer outside of Russia is Colombia, with an output of 6,000 oz. or 7,000 oz. per annum. The official statistics compiled by the Russian Government would appear to show that the annual production of recent years has averaged between 170,000 oz. and 180,000 oz., high-water mark having been reached in 1901 with 203,000 oz., but the illicit trading already referred to represents about one-third more. The output tends to decline as the result, to some extent, of the partial exhaustion of the platinum-yielding sands, much of the alluvium now being worked yielding not more than 1dwt. per ton, while the richer sands do not yield more than 3dwt. Before 1898 the production was in the hands of many comparatively small concerns so ill provided with capital that they were entirely dominated by the big refining firms abroad. All the metal produced—with the exception of about 2 per cent.—is exported in a crude state for refining abroad in the principal consuming markets, the production in some cases being purchased for years ahead. In 1898 producers controlling about 50 per cent. of the total output were formed into one concern by a French financier, and the Compagnie Industrielle du Platine, which has since taken a leading part in the industry, was then established. The "tied" condition of the majority of the producers as regards their output accounts in a large measure for the continued falling off in the production, notwithstanding the high prices which have ruled. As their output is sold ahead for years to come at prices said to average less than £3 per ounce, producers have not benefited to any extent from the high prices which have ruled, and accordingly not only is the incentive lacking to increase the production, but there is distinct encouragement to conserve the remaining but steadily dwindling supplies in the hope that advantage may be obtained later on of the higher values now ruling.

"Proposed Regulation of the Trade.

"At the beginning of last year the discontent of producers crystallised into an active propaganda for the establishment of a Government monopoly, or the passing of legislation which would free the smaller miners from the grip of the foreign refining houses. At a meeting then held proposals were formulated and pressed on the Government, but after a time seemed to have been shelved indefinitely. Quite recently, however, the Russian Minister of Trade and Industry has come forward with proposals for regulating the industry on lines somewhat similar to those suggested by the producers last year. Briefly, it is proposed to prohibit the export of crude platinum and to provide for its treatment in Russia by means of a State refinery should private enterprise fail to prove equal to the task. The crude platinum would be sold to the Russian Imperial Bank on certain specified terms—the price suggested by the producers last year was £3 19s. 7d. per ounce troy of crude 83 per cent. platinum—and the marketing of the refined product would be left in the hands of the Bank, which would account to the placer owners for the balance of the price, less commission. The production, refining, and distribution of the metal would be strictly governed by hard-and-fast regulations, any breach of which would bring upon the offenders condign punishment in the shape of heavy penalties. Those proposals, if carried out in an energetic and straightforward manner, would doubtless put the industry on a much sounder footing, but that there are formidable difficulties in the way cannot be disputed."

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# Photo-Mechanical Notes.

### Process Copyboards.

A patent (No. 28,448, 1909) has been granted to Albert Nixon, Eagle Works, Durban Grove, Hackney, London, N.E., for a type of process copyboard, for which a rigid impervious material such as glass is used. In order to hold the copy and the covering glass plate (if used) in place on a copyboard, clips or clamps are provided which are attachable to the surface of the copyboard by means of suction. Use is made of suction clips (such as those which form the subject of the patentee's concurrent Application No. 28,449, of 1909), which comprise a suitable sucker, such as a rubber cup (with or without a hand bulb), or a rigid vessel or rim provided with a rubber or other lip, and means for producing the necessary suction, and the sucker is provided with means projecting therefrom, which will press the copy against the surface or copy-plane and hold it in position so long as the sucker is attached to the copyboard.

Copyboards constructed according to the invention offer, amongst other, the following advantages:—They are not so liable to distortion through heat, moisture, or cold, as the ordinary copyboards, and practically always present a flat even surface in the copy-plane. If made of glass, the copying of transparencies is facilitated in that no apertures or carriers have to be provided, the transparency being held to the glass copyboard by the suction clips or clamps. The glass copyboard may be rendered opaque wholly or in part, if required, by applying colour or an opaque sheeting or covering.

### Spotting the Print on Metal.

After the print is dyed and dried it is carefully examined for spots or defects. If there are more than one or two very small ones the print should be re-made, for it will take more time and be less satisfactory to spot in these defects (and then after etching engrave away all traces of them) than it will to repeat the printing. The print need not be spotted in until after burning-in; in fact, it had better not, unless the spotting is done very carefully, because, afterwards, it can be easily wiped away again if not good. If, however, the spotting is done carefully on the print before burning it will form an enamel with the rest of the image, and so not be removed when the plate is cleaned after the proving before fine etching; whereas, in the other case, all the spotting has to be done over again if the plate requires more etching. The best medium to use for spotting is either a spirit lac or a little bitumen dissolved in benzole and turpentine; anything greasy, such as ink, is to be avoided, because it sometimes runs and so stops out far more than is required.

### Rough-Etching the Plate.

If the print is on zinc there is often difficulty in retaining the enamel on the metal during the etching. If the enamel looks spongy it will not hold. It should look firm and glossy. A useful precaution is to put the print through a hardening bath before it is burnt in, but not until the dye has been well rinsed off. Five minutes in the following bath will be found sufficient:—Water, 25 ozs.; methylated spirit, 2½ ozs.; ammonium bichromate, 1 oz.; chromic acid, ¼ oz. The best results will be got from zinc by etching in a weak bath rather than a strong one: one part of nitric acid to 80 of water is quite strong enough for tub etching where the best results are wanted rather than speed in getting the work out. Machine etching is certainly superior for zinc, both in respect of quality of the etching and the speed with which the work can be done.

In etching copper the machine has no advantage except in regard to speed, as a plate properly etched face downwards is equal, if not superior, in depth and smoothness of cut, to a machine-etched plate, though this latter can be made in perhaps one-third the time. It has been found that the optimum strength for the iron perchloride is about 32 deg. to 35 deg. Beaumé. The solution can be used hot without any ill effects, and this greatly increases the speed of etching; if the solution is heated to 100 deg. Fahr. it will etch more than twice as fast as when used at the ordinary temperature of about 60 degrees.

### The Penrose Process Pocket Book, 1911.

This useful pocket-book, issued by Messrs. Penrose for the process worker, contains, as heretofore, a diary, together with a section, divided into months, for payments received and moneys paid, in addition also to a number of blank pages for memoranda. The formulæ section, which occupies the latter half of the book, is well provided with data and tables relating to the photographic and optical processes of photo-engraving, photo-lithography, collotype, and photogravure. Tables of weights and measures, metal gauges, thermometric temperatures, and money calculations, etc., form a most useful miscellany of the information which the photo-mechanical craftsman or manager has constant need of. We believe that the pocket-book will be sent to *bona fide* heads of process firms on application to Messrs. Penrose, at 109, Farringdon Road, London, E.C.

### PHOTO-MECHANICAL PATENTS.

The following patents have been applied for:—

Printing-Plates.—No. 29,580. Process of making printing-plates, stereotypes, and other engraved plates for printing on any desired material. Angelo Emmanuele Bacigalupi, 111, Hatton Garden, London.

Illustrations in Colour.—No. 30,018. Improved process for producing illustrations in colour. Karl Peucker, 111, Hatton Garden, London.

Ensign Film Competition.—Mr. R. W. Hanson, 39, Grosvenor Road, Highbury, London, N., is the winner of the "Ensign" roll film competition for December. Houghtons Ltd. offer a three guinea camera every month for the best negative on "Ensign" film. The entries close on the 3rd of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

# Exhibitions.

## THE SCOTTISH SALON.

Last week our review dealt with the portraiture and figure studies; this week we propose noting some of the more prominent of "other subjects." First let us say that the Salon is strong in landscape, and that the feature in landscape is the prominence given to sunlight in the majority of the pictures. This is a strong evidence of the healthy reaction from the low tones of recent years. Perhaps the first strong appeal to Scottish photographers for an appreciation of the pictorial value of sunlight was the one-man show of Dr. E. G. Boon, at the Salon two years ago at Wishaw. Individual photographers certainly appreciated "sunlight" pictures, but their work was like a voice crying in the wilderness until Dr. Boon made his strong appeal; in fact, it was thought by some that his insistence on sunlight effects was overdone in cases, but, overdone or not, it has had its effect. It was evident last year to the observant critic; this year it is so positive that it cannot be neglected.

First we note the quartette by John M. Whitehead. "Tempest Riven," a wrecked hulk on the seashore, with a dramatic sky, is the picture chosen for reproduction in the catalogue. "On the Brooding Hills" is a typical Whitehead, trees on a hilltop surmounted by a sunset sky; in "The Mystic Hour" we have even in the title a declaration of Whitehead's love for the fall of the day; in the mid-distance a windmill, in the immediate foreground a pool reflecting the strong light in the sky, and that glorious range of half-tones characteristic of Mr. Whitehead's work. We have the same delicacy of tone gradation, but in a higher scheme, in "'Twixt the Spring and Summer"; here, instead of the twilight, we have the haze-light of early summer, with a decorative foreground.

J. Campbell Harper (Leith) has been exploring old Edinburgh. "Old Playhouse Close" is a good example of the archæological photograph, while "The Guard Passing the Canongate Tolbooth" is a feature of military life dexterously used in conjunct with the ancient building. "Wind-Swept Pastures," by Hugh Paterson (Langside), depicts well the "wind-swept" effect on the trees; the sheep are somewhat unsatisfactory in the composition, and the mounting leaves much to be desired.

R. Marshall (Grangemouth) has for the nonce left his dock subjects, and in "Across the Bents" has a fine open landscape; a grass-grown roadway winds over the moorland, some sheep appear in the foreground, and over all a fine sky.

This might be called James McKissack's (Glasgow) year. While as a member of the Salon Committee he has played his full part in the organising and executive work of the show, he has been no less busy with the camera. He tops the record, in fact he tops all records of the Salon numerically with twenty pictures accepted. Most of his subjects are Continental, the fine old buildings having captivated his attention. "Street in Rothenburg o/T," reproduced in the catalogue, shows the fine old buildings decorated by the quaint shadow design against the strong sunlight. Variations of the same theme appear in many of his exhibits, sunshine being an effective adjunct in almost, if not all, his exhibits. "A Bavarian Pastoral" has quite a Continental atmosphere, if one might so use the term. "A Castle of Romance" is an exceedingly strong picture, carrying with it a memory of the Hofmeisters; heavy and dark are the tall trees lining a roadway, the horizon shows a sunlit castle peeping up above the trees—verily all the material for romance is here. In his home subjects, "Scarbro'" is an assertive composition: the smokestack of a steamer agressively monopolises the foreground, throwing back the rest of the picture in fine perspective. "Edinburgh Castle" has the pile of the castle in the distance, a wall in the foreground being redeemed from blankness by the fine play of sunshine and shadow on it. From Edinburgh comes "A City Morn." where, in the railway shunting yards, the glimmer of the morning sun brings into strong relief the smoke from an engine. D. Lumgair (Selkirk), in his cathedral pictures, displays fine technique; a similar quality distinguishes the landscapes of R. K. Holmes (Dollar).

Wm. C. S. Ferguson (Shawlands) is the Scottish apostle of oil, and all his work is in that medium. "The River" is the picture chosen for reproduction in the catalogue. Here the strong foreground and overhanging branch act as a foil for the glimmering sunlit water and the trees beyond—this is peace; "Fangs of Ocean" is war; here the shore rocks, dark and cruel in their outlines, stand out aggressively against the surf; the title appears to us perfection, so aptly does it express the picture. "Where the Sea Surges" is a similar theme, but without the blunt strength of "Fangs of Ocean." In "The Pier" we have clearly evident the rare luscious quality of shadow contrasted against the glimmer of light beyond. "Our Alley," by Rufus E. Evans (Newcastleton), is a pleasing transcript of a corner in a rural township. Chas. Heath's (Glasgow) "Wind-Swept" decidedly carries out the title; not only do the trees show the effect of the wind, but it is also seen in the undergrowth. W. H. Wilson, the Salon secretary, has had time to do work that receives acknowledgment on the walls. "Scarbro' Harbour" is dingy enough for the Clyde. Eric McKay (Paisley) has some goodly yacht pictures. John McClure (Prestwick) has a double figure entry, and through all his work runs a distinct evidence of artistry; "Evening Mists" has a fine shadow in the foreground; in "Dawn" the mist shows in contrast to the near trees; "Old road, Arrochar," is a picture of good quality, and the distance recedes well; "Under the Arc Light" is an after-dark picture, clever and effective.

John Currie (Glasgow) shows good quality in "Reflections, Edam," where the trees and whitewashed buildings show fine reflections in the water. A. Primrose (Airdrie) has a praiseworthy memory of old-world life in "The Old Tolboo'." "The Sentinel," by M. Fraser Black (London), shows an equestrian statue, the lights reflecting on the pavement making a satisfactory foreground. A. F. Sturrock (Barnhill) has a nice decorative effect in "Pond Lilies"; one can well imagine it used as a basis for a wall-paper design. "The Black Pall," by Andrew McQueen (Shawlands), shows an effective use of the smoke from a steamer. "Auld Reekie," Ben Sherratt (Edinburgh), is a picture of Edinburgh, treated as its title indicates. The strong shadow on the river of the bridge throws into fine relief the clustering houses of the town beyond in "The Bridge" (reproduced in the catalogue), by W. A. Mackinnell (Dumfries), but we do not like the unsupported arch of the bridge. "Bleak December," by James Patrick (Dumfries), shows horses coming along a snow-driven roadway; the picture is decidedly wintry. City sunshine and fog is the theme of "Royal Exchange Square," by Wm. Howat (Ibrox), who has also a clever sunlight and shadow picture in "Sunlit Wall." Harold J. Black (Glasgow) has a good study of lighting in "In the Stableyard." "Sunshine and Shadow" is the subject (locale, a city slum) and title of W. S. Crocket's (Tollcross) picture. A similar theme in country surroundings inspires "Noontide." John Baird (Glasgow) has a good lighting in "An Old Close," and George Malcolm (Edinburgh) has a subject that would please the antiquary in "A Quaint Old Edinburgh Fish Shop." Miss M. J. G. Sheret (Aberdeen) has successfully caught the shimmering light of summer in "A Canal, Bruges." The "after-dark" spirit has caught A. Chapel Milne (Brechin), and in "Hogmanay" he makes a telling use of the lights streaming from the house windows on the snow-clad street. The light beyond, seen through the near trees, gives point to "From Gloom to Gladness," by Louis Dick (London).

There are not many flower pictures, but what there are merit attention. Mrs. R. Dunlop (Motherwell) gracefully renders the dainty delicacy of the petals in "Poppies"; R. Burnie (Glasgow) has a well-arranged picture of "Snowdrops"; L. Girdwood (West Calder) renders "Begonias" in colour, pink petals, green foliage; while good modelling is displayed in "Apples," by Chas. G. Thornton (Edinburgh).

Nature pictures are few, but Chas. Kirk (Glasgow) and Chas. C. Graham (Milngavie) deserve every credit for so ably representing this fascinating branch of photography.

The trade exhibits include carbon prints on wood by the Autotype Co. and prints on their various papers by Messrs. Elliott and Co., Barnet—both effective displays.

The exhibition remains open until the 14th inst., and is being visited by large crowds. It should have a powerful educative effect on the many non-photographers who visit it.

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Mr. Howden Wilkie, F.R.P.S., has purchased the studios known as The Raeburn, situated at 42, The Broadway, Wimbledon. The business will be carried on at that address in addition to Mr. Wilkie's branch at Wimbledon Park.

## FORTHCOMING EXHIBITIONS.

December 24, 1910, to January 14, 1911.—Scottish Salon (Glasgow). Sec., W. H. Wilson, 139, Cartvale Road, Langside, Glasgow.

December 30, 1910, to January 7, 1911.—Wishaw Photographic Association. Sec., R. Telfer, 138, Glasgow Road, Wishaw.

1911.

January 28 to February 4.—Glasgow Southern Photographic Association. Entries close January 16. Secs., S. Robertson, 79, Govan Road, Plantation, Glasgow, and W. S. Denver, 467, Eglinton Street, Glasgow.

February 11 to 18.—Aberdeen Photographic Association. Entries close January 20. Sec., J. A. Brodie, 48a, Union Street, Aberdeen.

February 25 to March 11.—Birmingham Photographic Society. Entries close February 10. Sec., T. Matthews, 60, Newhall Street, Birmingham.

March 3 to 18.—Northern Photographic Exhibition (Liverpool). Sec., C. F. Inston, 25, South John Street, Liverpool.

March 23 to 25.—Beith and District Arts and Crafts Club. Sec., J. Peat Millar, 40, King's Road, Beith.

March 25 to April 1.—Sunderland Photographic Association. Sec., Wm. E. Kieffer, Stirling Road, Sunderland.

March 28 to April 1.—Sheffield Photographic Society. Sec., C. H. Parker, 67, Wadbrough Road, Sheffield.

May 12 to 20.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 25, Harp Alley, Farringdon Street, London, E.C.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents were made between December 19 and 24:—

Lenses.—No. 29,605. Improvements in fitting lenses to cameras. Paul Bernhard Salomon Ponge, 15, South Street, Finsbury, London

Film-Carriers.—No. 29,823. Improvements in and relating to film-carriers. Ernst Brinkmann, 285, High Holborn, London.

Colour Cinematography.—No. 29,586. Improved method of producing cinematographic pictures in colours. Serge Prokudin-Gorsky and Serge Maximowich, 31, Bedford Street, Strand, London.

Celluloid.—No. 29,442. Non-inflammable celluloid. Henry Peters, 2, Elm Villas, Ealing Green, London.

Moving Pictures.—No. 29.832. Improvements in or relating to moving-picture devices. Thomas Joseph Murphy, 7, Southampton Buildings, London.

Cinematograph-Photograph.—No. 29,916. Improvements in or relating to the working of moving pictures and talking machines. Edmund Seal Donisthorpe, 7, Southampton Buildings, London.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Rapid Bromide Printer.—No. 28,440, 1909 (December 6, 1909). This invention consists of a desk, 1, or paper support in the centre of which (and below the paper support) is a chamber, 2, in which are placed two incandescent electric lamps, the bulb of one lamp being coloured ruby red or yellow, the bulb of the other lamp, 3, being colourless; in some cases the coloured lamp may be dispensed with.

To a rack (or its equivalent) is attached a paper clip by means of which the paper is drawn forward across the negative as required, this rack (or its equivalent) moves in suitable guides in the paper support.

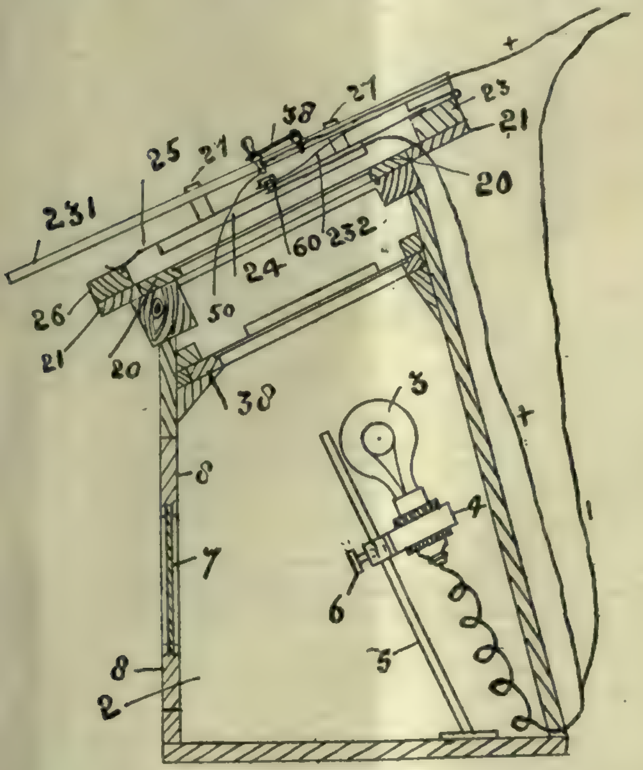
Moving on the rack or on a bar above it is a slider, 18, to which is attached a ratchet which engages with the rack so that when the slider is moved forward the paper is drawn across the negative in order to obtain another print.

The left hand portion of the paper support may be provided with a hinged flap or other means for excluding the light from the unprinted paper.

Above the lamp or lamp holder is a negative holder, 19, which is capable of rotation and of movement across the paper support to enable the negative to be moved into any required position and to be clamped in that position by any suitable means.

Above the negative holder is a platen, 24, consisting of a flat piece of wood or other suitable material covered on the inside with felt or other soft material, the platen being provided with springs, 25, to hold normally the platen clear of the negative or paper.

There is also provided a lever, 231, which is hinged to the negative holder or other suitable portion of the apparatus, by means of which the platen is held firmly against the paper and negative so as to ensure the paper being flat and in contact with every part of the negative while printing, the platen being attached to the lever by metal bands and a spring. To this lever is attached an electric switch, 38, by means of which the current may be made to pass to the ordinary lamp when the platen is pressed on to the paper, if the switch is in the "on" position; if the switch is "off" no current passes.



A terminal projects through the lever which when the lever is pressed downwards makes contact with a terminal on the upper side of the platen and the lamp lights up, the spring inserted between the lever and the platen being used to keep the terminals apart when the platen is raised from the paper. Below the negative holder are sliding masks, the opening between them being regulated according to the size of the print required, that is to say according to whether the whole or only a part of the negative is to be reproduced.

The masks when adjusted are held firmly by means of suitable clamps which form stops for the slider, the movement of the slider being limited by the stops to ensure that the amount of paper moved across the negative at each forward movement of the slider corresponds with the size of the print required.

A negative is placed in the negative holder and adjusted, the masks are clamped in the position necessary to give the required width to the print, after which a strip of bromide paper is placed over the negative and gripped by the paper clip. All these preliminary operations are performed by ruby or yellow light, and when all is ready for printing the coloured lamp, if one is used, is switched off.

The operator then moves the slider back to the stop and presses the platen on to the paper by means of the lever and holds it down while exposure is made to the white light; he then releases the platen and moves the slider forward to the other stop and draws forward enough paper for the next print, moves the slider back to the stop and proceeds to make another exposure as before, and so on until all the paper is used up, he then places a new strip of paper in the paper clip if more prints are required, and so on. Alexander Good, 2, Bridport Road, Thornton Heath, and Richard Lang Sims, 437, Brixton Road, Brixton, London.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

Plastic Reproduction.—No. 29,260. Process and apparatus for the plastic reproduction of objects. Selke.

## New Trade Names.

Eternite.—No. 328,931. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Williams Brothers and Co., The Clarence Chemical Works, Hanworth Road, Hounslow, Middlesex, aniline dye manufacturers. November 3, 1910.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Spirit-Vapour Lamps for Home Portraiture.

Many workers would elect to produce portraits at home (writes "F. J. M." in the "Amateur Photographer and Photographic News" for January 3), but are debarred by the smallness of their rooms, or by the awkward direction in which daylight illuminates the most desirable places. Given a certain amount of patience and observation, there is no reason why good portrait work should not be accomplished in any room, big or little, with the aid of artificial light.

On many occasions we have referred to the utility of flashlight for indoor portraiture, and undoubtedly this form of artificial lighting has many advantages. Spirit-vapour lamps, however, if properly used, will give even better results than flashlight, and are, moreover, entirely under control for the purposes of observing the final effect, and adjusting the modelling before the picture is taken. In this respect, work with the vapour lamps approximates to daylight studio photography. It is here that flashlight portraiture fails, as it is not possible to estimate exactly what the final effect will be, and one has to depend on past experience in arranging the position of the flash to the best advantage.

In the small room there need be no special preparation for securing the portrait. The sitter can proceed with his or her usual occupation, and the photographer can, with one or a couple of portable vapour lamps, placed in various positions, study the lighting, and then, when ready for making the exposure, pump the light up to its greatest power, and uncap the lens.

### An Accessory for Natural History Photography.

In "Photography and Focus" for January 3, "W. H. N.," writing on the subject of natural history photography, gives the following useful suggestions:—"A shallow box with its back and front made of a couple of sheets of glass—one should be plate-glass for choice—is very useful in a twofold capacity. If it is watertight, it forms a convenient temporary aquarium, in which small fishes, water plants, newts, etc., may be put to be photographed. It can also be used, either as it is or inverted, as a temporary receptacle for small animals, birds, butterflies, etc., for the same purpose. In using such an arrangement, the camera should always be pointed from a quarter which is in shadow, so that no light objects are reflected from the front surface of the glass. With a little care it is easy to get a result in which there is no trace of the glass, back or front.

"It sometimes happens that there are quite a number of similar objects to be photographed, and when this is the case a great deal of time and labour may be saved by what might be termed standardising the conditions. Thus, a stick may be cut the exact length which separates the centre of the object from the front surface of the lens, and the extension of the camera when the object is sharply focussed may be marked on the baseboard. The succeeding objects are put up at the distance measured by the stick, the camera is extended to the mark, and all need of repeated fine focussing is done away with. The exposure, in the same way, may be made by means of measured lengths of magnesium ribbon, burning these always at exactly the same distance from the subject, and so every plate may have exactly the same exposure."

# New Books.

"HAZELL'S ANNUAL," 1911.—The current volume of "Hazell's Annual," published at a somewhat later date than usual, so as to include details of the new Parliament, follows the customary excellent arrangement of the volume. It provides a mass of condensed information on topics of the day, international, political, social, commercial, and scientific. The section on page 465 dealing with photography very usefully summarises the events and progress of 1910. The "Annual" is supplied with a most exhaustive index, and the only criticism which we can level against the volume is that so carefully compiled an index should have its convenience depreciated by being broken up by advertisement pages. The "Annual" is published by Messrs. Hazell, Watson, and Viney, Ltd., price 3s. 6d.

"TRAVEL AND EXPLORATION."—The first number (January) of Vol. V. of the popular monthly, "Travel and Exploration" (Witherby and Co.), is more varied and interesting than usual. Mr. Edmund Forbes has been entrusted with the principal exploration article, which deals with Malay klongs and rivers, while Mrs. Ellen Beadnell contributes an observant sketch of life in Wei-Hai-Wei. A striking and suggestive article, evidently written by one who knows India and the India Borderlands, entitled "En Route for Trans-Himalaya," is really a review of Sven Hedin's remarkable volume, "The Overland to India." In the travel section more attention is paid this month to Continental travel, and Mr. Ernest Young contributes an instructive article on Bear Shooting in Finland, while Mr. Eustace Reynolds-Ball describes the artistic attractions of six Flemish cities. Other readable articles deal with California, Morocco, and Palestine. Variety is given to the magazine by a pleasantly written and informative study of Pickering, an ancient town of Yorkshire.

# Commercial and Legal.

LEGAL NOTICES.—A Receiving Order has been made in the case of James Hawke Moody, photographer, 20, Tanygroes Street, Port Talbot, Glamorganshire, lately residing and carrying on business at High Street, Aberavon, Glam.

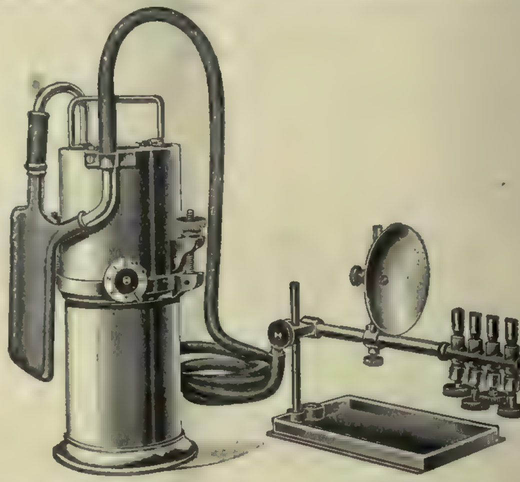
Notice of intended dividend is given in the bankrupt estate of Frank Knight, artist and photographer, 19, Castle Street, Luton, lately residing at 2, George Street, Upper Houghton Regis, near Dunstable. All proofs must be lodged on or before January 10 with A. Ewen, The Parade, Northampton.

THE PAGET PRIZE PLATE CO., LTD., Watford, are prepared to consider the purchase of negatives, half-plate size and upwards. Contact prints, with price clearly stated on the back, are all that are required in the first instance. If the prints are to be returned stamped addressed envelope should be sent.

# New Apparatus, &c.

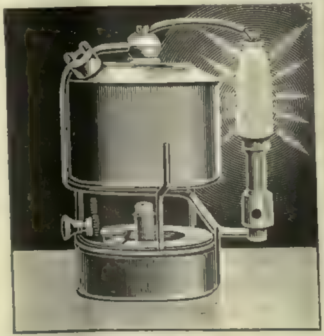
**The "Klimax" Acetylene Generator. Sold by W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London, E.C.**

In this very portable, yet strongly made, generator, the carbide is contained in the base, the upper portion of the generator being a tank from which water is admitted into the carbide compartment below. The water drips down a central tube, through the perforations in which it reaches the carbide. The gas escapes by the inverted U-tube, through a rubber regulating bag, from which it passes on to the jet. The apparatus is most simple in construction, the working parts are readily accessible for cleaning, and in operation the generator is extemely handy. For these requiring a light for the optical or enlarging lantern without the aid of gas or electric supply, the "Klimax" is a very useful equipment. The generator takes 1 lb. of carbide, the tank holds one pint of water, and the complete apparatus stands only 14 in. in height. Complete with a four-burner jet fitted with reflector, tray, and 3 ft. of rubber tubing, the price is £2 2s.



**The "Luna" Spirit Mantle Burner. Sold by W. C. Hughes and Co, 82, Mortimer Road, Kingsland Road, London, N.**

In this new lamp Messrs. Hughes provide the enlarger and lantern worker with a most powerful light produced with methylated spirit only, and of a size to go into any projection or enlarging lantern. The lamp is worked without aid of any pump, the gas being produced by volatilising spirit (in a chamber provided for the purpose) by means of a small spirit flame placed beneath it. The height of this flame is adjusted by rack and pinion, and the supply of the combustible vapour thus controlled to a nicety. We have seen for ourselves the remarkable power of the light, which is greatly in excess of the best oil lamp, and distinctly better than a four-burner acetylene jet, and this not only as regards intensity, but also in colour. Comparative tests have shown us the effective 12 ft. picture which is obtained with the burner, which, once started—it requires only about five minutes to have it in full action—provides a most



brilliant light for a couple of hours. The lamp is the most satisfactory illuminant, short of the electric arc or a lime jet, which we have seen. The price of the "Luna" lamp is £2 2s.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, January 6.

West Surrey Photographic Society. "From Negative to Exhibition Print. II.—The Print." Mr. Baskett.
Queenstown Camera Club. Autotype Carbon Demonstration.
Oliver Goldsmith Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Sunday, January 8.

South London Photographic Society. Excursion, Greenwich to Woolwich.

### Monday, January 9.

Kidderminster and District Photographic Society. "Bromoil Demonstration." H. W. West.
Cleveland Camera Club. "Runswick and Staithes." T. W. Kelley.
Bowes Park and District Photographic Society. "Photo-micrography." E. Ridgway.
Scarborough and District Photographic Society. Members' Night. Lantern Slides and Prints.
Southampton Camera Club. "St. Paul's Cathedral." E. W. Harvey Piper.
Bournemouth and District Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

### Tuesday, January 10.

Royal Photographic Society. Ordinary Meeting. An exhibition of prints showing the application of photography to biology by various workers under the direction of F. Martin-Duncan, F.R.P.S.
Halifax Camera Club. "Demonstration of Worsnop's 'Reflectroscope.'" C. Worsnop.
Leeds Photographic Society. Exhibition and Criticism of Members' Prints. Alexander Keighley.
Sheffield Photographic Society. Social Evening.
Worthing Camera Club. Lecturettes by our Littlehampton Members:—E. Baker, R. Graham, C. W. Licence, W. A. White, and A. Young.
St. Helens Camera Club. "Gum Bichromate Process." J. Leyland.
Swansea Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

### Wednesday, January 11.

Croydon Camera Club. Exhibition of Lantern Slides for Award offered by W. Ashcroft.
Coventry Photographic Club. "Gum Bichromate." J. C. S. Mummery.
Borough Polytechnic Photographic Society. "The Gum Bichromate Process." C. Wille.
Partick Camera Club Monthly Lantern Slide Competition.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. "Development." H. W. Bennett.
South Essex Camera Club. "Flower Photography by Artificial Light." E. Seymour.
Edinburgh Photographic Society. Members' Slides. British Architecture.
Hartlepools Photographic Society. Autotype Carbon Demonstration.
Cwmaman Amateur Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Thursday, January 12.

Oldham Photographic Society. "Thornton-Pickard Specialities and Prize Slides." A. Hesketh.
Liverpool Amateur Photographic Association. Lantern Lecture: "One Hundred English Wild Flowers in Natural Colour." H. Essenhigh Corke.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Bromoil." T. Rhodes.
Handsworth Photographic Society. "Lantern Slide Making by Reduction." E. G. Collins.
Batley and District Photographic Society. "Carbon." A. Lyles.
Birstall Photographic Society. Autotype Carbon Demonstration.
Cardiff Y.M.C.A. Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, January 3, Mr. W. T. P. Cunningham in the chair.

Dr. C. Atkin Swan delivered a lecture on the practical side of Alpine photography, in the course of which he described the methods and apparatus which he had found best in twelve years' experience in mountaineering. He preferred to use both a stand and a hand camera, taking the former on the less difficult ascents, and reserving the latter for climbs such as those up the many "chimneys" in the Alps, where a very light camera was the only one possible. He preferred the box form of hand camera, and had long used the Special B and afterwards the Special B de luxe of Messrs. Newman and Guardia. Whenever possible, he preferred to take plates, or where lightness was of the utmost importance, cut films or roll-films in a roll-holder. The camera should never be slung in the usual way over one's shoulder, where it could swing round and so endanger the climber; it should be attached to knapsack straps over the shoulder and fitted so that it could be at once unhooked and swung round for use. The low temperature of the higher altitudes made it advisable to dispense with all rubber pneumatic releases, using the more reliable "Antinous." He advised a camera of quarter-plate size in preference to one 3½ x 2½, since the former gave more latitude for adjusting the picture in the plate and a better average was obtained from the many exposures, made on a climb, which required to be done quickly. He advised taking a changing bag or tent without any ruby window, and to use in it a light bow of cane which would keep the top of the bag off the worker's hands. As regards plates, he used nothing but orthochromatic, chiefly the ordinary variety, such as the Wratten "Allochrome," or for hand-camera work a panchromatic, such as that also of Wratten. The latter allowed of a filter of low multiplying factor being used, and thus permitted of instantaneous exposures with the camera in the hand. The most common mistake was that of over-correction; he had found that the K1 screen of Wratten was sufficient in the vast majority of cases. He had tried plates of the non-filter type, but his experience had been that they were not as satisfactory as a screen ortho plate. As regards exposure, his experience was that in the higher altitudes very little less time was required than when working at sea level. In development, his practice was to commence with a weak rodinal developer of 1:100, and then, in accordance with the degree of contrast in the subject, to proceed with this or to use one of 1:30 strength.

In telephoto work, which, in mountainous regions, was a pure joy to the photographer, he had discarded extra tripods or front supports for the camera in favour of a large tripod head. He invariably used a hood on the telephoto, as indeed on every lens, and he had found the suggestion made to him by Captain Owen Wheeler of obtaining high magnification by means of a high-power negative at a relatively short camera extension to be excellent in practice. After some discussion of the technical points raised by Dr. Swan, and illustrated in a fine series of lantern transparencies, the proceedings closed with a hearty vote of thanks to the lecturer.

**Southampton Camera Club.**—The annual meeting of the Southampton Camera Club took place at the Club Room on Monday last, the 2nd inst., W. Burrough Hill, Esq., F.S.I., presiding. The following officers for 1911 were elected:—President, W. Burrough Hill, Esq., F.S.I.; Vice-Presidents, Messrs. G. T. Vivian, A. E. Henley, Arthur Marshall, A.R.I.B.A., F.R.P.S., F. G. Ryder, S. G. Kimber, F.R.P.S., W. H. Trigg, and Dr. H. Milner White; Hon. Secretary, C. M. Cooper; Treasurer, F. Russell; Lanternist, G. T. Vivian; Reporter, R. D. C. Robinson; Committee, F. S. Albert, Dr. N. Aldridge, F. H. Burr, W. A. Chaplin, C. Daw, E. H. Irish, W. R. Olney, R. E. Parson, W. P. Purvis, and R. F. C. Tear.

After thanking the retiring officers for their services the meeting terminated.

# News and Notes.

**Messrs. Ross, Ltd.**, manufacturing opticians, of 111, New Bond Street, W., 31, Cockspur Street, S.W., and Optical Works, Clapham Common, have been granted a Royal Warrant, appointing them opticians to his Majesty King George V.

**Messrs. J. H. Dallmeyer, Ltd.**, advise us that they have just purchased the plant and tools belonging to the late Mr. F. Steele, of Victoria Park. They will carry on his business of the manufacture of accurate prisms, plane surfaces, and mirrors of all kinds, at their factory at Denzil Works, Neasden, N.

**United Stereoscopic Society.**—The winner of the transparency competition, recently held by the United Stereoscopic Society, was Mr. F. Low, Mr. C. W. Adshead taking second place. The judge, Mr. C. Welborne Piper, characterised the work of the competitors generally as being of a remarkably high standard of merit.

**10s. 6d. Every Week for a "Nyte-Lyte" Postcard.**—A prize of 10s. 6d. cash is offered each week during January for the best prints sent in made on "Nyte-Lyte" postcards. Cards may be toned or untoned, and in any style of masking, etc. The competition commenced Monday, January 2, the first week being from January 2 to January 9 inclusive. Postcards arriving not later than the first post on Monday morning in each week will be included with entries for the six days previous. Postcards arriving after first post will be included in entries for the following week. The competitor should buy a packet of "Nyte-Lyte" postcards, make his print, write his full name and address on the address side, put a ½d. stamp on, and post to Competition Department, Marion's, Soho Square, London, W.

A cash prize of 10s. 6d. will be awarded each week to the sender of the card which best combines pictorial and technical excellence. The winner will be required to furnish, if necessary, a clean copy of the card. The copyright remains with the competitor, but it is understood that Marion and Co. may exhibit the card or reproduce the subject once without further payment.

Cinematograph Theatres.—At Tower Bridge, on Monday last, Mr. Cecil Chapman imposed a penalty of 40s. and five guineas costs upon the Bermondsey Bioscope Company, Limited, of Mark Lane, E.C., on a summons taken out against them by the London County Council in respect to the opening of a cinematograph theatre in Borough High Street on a Sunday, in contravention of the conditions of the licence.

The case was before the Court some months ago, and the magistrate held that the London County Council had no power under the Cinematograph Act, 1909, to forbid Sunday opening as a condition of the licence, even though inflammable films were used. The High Court reversed his decision and sent the case back to him for conviction.

At the same Court there was a summons against Georg Eustace Skliros, of Regent Street, in respect to a cinematograph theatre in Rotherhithe New Road.

Mr. Dymes, for the London County Council, said the defendant had the theatre open on Sunday, December 18, although the High Court decision was given on December 9.

The defendant pleaded that the decision was not reported to the London County Council until December 20.

Mr. Chapman imposed a penalty of 40s. and two guineas costs.

The Defendant: I should like to know, for my future guidance, whether I can open on Sunday evenings if I use non-inflammable films only?

Mr. Chapman: Where inflammable films are used the Council has complete control over the building, and can refuse to grant a licence, or to grant a licence for its use on Sunday. If you do not use inflammable films, I do not think it is contended that the Council has any authority.

Ilford Competitions.—Messrs. Ilford, Ltd., are arranging a series of competitions in connection with their monthly journal, "Photographic Scraps," the first of which is for prints or enlargements, toned or untoned, on Ilford bromide paper. There will be four classes, and cash prizes to the value of £20 14s. will be awarded, the judges being Messrs. Ilford, Ltd., themselves, whose decision shall be accepted as final.

The awards will be distributed as follows:—Class 1 (for prints under quarter-plate size): First prize, 10s. 6d., and ten prizes of 5s. each for the next ten competitors in order of merit. Class 2 (for prints quarter-plate, postcard, and 5 x 4): First prize £1 1s., two prizes of 10s. 6d. each, and ten of 5s. each. Class 3 (for prints or enlargements half-plate and over): First prize £3 3s., two prizes of £1 1s. each, two of 10s. 6d. each, and ten of 7s. 6d. each. Class 4 (for competitors under 18 years of age): First prize 10s. 6d. and ten prizes of 5s. each.

All competitors must comply with the following conditions:—

Prints should be mounted but not framed, and be accompanied by the coupon at the foot of page 3 of cover of the January issue of "Photographic Scraps." One coupon only to be sent by each competitor.

Prints and the negatives from which they were made must be the sole work of the competitor.

Nothing whatever should be written on the front of the mount. The competitor's name and address, the variety of plate, film, or roll-film used in taking the negative and the variety of bromide paper, with the batch number, on which the print is made should be plainly written on the back of the mount.

Negatives used must have been taken on Ilford plates or flat films. Where roll-film has been used it may have been of any make.

A competitor may not send in more than four prints in each class, and only one prize will be awarded to one competitor. Every print must have particulars written on the back of its mount.

Prints to which prizes have been awarded in other competitions are not eligible.

Competitors entering in Class 4 must write "Class 4" on the backs of their mounts, and will be understood by such entry to declare that they had not passed their eighteenth birthday at the time the work was done.

Prints to which prizes are awarded to become the property of Ilford, Ltd. All others will be returned if stamps are sent for postage.

Copyright, except for reproductions not for sale, to remain the property of the competitors.

Ilford, Ltd., are not responsible for loss or damage, although every care will be taken of prints received.

Prints on "Bromona," or by the Bromoil process, are not eligible for this competition.

Prints may be sent in any time before February 28, 1911, addressed "Competition, Ilford, Ltd., Ilford, London, E.," and the awards will be announced in the April number of "Photographic Scraps."

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SUNDAY WORK IN PHOTOGRAPHIC STUDIOS.

To the Editors.

Gentlemen,—I have followed, with great interest, the various letters in the "Journal" on Sunday closing of studios. I note that it is only the masters or managers (presumably the latter get commission on the Sunday takings) who are in favour of opening on Sunday. Now, I can speak on both sides of the question. I have owned my own studio for some years now, but previous to that I worked in studios which opened on Sundays and in studios which did *not* open on Sundays. Every assistant I have met has objected to Sunday work, not *on principle*, but because it is *extra* work, not paid for, and for which, in nine cases out of ten, was not allowed for in the week day. I personally know studios which open on Sundays from 10 a.m. to 6 p.m., and the operator and receptionist have to attend every week, in addition to which there is only the usual half-day a week off, and the hours on week days are nine to eight, and on Saturdays nine to nine. In one place I know the operator works the business single-handed, and he has to be in the place all day, *and have his meals there* (including Sunday). This man has one half-day a week off. These are the kind of places which want to keep open on Sundays—the cheapest of the cheap. So-called studios doing midgets at six for 6d., and mounted enlargements at 1s. each. In order to make a living out of such preposterous prices, the poor assistants are sweated seven days a week, on a paltry wage that a bricklayer would refuse. It is quite time that Sunday studios were closed. As regards the arguments that a certain class of people would not have photographs taken at all if they could not have them taken on Sundays, that is all bunkum. I have had fifteen years' experience, and I know that people *make an effort* to have a photograph taken when they require it. If there were no studios open on Sundays these people *would* make the effort, and in that case, while they were about it, they would have a better photograph, and they would appreciate the results better. In these days of electric light photography, the one remaining plea for Sunday opening falls to the ground. By keeping open one or two days a week a bit later, all who could not come in the daytime would be gathered in. I am confident that no good business would suffer in the least, and assistants would turn out better work, after a day's rest, than they do now, when, after being at work till 10 p.m. on Saturdays, they have to commence again on Sunday morning. If any places suffered at all, they would be the "sixpence a dozen" shows, and the sooner these parasites (they are nothing else) shut up, the better. Photographers complain about bad times and competition, but if every bonâ fide professional would stand together for the common good, times would be better. I think this is a good chance for the P.P.A. to exert itself. I am sure all the members of that association would willingly sign a petition for compulsory closing of *all* studios on Sundays.—I am, Gentlemen, yours faithfully, A PROFESSIONAL.

To the Editors.

Gentlemen,—The question of Sunday trading is not such a simple one as it may have seemed to be at one time. With the broadening of outlook on life and the consequent relaxation of the rigid Sabbatarianism which formerly obtained, the question of the rightfulness or wrongfulness of Sunday work gives way to that of expediency. Certain callings can only be practised when the public have leisure, and photography happens to be one of them. Those of us who, like myself, depend mainly on portraiture for the middle classes are not personally much inconvenienced by the problem, but I can readily understand that others who do much in the way of cycling groups, etc., may find some difficulty in persuading their would-be patrons to arrange for week-day sittings. The fact is that the less well-paid sections of the working portion of the community get very little leisure indeed, except on Sunday. But the more we cater for them, or for any other class, whether with Sunday concerts, lectures, refreshments, or the taking of photographs, the less leisure there is likely to be for other sections of workers, unless means are taken to ensure it. Under our present system of unrestricted competition, with each man ready to take advantage of his neighbour, what one man does another is soon compelled to do, and, with the existing difficulty of obtaining all-the-year-round employment, many assistants may find themselves faced with the alternative of a seven-day week or no work at all.

Now it is in such cases as this that an assistants' trade union would prove most useful. Individual bargaining when two men are after one berth does not get us very far, and, since you have closed the previous correspondence on the relations of "Employers and Assistants," by reason of the introduction of personalities, will you allow me to say here what I was intending to say under that heading? For many reasons it is desirable that an assistants' union should be formed. With the best of intentions on the part of employers, it must be admitted that their view is not that of the employees. Trade unionism cannot do everything, but it could modify some of the worst conditions which obtain, and which, if allowed to persist, will more and more prevent youths of ability from taking up photography as a means of living. Any employees' association must, however, be started and run by employees themselves, and the London men ought to take the lead. The present would be good time to get the organisation on its legs, then by the time the P.P.A. Congress meets in April the union would have had time to formulate representations which the conference could consider.

Londoners interested in this question may like to know that a lecture on "Trade Unions" will be given by Mr. Sidney Webb (perhaps our greatest authority on the subject), on Friday evening, January 13, at 8 p.m., in the Memorial Hall, Farringdon Street, to which visitors are admitted (I believe, free).—Yours,

Watford. WILLIAM COLES.

## THE PRINTER.

To the Editors.

Gentlemen,—I want to plead the case of the printer, and as I can do this better by addressing his employers, I hope you will print the enclosed "open letter" to heads and proprietors of photographic studios.—Yours truly, IL PENSEROSO.

I take up my pen to write on behalf of the photographic printer. It is only fair to you gentlemen who may read this article that I should admit that I am a printer, then you can decide as to whether you consider my remarks practical or reasonable.

In opening, I would like, with your permission, to take a glimpse into the history of the printer, as it is from the past that the present grievance has been derived. If you will look back with me for a time, it should not be difficult for us to trace the origin of the conditions under which a printer of the present day has to work, and it is on the unfairness of these conditions that I write. In the early days of photography, when the art was travelling through the silver and albumen stage, the printer of photographs was by no means the least important being on any staff. He prepared, coated, and sensitised the paper, and to his work, to his experimental knowledge in this matter, the present advancement of photography owes more than its representatives care to admit. The fact that he was a chemist does not hide from us the greater truth that he was a printer, but gives it emphasis. At this time, the sloppy, sloshy nature of the man's work demanded that he, with his sinks, should be confined in some remote corner of the business premises, and usually a cellar, an outhouse, or some place unfit for other use, was his allotment. These surroundings did not interfere with the work of the printer-chemist, and he slopped his way merrily along through life until that time when the big manufacturing firms either secured his services or submerged him.

The next generation gave to the world of photographic art a new style of printer. Into the hands of this man, or boy, who was taken from no particular sphere of life, were placed a prepared and sensitised paper, a toning formula, and a sheet of instructions, so that if he could guess within reason the depth of a print he was a qualified printer. In this stage, the mechanical worker, who had no artistic effort demanded of him, was content to rub along in the same dirty, dismal surroundings in which his chemist-confrère had revelled. I do not blame the chemist for his indifference to his conditions, because his labours were of a messy nature; nor the mechanical worker, because so little was required of him; but I do condemn the toleration of the artistic worker of the present day, because the filthy condition of his surroundings is detrimental to his work and to himself. It is no longer necessary for him to be closeted in a cellar or an outhouse, as the nature of his work is clean. I wonder that the trimming and mounting is not done in such places; it is more "messy" than printing. Certainly one does not get so dirty in doing it, but that is explainable. "Look into your printing-room!" Greater men, greater business men than myself have raved at you about it, and you have forgotten it. Perhaps it will dawn upon you when a printer tells you that there are printing-rooms in the land to-day—they are yours—which are hotbeds of chemical poisoning, from dust, rheumatics, from damp and influenza, with its attendant evils from draughts. So long as these unhealthy, unfair, and ungodly conditions remain, the further advancement in artistic photography cannot be, because you are handicapping and humbugging the man on whom the advancement of production depends. "Don't forget the printing-room!" This cry has often graced the pages of this journal, although perhaps with a different meaning to my own. Forget? There are some rooms to which the application of the word would be trifling with the letters that form it. Some rooms I know, rooms in high-grade businesses, are impressed on my mind with the tenacity and permanence of a carbon transfer. They are filthy with the dirt of years; dirt which began its glad task of accumulation in the days of the chemist and is still going merrily on. Some of them are little better than hovels, furnished with shelves and benches which are saturated with the spilt solutions of the early workers, and decorated with filthy bottles, test tubes, glass, and a general collection of useless rubbish. Others are available for use in one corner only, the remaining room being devoted to an odd assembly of apparatus, consisting of obsolete cameras, backgrounds, rustic seats, and burnishers. Among these surroundings you command, you entreat, your printer to give you artistic and permanent results. I like that word permanent, when I think of the dangers which are lurking round every piece of paper which comes out into the pure, fresh air of the printing-room.

Gentlemen of the photographic profession, give your printers clean and healthy conditions; give your clients the best results, with permanence, and your business cannot fail to respond. You know that you never get the best results of which your man is capable, and so long as you hamper and humbug him as you do, you will continue to lower the standard of his work—that is, your work. Do you ever reason as to where those black spots, those hideous streaks and stains, come from? Yes, it is your printer; he puts them there for the dual pleasure of being reprimanded and repeating his work. You believe him to be careless; well, get a careful man, put him in those same surroundings, and study his downward career to the careless state. Your mounting, spotting, reception-rooms, etc., are nicely swept and dusted, and a good deal of the sweepings from those rooms forms part of the decorative scheme of the printing department. Fancy attempting to thoroughly sweep or dust here! Why, a man would be discharged for idling. Your clients could walk into your other rooms and you would not feel ashamed; but they must not see into the printing regions. "Printers are such dirty devils" is quite a familiar phrase, and I agree with those whose good sense has led them to recognise the fact. One can only wonder how long the smart operator's appearance would hold good if everything he touched added a dash of dust to his noble being. You see, you do not give a man the chance of being clean, and if he is not clean he must become careless, because if dirt does not matter, what does? The tone of his surroundings gets into a man's bones, into his mind, into his work; the result is equally as detrimental to your business interests as to the man's moral character. There is much that could be written in regard to the effects of the dirt upon the waste of material in the printing-room, but the subject is of such immensity that I would rather leave it open for individual thought.

Striking aside from the above state of affairs, I would like to point out to you the lack of proper washing facilities. You, gentlemen, who are employers, are so rarely seen in the printing-room that it is a question if you know how many sinks you have. Some printers are blest with one, and some hardly that. At present I am fortunate enough to have three, and if I show you the difficulties under which the washing of prints is carried out in three sinks you will perhaps agree with me that a standard of five would not be too many for any toning-room. Come with me into the regions of draughts and wet feet, where I can give you a practical explanation of four points which are of great detriment to your name as a photographer, to your interests as a big man. The four points I will take are: (1) Why your prints fade; because they are never washed. (2) Why prints are rubbed and torn; because a big flow of water was run on them for speed. (3) Why orders are delayed; because they are waiting for sink room. (4) Why your printer allows these things to happen; because he is disgusted with your meanness and indifference. If you will now allow me to give you a day's practical working under my present comparatively good conditions, perhaps a little chord of sympathy will be touched, which may lead to the betterment of my less fortunate comrades. I have a batch of seventy 10in. x 8in. P.O.P. prints for toning, and I walk into the toning-room with them, only to find that my friend the bromide fiend from upstairs has monopolised all the sinks with a big batch of prints fresh from the fixing bath. Of course, I don't blame him, he has his work to do; but I take his prints and pack them solidly into two sinks (one syphoning into the other), and proceed to clean my one sink and wash my prints for toning. The prints are washed, rinsed, fixed, and thrown back into the sink to wash, if they can. I realise the impossibility of this, but it is not my responsibility. Now I will take those collodios and tone them; but there is no room. Ah! Well they must wait until another day. I will finish platinum printing. In an hour's time I have finished printing, and have now about two hundred plats. to develop. Out come the P.O.P.s, in their half-washed state, and the same happens to the bromides. As I take them out I notice that some are torn and some blistered, which is easily accounted for when you notice that in my vain efforts to get them washed the water has run gaily over the sides of the sinks and flooded the floor. Those waste prints go into the rubbish box, and the plats. go to wash, and there they soak, sixty to seventy, in a sink. In endeavouring to give them a chance to wash, I rub some of them, but if you will so cramp me, you must have some rubbed prints or all unwashed prints. Taking out these prints, I throw out the badly rubbed ones, and work for the day is done. If on any one particular here written you can point out to me where there is any neglect or carelessness of the printer, which is not your responsibility, then, gentlemen, the printing section of the photographic profession would, to a man, be prepared to remedy it. You do not know the number of prints which are ruined in this way, because, as previously remarked, your visits to the printing-room are so rare.

Perhaps it is that you do not care to get your feet wet or your clothes soiled, but, whatever the cause, it would not be anything to your disadvantage to see the havoc wrought by your ignorant indifference. It is no pleasure for a printer to see his work going wrong, only, realising the impossibility of preventing it, he becomes apathetic, and is quite prepared to do the same work over and over again, if you are prepared to pay him for it.

Having reached this stage, I would like to recommend more fully to the notice of you, gentlemen, who are medallists, etc., the power behind the scenes. In this I hope that you will recognise I mean the printer himself. Without in the least interfering with your just claims to the artistic, which is exhibited in your posing and lighting, I claim that the printer in his own sphere has equal claims. Rather a sweeping statement from the man in the dirty boots and apron, I will admit, but give him a batch of negatives and let him demonstrate to you my meaning. Some of those negatives are underexposed, some over, and few correct; from those you expect a regular style of print, and you get it. How do you get it? Do you know how your printer gets it? How he prints in, shades, suns, and juggles with developers until you believe that he can print from a piece of glass with a smudge on it? Do you tell him what you want? Do you trouble with your exposures? Do you know what a direct print from any given negative will be like?

No. You do not. Leave it to your printer, he will make it all right. Why can he make it all right? Because you have made him a greater artist than yourself, in the world of photographic production. Your servant has become your master, to your benefit. How many apparently hopeless sittings has your printer by his arts converted into a usable quantity? Ask him to print you a P.O.P. of each from twelve assorted negatives, and one of each in platinotype, all to be a given standard, and watch him do it. You depend so much on your printer that you can no longer afford to ignore him. Do not misunderstand me when I say that you can no longer afford to ignore your printer, and smilingly think of a possible strike. You know that we have no organisation which could effect a strike, otherwise it would not have been left for any present-day printer to have denounced those conditions of which I complain. The trouble lies entirely within the limits of each business house. You are becoming more and more dependent upon the energy and artistic effort of your printer, and you are not giving him in return better facilities for his work. I have shown you that it is not necessary for any printer to be compelled to work in the slums of the business; I have shown you the fallacy of limited washing room, and I have pointed out to you the effect of these on the man. Now, gentlemen, it rests entirely with yourselves as to whether you will remedy this state of affairs or not. Remember, you are dependent on a man whose conditions of working make him apathetic and careless. This means that your whole system of business is apathy and carelessness. You cannot get away from this fact, that, for the most vital part of your business, which is the actual producing of those prints by which you stand or fall, you depend entirely on the man whom you ignore. After all, it is the print that matters. People do not hang a negative on their walls as a record of some friend or scene; the retouching, mounting, and spotting are details, it is the print which is the main object. Gentlemen, take your printer into fair surroundings, give him clean rooms, and have them kept clean. Make your business watchwords "Interest and Care," and produce work which will endure long after the half-washed, dust-laden specimens of to-day have yellowed the paper on which they were printed, and departed.

"IL PENSEROSO."

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## DISTORTION IN TELEPHOTOGRAPHY.

To the Editors.

Gentlemen,—Messrs. E. A. and G. R. Reeve say that "the remedy of allowing the camera back to tilt with the camera has not previously been advocated in print." This may be so, but surely most practical workers knew of it and used it, as I did myself from the first? I soon found by ocular demonstration that my lines went wrong if I corrected the back in a similar manner to that for ordinary lenses, and that scarcely any change to verticality was needed. I remember three years ago seeing a French photographer in Touraine getting some high-up detail on a small camera with a low tripod, and to my surprise, he had not attempted to correct the camera's back. On going nearer, and seeing he was using a telephoto lens, my surprise vanished, as I saw he had come to the same practical conclusion as I had myself. But the only test I should care to rely on would be the visual one.—Yours truly,

32, Rosemont Road, Acton, W. FREDERICK H. EVANS.

# Answers to Correspondents.

**** All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

**** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

**** Communications relating to Advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & CO., 24, *Wellington Street, Strand, London, W.C.*

**** For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPHS REGISTERED:

De'Ath and Condon, 32, Bank Street, Ashford, Kent. *Photograph of Seven Clergymen, entitled, "The Ashford Mission, Dec.,* 1910."

W. T. Munns, 7 and 8, Windmill Street, Gravesend, Kent. *Photograph (combination) entitled, "Proclamation of King George V. at Gravesend, May 9th,* 1910." *Photograph of the Staff of the G.P.O., Gravesend, outside the Chief Office, Milton Road.*

H. O. SOUTHGATE.—We have no recollection of the photograph.

C. F.—1. We should advise outfit No. 3. 2. The firm bears a good reputation for goods of reliable medium quality. It does not make the very highest class of apparatus.

"CAMERA CRAFT."—A week or so ago you recommended the American book, "Camera Craft," for photographers. Can I obtain it in England? If so, the price, and where? If not, can you advise me how to get it?—ENQUIRER.

Apply to the publishers, 713-715, Call Building, San Francisco, Cal. The price is 10 cents per copy; foreign annual subscription, $1.50.

BROMIDE LINEN.—We should be greatly obliged if you would let us know at your earliest the name of a firm who supplies linen, silk, or satin with sensitised bromide emulsion. As far as we know, a firm advertised some time ago in your paper, but we cannot trace same.—B. AND CO.

So far as we know, these materials are not on the market. Messrs. Wellington and Ward supply a bromide canvas.

BLOTTERS.—1. Kindly say where I could obtain pure, fluffless blotting paper *in rolls* for drying prints. 2. Re the longcloth used with above, is it necessary to have this washed first to eliminate the "dross"?—PRINTER.

1. L. S. Dixon and Co., Ltd., 38, Cable Street, Liverpool, and J. and B. Dodsworth, 127, St. George's Street, London, E. 2. It is better to wash the cloth.

F. R. AND SON.—The lenses are excellent; the focal length is about right for three-quarter or bust cabinet photographs, but for groups you would require one of shorter focus, say 7 or 8 inches, but where space permits, it is an excellent lens for groups. It is almost as rapid as a portrait lens, and an exposure of, say, 1-10th of a second should give you fully exposed studio portraits of subjects in light clothes.

VARNISHING NEGATIVES.—Will you please state your opinion as to the efficacy of varnishing negatives. I have heard it argued very strongly that, as a matter of fact, they are better not varnished, various reasons being given.—SANDARAC.

We cannot controvert reasons which are not stated, but there is no question whatever that varnishing with a shellac or celluloid preparation preserves the gelatine film both from damp and mechanical damage.

BROKEN NEGATIVE.—A customer has brought to me a half-plate negative broken into about half a dozen pieces. As it is of value to him, he desires me to make a duplicate. I should therefore be glad if you can offer me any advice on how to obtain the best result.—JEWSONIO.

The best suggestion that can be made is to piece the negative together on a plain piece of glass, to fix them with a touch of Canada balsam, and, putting the whole in a printing-frame placed at the bottom of a deep box, to take off a print. From this, after skilful retouching, a fresh negative is made.

WINTER DEVELOPER.—Not finding it always possible to raise my photographic solutions in the winter to normal temperature, I should be pleased if you would give me a reliable formula for developing plates at a low temperature—between 40 and 50 degrees Fahr.—and, I might add, plates which have usually only received minimum amount of exposure.—A. KNIGHT.

The best advice we can give you is to use a metol or rodinal developer, but this will not compensate for the low temperature. Surely you can command a dish of warm water in which to place the developing dish or tank? The only satisfactory way of dealing with low temperature is to raise it.

VALUE OF NEGATIVES.—In a case of selling a business, how much could be charged for negatives a dozen; 2,000 have been used within the last three years, and we have negatives for the past twenty years? Could you kindly give us an idea what would be the worth of same for business? Negatives for this last five years have been preserved and numbered.—VANDYKE.

Impossible for us to say. In a general way, the value of stock negatives has greatly declined of late years. As new photographs can be obtained so cheaply, people do not re-order as they formerly did. Except in the case of negatives of notable people, the value of the negative is very small indeed.

DULLING METALS.—Can you oblige me with formula of the best mixture with which lightly to coat medals, cups, etc., when photographing same, to prevent reflections? One that is quickly removed from crevices preferred.—PLYMOUTH.

In the cases of vases, cups, and other vessels, filling with ice cold water is a good method. A thin dew of moisture forms on the outside of the vessel, and is, of course, at once removed. But a better all-round plan is to hold the vessels over burning magnesium ribbon, from which a thin film of magnesia is deposited, even in the finest details. This, again, can be removed at once with a damp cloth.

COPYRIGHT.—Would you tell me if the copyright on the book called "Old England," a museum of popular antiquities, published in two volumes by James Sangster and Co., Paternoster Row, in the year 1864, has expired?—CORNWALL.

Literary copyright, which, in the case of a book, includes also the illustrations in it, lasts for the life of the author and seven years after his decease, but in the case of miscellanies, encyclopædias such as the volume you refer to would appear to be, this right has been held to be the property of the publisher, and the duration to depend on his life. Most probably in either case the copyright has now expired.

SULPHIDE TONING.—I have been troubled for a long time now by getting very cold tones on bromide paper toned in the sulphide bath, as enclosed specimen. The paper used is Kodak platinum matte, developed in diamidophenol for one minute (the exposure being ten seconds). Bleacher as follows:—Potass. ferricyanide, 3½ oz.; potass. bromide, 3½ oz.; water, 80 oz. Redeveloped in sulphide of soda, 1 per cent. The tones thus obtained on velvet surface are excellent, but on plat. matte are very cold and a nasty purplish colour. The trouble years ago used to be to get the tone cold enough. If you could help me by pointing out the cause of my difficulty, or by giving me better formula, I should be much obliged.—SEPIA.

The colour obtained by sulphide toning is very largely dependent on the emulsion, and partly on the development. We would suggest that you try a different developer. We do not, however, agree that the tones obtained are so very displeasing; we fancy a good many workers have been wanting just some such tone as this.

FLASHLIGHT.—I am expecting to take, very shortly, a fancy dress group of about 100 persons. This has to be done by flashlight.

I intend using "Agfa" powder. Would 50 grains be sufficient for an exposure, 10 x 8 plate, and would 30 ft. distance from group be far enough away? This would be behind the camera at an elevation of about 8 ft. What is the best means of firing it? Should the powder be laid on a tray, or something similar, of about a foot in length? What plates would you advise? I presume this powder is quite safe? Lens, whole-plate "Holostigmat," stopped to *f*/11. Would this be about correct?—FLASHLIGHT.

You ought to be able to use the lens at *f*/8. The height of the lamp is about right. The powder should be laid in a train in a shallow tray of wrought iron (tin plate). You can purchase such a lamp, complete with percussion cap ignition, from Houghtons Ltd. for a shilling or so, or a larger lamp from Chas. Zimmermann and Co. The "Agfa" powder is perfectly safe. We should be inclined to use about double the quantity, say 100 grains. See the "B.J. Almanac," 1911, p. 525, for many useful hints.

**IRRADIATION.**—Would you kindly, through the medium of your valuable paper, give me some indication of the causes that are specially favourable to irradiation. It is not a condition that I often get, but I enclose two worthless negatives that were really taken to see what forcing treatment the plates would stand, and you will see indications, but not very bad examples of irradiation. They were taken with a Watson 4.9 3-foci Holostigmat, the swan on an Imperial Non-filter plate, backed *f*/6 1-40 sec.; the other on a Lumière violet label plate, *f*/7, 1-40 sec., not backed. Both were developed in 1:25 Azol, kept at a temperature of about 80-85 deg. F. Previously I have not often got irradiation. My worst examples have been with focal plane exposures of white objects, say, 1-600 sec., on Wratten Verichrome plates. Any indication you can give me as to the conditions that especially make for this condition would be very interesting. I suppose fast plates are much more prone to it than slow?—A. H. HALE.

We question if you are correct in calling the effect irradiation; we should rather class it as ordinary halation, caused by reflection from the back of the plate. In the case of the backed plate, the backing is, we should say, not perfectly effective, at any rate, not sufficiently effective to withstand the effect of forced development, though probably quite efficient in more ordinary circumstances. The appearance or non-appearance of halation effect depends largely on development.

**STUDIO ROOF.**—Your opinion on the following will be esteemed a favour. My studio is a wood and clear glass erection, getting rather old. The roof leaks badly. Have spent a lot of money trying to put it right, but with little success. Have come to think that it is no good patching it (the roof). The studio is also badly situated for the light. My glass faces north-west. I get the sun in about two in the afternoon in summer. My accommodation is limited, and I could do with a little printing-room. So have thought on adding addition, as per enclosed sketch, putting a new roof on top of old one, with matt or obscure glass, and running it right up. Clear glass on printing-room and matt on studio. Would you advise matt, or that heavy obscure glass for studio? Would it require to be properly sealed at point marked X on plan? Would the matt glass improve my lighting? I shall be grateful if you can suggest any improvement.—J. S. RICHMOND.

Your plan for dealing with studio roof does not commend itself to us at all. Dust and smoke would soon accumulate between the two layers of glass and render the light extremely slow. We would recommend you to have the present roof removed entirely and have it replaced by one on the "dripless" system, with lead slips instead of putty, which any good builder would supply you with. Ground glass would be better for keeping out sunlight than the obscured glass, but we should prefer clear glass and an outside screen to prevent the sun from striking the glass at all. The printing-room should not interfere seriously with the side-light, though there will naturally be a loss of light through the light passing through the roof at an angle before it reaches the studio window. You would probably have to glaze the latter with ground glass to prevent the sitter from being embarrassed by the printers in the next room.

**TEMPERATURE COEFFICIENT.**—I have read in the "Photographic Journal" of this month the papers on "Time Development," by Dr. Mees and Messrs. Watkins and Ferguson. They have proved that the temperature coefficient of a developer varies with every brand of plates, but my difficulty is this: Suppose 2.3 be the T.C. of a certain developer, e.g., metol-quinol, for a certain brand of plates, e.g., Wratten Panchromatic, will the T.C. be the same with other developers, e.g., Glycin, Rodinal, etc., for the same brand of plates? It seems to me that this will not be the case; but Messrs. Wratten, I presume, think otherwise, because in their sensitometer test card they give times to develop with their metol-quinol developer for three different temperatures, and they give elsewhere formulæ for other developers which will require the same time. Does it not follow from this that they presume the T.C.s of the various developers to be the same? If so, are they right? Is there any appliance on the market which can keep the developer and the developing dish at a constant temperature for a certain length of time, say about half an hour? I want this to find the temperature coefficient of a developer by two experiments, one at the ordinary temperature of the room, the other at about 10 deg. C. higher. If there is not any such thing on the market, could you tell me how I can make one myself at home?—S. N. BANERJEE.

The temperature coefficients of different developers are different, and consequently, while two developers may give exactly the same results at one temperature, they will not at other temperatures. We imagine that Messrs. Wratten and Wainwright intend that if the most accurate results are to be obtained, the developer they give on the cards should be used, but that they consider that the variation due to the temperature coefficient of the other developers, which give the same results as metol-hydroquinone at a mean temperature, will not be sufficient to be of importance in practical work. It is clear that they cannot be expected to give the times of development for a large number of developers for a range of temperatures. We do not know of any apparatus for keeping a developing dish at a constant temperature for a considerable time, except the developing thermostats designed for the purpose.

◆

**AUSTRALIAN KODAK, LTD.**—In the current number of the "Australasian Photo-Revue," published by Australian Kodak, Ltd., an interesting account is given of the firm's new factories just completed at Abbotsford, Victoria, on the most modern lines, at a cost of about £140,000. The factory is equipped with refrigerating plant, and within its walls the dry plates, films, and papers originated by the Kodak Company are manufactured upon Australian soil. A large section of the works is also devoted to the manufacture of mounts and other photographic stationery, whilst it is quite characteristic of the Kodak thoroughness that the silver nitrate needed for the sensitive preparations is likewise produced in the factory from Australian silver bullion. The illustrations of the factory buildings show the large scale on which the company is prepared to conduct its manufactures amid surroundings which appear ideal for the production of photographic materials.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2645. Vol. LVIII. FRIDAY, JANUARY 13, 1911. Price Twopence.

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## SUMMARY.

In a leading article we give a number of reminders to the professional photographer of the work in which he can usefully engage during the present period of slackened business. Plans for profiting by the forthcoming Coronation festivities may occupy his attention, and there is always work to be done in devising profitable forms of advertisement. (P. 18.)

Mr. G. F. Green, in an illustrated article, draws attention to the character and lighting of the eyeball in influencing the expression in a photographic portrait. (P. 19.)

An American professional worker writes in advocacy of a system of studio flashlight which can be used interchangeably with the ordinary light of the studio. (P. 22.)

A useful accessory for copying by aid of a studio camera is described in a note on page 17.

Sunday work in photographic studios, the studio roof, etc., are topics discussed under "Correspondence." (P. 33.)

Dr. Cooper Hewitt has invented a fluorescent reflector for use with all descriptions of artificial light, the colour or spectrum quality of which may thus be altered. The system is of special interest as applied to the mercury-vapour lamp, the light of which can thus be made to correspond with that of daylight. (P. 25.)

Dr. H. D'Arcy Power has given working directions for a method of preparing positives direct by reversal, the process being specially applicable to the duplication of lantern-slides as well as to the preparation of reversed negatives. (P. 21.)

Formulæ for developers to be carried in powder are given by a French worker. (P. 26.)

A German inventor advocates a fixed transparent mirror in a reflex camera. (P. 27.)

Some hints on diffusing the light of the enlarging lantern are given on page 18.

Colour screen-plates, folding reflex cameras, and a system of taking and viewing cinematograph pictures on flat film, figure under "Patents of the Week." (P. 29.)

A rotating frame for printing half-tone plates from full-tone negatives by aid of a screen is described under "Photo-Mechanical Notes." (P. 28.)

At a recent meeting of the Edinburgh Photographic Society, Mr. H. N. Bonar, F.Z.S., described the methods found best in his own practice of photographing shore and water birds. (P. 24.)

## EX CATHEDRA.

**Canvassing Frauds.** Free enlargement swindlers appear to be at work in North London. We have recently had a case reported to us which is quite on the old familiar lines. A canvasser calls at a house and represents that he is acting on behalf of a recently established photographer who is willing to give away a certain number of life-sized enlargements to local residents as an advertisement, only stipulating that the recipients should pay 6s. 6d. for framing. This sum and a much-valued photograph are handed to the canvasser, and no more is heard of him. The householder is now making enquiries of every photographer in the locality, as the photograph cannot be replaced. It might be advisable for photographers who advertise in local papers to send a letter to the editor, asking him to warn the public against such swindles, even if no case has occurred in their own neighbourhood. It may prevent them and also give a little additional advertisement.

* * *

**A Copying Device.** We have often wondered why photographers so handicap themselves in their work by neglecting to provide themselves with some simple appliance. In this year of grace, 1911, not one portrait photographer in three has anything in the way of a copying board and easel. In studio after studio we have found the operator struggling with the studio camera on its stand in front of a C.D.V. or glass positive pinned on the edge of the background stand, or perhaps nipped in the head rest. Much time is lost by these primitive methods, and a really non-distorted copy is the exception rather than the rule. For the benefit of those who would do better if they knew how, we describe a very neat arrangement devised by Mr. A. Cowan in 1879, and almost forgotten ever since, although one German camera maker at least has added it to his studio stands. It is nothing more than a light frame about four feet long, which can be slipped into grooves underneath the table top of a studio stand, and running freely both before and behind the camera. On the front portion a small easel carrying the original can be slipped to and fro and clamped in approximately the correct position. If on focussing it is found to be too near or too distant, it can easily be adjusted by sliding the portion of the frame behind the camera. For making lantern slides, transparencies, or enlarged negatives the easel is replaced by a box with a forty-five degree reflector, any intervening space between that and the lens being covered with a focussing cloth. If the construction of the stand does not allow the frame to be slipped underneath, a false top about one inch away from the true top should be fitted and the frame slipped in between. The advantages of this arrangement are obvious. The camera and copy can be swung to any angle to avoid reflections and moved to any part of the studio to secure the best light, while the cost, even if made by a skilled cabinet maker, is a very small item.

* * *

**Business Affectation.** The business man hopes to be always busy, and no man of keen business instincts would allow himself to be found during business hours standing about with his hands in his pockets. There may be slack times in any business, but it is just as well not to allow the public to know that they occur. We remember a case where the side lights of a printing room were visible from the thoroughfare, and during slack times empty printing frames were placed on the sloping printing shelves so that any appearance of a deserted printing room was avoided. This, of course, is a perfectly legitimate bit of stage management, but there are men who resort to dodges which it seems to us are ill-advised and likely to do more harm than good. As an example, we have known people who have called to make enquiries to be kept waiting fifteen or twenty minutes when it would have been easily possible to have seen them at once, and this has been done under the mistaken impression that it suggested great pressure of work and engagements. Probably the only effect is to irritate and annoy the caller who is probably quite keen enough to see through the dodge. A thing of this kind may impress now and then, but if practised to any extent it becomes a matter of more or less common knowledge, and the man who practises it makes himself a laughing stock. If a principal is busy in the studio with a sitter well and good, but the public know by now that photographic operations can be left, and such work as developing is usually done at the end of the day.

* * *

**Diffusers in the Enlarging Lantern.** We imagine that most workers with the enlarging lantern who use incandescent mantles for the illuminants have by now discovered that ground-glass has virtues in preventing the structure of the mantle from appearing on the screen; but, judging from what we read and also see, very few know just where the glass should be put. We have just noticed an illustration in which the glass is placed immediately behind the condenser, while in many cases we know it to be put in front of the condenser and in contact with the negative. The latter is the right place if we want to soften the gradation of the negative, but while the diffuser in this position also disperses the image of the mantle, it at the same time completely upsets the optical system of the lantern, renders the condenser practically useless, and cuts out a large amount of light. If placed behind the condenser and close to it, it has much the same disadvantages and fails to effect the gradation, hence this position is of little use. The most advantageous place is as close to the light as possible, for here it cuts out less light and also enables us to secure the advantages of using a condenser. This, then, is the place to put it whenever possible, and when it is not required for the purpose of softening gradation. The reason why the condenser is rendered inoperative when ground-glass is used in the wrong place is very simple. In a perfectly arranged system all the light that passes the condenser will also pass through the projector and reach the screen, and the prime function of the condenser is to collect all the light possible from the lamp and to "condense" it into such a small beam that it will pass the projector. This function must obviously be upset if we introduce a scattering medium between the condenser and the projector. Indeed, if the light is powerful and far enough away we can remove the condenser altogether without in any way spoiling the illumination. Close behind the condenser the detrimental effect is perhaps not so great, but still the function of the condenser is more or less upset and light is lost. If near the light, then the ground-glass itself becomes the source of light, and so the condenser is free to act in its normal fashion, and cuts out a minimum quantity of light.

* * *

**The Yellow Cap for Enlarging.** It is curious that the position of the safety screen used when putting the bromide paper in position for enlarging has received little or no attention, in spite of the fact that the cap usually employed most obviously spoils the definition and renders it impossible to focus directly on to the bromide paper. If, however, we use a similar non-actinic screen behind the negative, instead of in front of the projector, all focussing difficulty will disappear, and it will become easy to adjust the focus with the bromide paper fixed up in position. So long as the yellow screen is behind the negative, it does not matter much where it is placed, provided it is quite transparent and also proof against heat. As a rule, it is easiest to insert it between negative and condenser, but even to enable this to be done most enlarging lanterns require a little alteration. If the maker takes the matter in hand he can arrange so that the screen can be placed practically anywhere, near the light being the ideal position, though in this place a gelatine screen will, of course, be of no use.

## SLACK-TIME SUGGESTIONS.

Most photographers, whether they like it or not, get a spell of slack time at about this season, and those who are wise make use of their brains instead of sitting down and grumbling at the badness of trade. The man with the new ideas is going to secure the elusive sitter when busier times arrive, and the grumbler will then probably have something really to worry about. It seems premature to talk about Coronation festivities and their attendant photographic business, yet in these times of keen competition the "first come is first served." In a small town one man gets all the plums and the others can have the leavings. The Mayor and Corporation will be arrayed like Solomon in all his glory next June, and, therefore, now is the best time to consider how to make the necessary arrangements for an historic group. If the expectant photographer numbers a few Councillors amongst his personal friends, it will be worth his while gently to insinuate that when you suggest the taking of a group they will back your application; for a letter sent without a little previous "wire-pulling" is likely to be either dropped on one side and forgotten, or worse than all, may bring the suggestion to notice, but the order to the other man. Even the offer of a framed enlargement for the Town Hall will not get them over the dislike of being photographed unless it is very subtly introduced. The local printer's charges will not be heavy for neat lettering on the mount under the groups, and the Councillors, being only human, may appreciate it as a record of the time of taking, even if their names are in very small type. Most of those appearing in the picture would be almost certain to buy a copy, and the sale to other loyal townsmen would also help to make the job worth the doing. Again, now is the time to consider the details of the business.

Much as the average photographer dislikes postcards, very few indeed of those who are situated in small towns can afford to ignore them, and they may bring in other and more paying work if properly managed. The Councillor friend may again be of use in obtaining a perch on the town hall balcony or roof, for the procession is almost sure to be accessable from there, and such a friend at court will also be able to see that you obtain a good position to view the "lions feeding," for no civic demonstration is complete without some banquet, even if it is only a tea for the school children. If these events are recorded on half- or even whole-plates, and a decent number taken, there is certain to be a sale for mounted prints, and the plates can be used for the cards. Such cards require to appear on sale at once; on the same night or next morning one can sell quite double the number compared with a few days' time when there are other competitors in the field. If cards are all ready to hand and developer for plates and bromides is made up in sufficient quantities so that all is ready beforehand, the cards ought to be on the market very soon after the event.

If the photographer does not get a crowd round his window trying to see if they appear in the procession or among the spectators it is probably his own fault for not making an enlargement of the negative showing the largest number of faces in the crowd, and it is surprising how few people can resist buying a photograph in which they involuntarily appear. One photograph, by the bye, should always be taken *looking away* from the interesting event which the people are watching, and so showing the larger number of faces instead of the backs of many heads. If only one view-point is obtainable, it is a matter for thought, which will be the better seller, the event itself, or the crowd; but, of course, get both if possible.

It is a common mistake in getting postcards out very quickly after the show, to print them without previously titling the negatives, but the two or three minutes spent in the naming are far from wasted, besides which it can usually be done after the methylated spirit bath and before the negatives are dry enough to use, and in this way no time at all is wasted.

Another business move, which has recently been very successful in a small town, might be particularly suitable for this Coronation year. The photographer offered a good quality loose-leaf album to the Town Council, containing cabinet-size portraits in platinum of all the members, who were asked to sit at the donor's studio—of course, without any payment. The album was gratefully accepted, and after all the Councillors had given sittings, the photographer's window attracted a good deal of attention, and the orders rolled in from the sitters' families. The album is a hardy annual, as each new member is expected to have his portrait added to the collection.

Lastly, a word on advertising. Although it may be good business policy for a city man to employ a professional to write his advertisements, a great many photographers have both the time and ability to produce their own if they only go the right way about it. One good plan is to keep a book, into one part of which other people's advertisements may be stuck when cut from the different papers in which they have appeared. Advertisements of many different kinds of goods may be adapted to suit the photographer's requirements with more or less alteration, and some of the announcements of patent medicines and soaps are very cleverly worded and spaced and well worthy of study. Another part of the book may be kept for dotting down ideas which occur to one at odd times, and these may be enlarged upon at leisure. At slack times like the present this book is brought out and the contents are whipped into shape and drawn out in full on paper all ready to send down to the printers as they may be required, for if it is left until a few days before the paper comes out, smart ideas will probably have either deserted one altogether or there will not be time to make them intelligible to the printer. It is best to draw out advertisements exactly as they are wanted to appear, printing (with pen) in large or small type and underlining and spacing to suit one's own ideas, but if one has to deal with a really clever printer it will be best to supply him with the matter only and let him display it as he thinks best. A series of clever advertisements may be made so attractive that the reader may look out each week to see the latest as it appears, and this is quite as it should be, but in writing them it is not always easy to keep the essential fact before one, namely, that they are put there to sell the goods, and not merely to interest and amuse. The modern "Yankee" style of crisp and pointed advertisements are splendid models, but for the shy and "touchy" English provincial they usually want a great deal of modification and toning down.

# THE EYEBALL.

In considering the importance of the eye in portraiture, and its great influence upon the expression of the face, one is led to wonder what, exactly, the eyeball itself contributes towards that which we call *expression*. We know that much can be done by the skilled physiognomist, who is able to simulate the emotions merely by obtaining complete mastery of the muscles controlling the soft parts surrounding the eye.

But I want rather to consider the influence of the actual eye in determining those expressions; the various changes it is subject to, and how it may best be presented photographically.

Possibly it may be urged that the eyeball proper needs no consideration; that if the lighting of the face generally be acceptable it will look after itself, and that, in any case, it appears so small in the portrait that subtle differences pass unnoticed. This, I think, is not so, and I would go so far as to say that the manner in which the eyeball is shown often makes all the difference between a good portrait and a bad one. Who has not seen the wholly unpleasant effect of a full front-lighting, the reflex occurring right in the pupil, which should be absolutely the darkest spot in the photograph? (See Fig. 1.)

In order to make these notes clear to those who may not have studied the construction of the eye, I propose to explain such few technical terms as are necessary, and to give a brief description of the character of the visible parts of the organ.

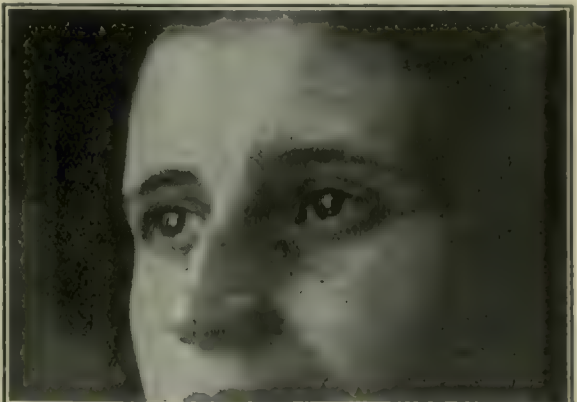

Fig. 1.
Showing effect of light falling full upon front of face, the bright reflexes coinciding with the dark pupils.

The iris, or "stop," is a movable coloured curtain, surrounding the pupil, capable of considerable variation in size, and the expansion or contraction of which controls the amount of light admitted to the interior of the eye. The quality and depth of the pigment in it determine the "colour" of the eye.

The pupil aperture is affected, as to size, by various circumstances, as from without by the brightness of the light falling upon the eye and by the distance of the object focussed upon. From within by the emotions—love dilating and anger contracting it; by the use of certain drugs (notably belladonna, so called from its property of dilating the pupil and thus adding to the beauty of the eye) or by the loss of nervous control. In the case of strong light or inspection of a near object, the aperture will be contracted. Now, we know that when we look at a near object the visual axes must converge, so that—leaving the intensity of the light out of the question for the moment—we see that convergent axes with contracted pupil apertures indicate mental concentration, the studious expression (Fig. 2). Conversely, parallel axes and larger pupils suggest the dreamy, far-off expression (compare Fig. 3). To combine, in a portrait, dilated pupils with convergent visual axes would give a blank expression to the face, which in the absence of belladonna would be indicative of incipient insanity.

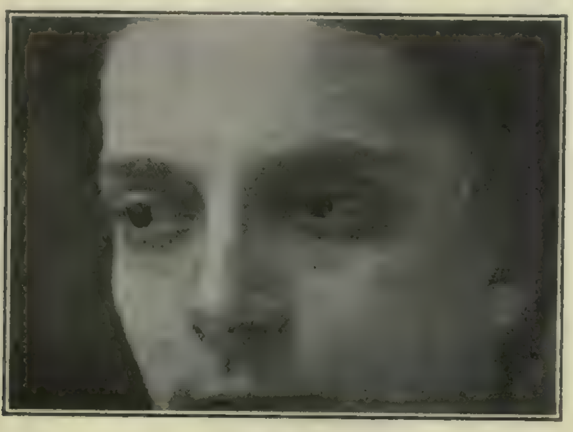

Fig. 2.

Inspection of a near object. Visual axes convergent, pupils contracted, characteristic of concentrated interest or study.

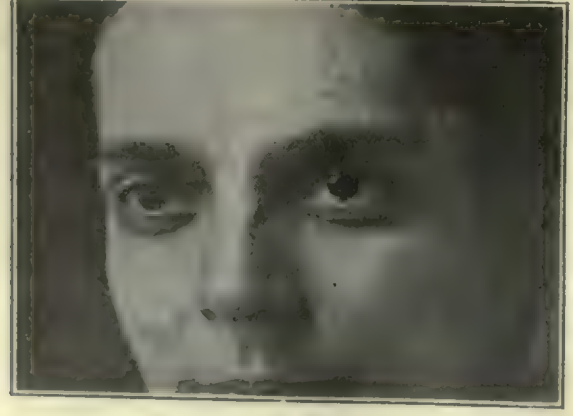

Fig. 3.

Viewing a more distant object. Axes parallel, pupils larger, characteristic of the "dreamy," far-off expression. Note the partial eclipsing of the reflex in the shadow eye in this illustration (and also in fig. 2) caused by shadow of the nose.

It is an interesting fact that a blonde person has, normally, smaller pupils than a brunette, owing to the light-coloured iris passing more light through its pigment, and, consequently, producing the effect of a relatively brighter light (Figs. 4 and 5). Thus a photograph of a fair person, in good light, exhibiting dilated pupils would suggest that the subject was either addicted to the use of drugs, in a weak, nervous condition, or perhaps in love.

The sclerotic, or "white," of the eye is a membrane covering the visible part of the main sphere of the eye. In health it is of a rather dull white appearance, but being crossed by innumerable tiny blood vessels, it is capable of becoming—in cases of sudden passion, inebriation, or injury—of a pinkish hue. Shakespeare had knowledge of these facts, for he made Falstaff say:—

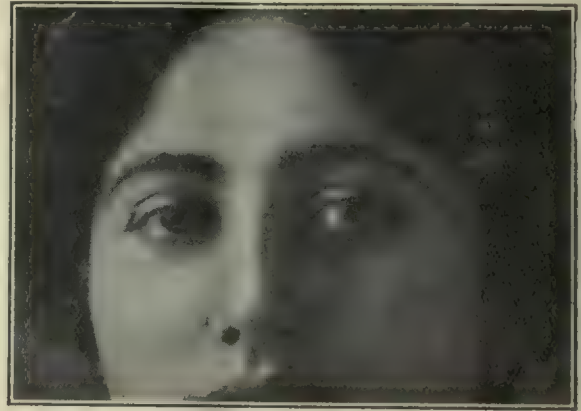

Fig. 4.

A brunette, the dark coloured iris exhibiting a larger pupil-aperture than in the case of the blonde shown in fig. 5. The curious effect of corneal light-focussing referred to is plainly observable here.

"Give me a cup of sack to make my eyes look red, that it may be thought I have wept; for I must speak in passion, and I will do it in King Cambyses' vein."—Henry IV., act ii., scene iv.

Dickens also, as shown in the amusing incident of Pickwick before the magistrate:—

Mr. Nupkins: "I saw he was drunk when he first came into the room by his excited eye. Did you observe his excited eye, Mr. Jinks?"

Jinks: "Certainly, sir."

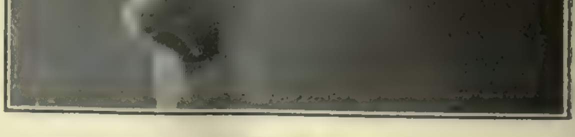

Fig. 5.

To show how the reflex is liable to be split up into little patches by the use of more than one source of light. We can clearly see the various images reflected in the cornea. (1) The vertical side-light; (2) the slanting main top-light; and (3) the secondary top-light, placed well in advance of the sitter with the object of modelling the shadows.

In front of the iris and pupil the sclerotic changes to a transparent, glass-like medium, called the cornea. Now, if the eyeball were a simple sphere we should have a curved surface capable of reflecting the image of a window or lamp as a single high-light. But a close inspection will show that the cornea is really a portion of a smaller sphere, as if bulging out from the surface of the sclerotic. Thus a point of light would be reflected from two surfaces of unequal curvature, and a correct photograph would reveal *two* high-lights of somewhat different brightness and quality. The occurrence of this secondary reflex upon the sclerotic would, however, be dependent upon the position of the camera relatively to the source of light, and also upon the accuracy of our tone-rendering. Anyone can observe it in his own eye with the aid of a hand-mirror. But we are more concerned here with the character and position of the reflections appearing in the beautiful little convex mirror, the cornea. Here we shall see the tiny microscopic reproduction of all that is before the eye, and that which we call the reflex we find to be nothing more nor less than a minute picture of the window or other source of light. I have before me now several portraits from which I can easily learn, by a close examination of the reflexes alone, the exact arrangements of the window blinds used in each case (Fig. 5). And here let me put in a plea for the simple scheme of lighting. We get into the habit of opening little patches of light here and there, fancying that we are improving the modelling. And perhaps when we've done we have much the same effect of light upon the model as we should have got by following out Mr. Raymer's "square-light" methods, but *plus* the extra trouble, and plus three or four conflicting reflexes in the eye—the result of the small scattered light-patches. I think we need a Watkins under the skylight as much as in the developing-room, to keep us down to the essentials of our operations.

The shape of the reflexes will not always be the same for either eye. For instance, if we use a side-light the shadow of the nose will blot out the lower half of the reflex in the shadow-eye (as seen in Figs. 2 and 3). Using top-light only the reflexes will either be obliterated by the shadow of the brows or will coincide unpleasantly with the dark pupils, according to the distance the source of light is in advance of the sitter. Again, when a strong side-light is employed not much in advance of the sitter a curious effect of lightness is observable on the side of the iris remote from the light; that is to say, diametrically opposite the reflex (see Fig. 4). This is caused by a focussing of light passing tangentially through the cornea. It will not be seen at all in the shadow-eye, unless the light be in a high position. When it occurs it has a rather pleasing effect, but it is not to be confused with the ugly patch in the same position, which is one of the results of the incautious use of a light reflector too near the sitter.

To sum up, I think I have shown that the treatment of the eyeball in portraiture is a much more important matter than is perhaps recognised by the profession generally; that the expression of the eye is very materially altered by the quality of the light falling upon it, the distance of the object regarded, and—to a certain extent—the complexion of the sitter; that the nature and position of the reflexes may be easily modified; and, finally, that by the intelligent exercise of our powers of control we can do much to make the portrait something more than a mere piece of circumstantial evidence of the sitter's appearance. GEORGE F. GREEN.

# DUPLICATING LANTERN-SLIDES DIRECT BY REVERSAL.

[In the following article from the "American Annual," Dr. D'Arcy Power, to whom photographers are indebted for many practical methods, describes a perfected form of the direct-reversal method of preparing positive or negative pictures on gelatine plates. His process is based on that of M. Balagny, which in turn is derived in part from that of the late Douglas Carnegie.—EDS. "B.J."]

To take a good lantern-slide, bound and ready for use, and without disturbing it obtain a perfect duplicate in a single operation, is an altogether desirable feat. How often have we seen a beautiful slide in the possession of a friend whose duplicate we would willingly possess, but when it came to be a matter of making an intermediate negative, with the resulting loss of quality in the positive, we have let it go. I here offer a process by which the original slide can be duplicated direct without unbinding, and without the slightest change in the sharpness or gradation of the slide. For many years process after process has been proposed for making negatives from negatives or positives from positives direct, but none of these, with the exception of the Autochrome plate, has gained any popularity. Personally, I have tried them all, without more than partial successes.

Recently M. Balagny* published a modification of previous methods which, though slight, seems to solve the principal difficulty; and, thanks to this, *plus* a further modification of my own, I am able to promise the duplicating of lantern-slides with ease and certainty. The principle on which all practical duplicating proceses rest is that employed in the Autochrome development process. After exposure and development in the usual manner, the plate is immersed in a bath of acid permanganate, or acid bichromate, by which the recently deposited silver image is dissolved; after exposure to light the residual silver is developed, and a reversed image results. With the thin film of the Autochrome plate this works perfectly, but with other plates the thickness of the emulsion is too great for the light to penetrate, and the unchanged silver on redevelopment fogs the image. This is the difficulty M. Balagny has surmounted (at least in part); he re-exposes the plate before removing the developed image, which image then serves to protect the excess of silver behind it from the action of the light; the back of the plate is meanwhile protected by black paper or by laying in a black developing pan. So far as my observation goes, this method is a great improvement on all previous ones, but it still shows some fog near the glass. This is presumably the results of light scattered in the emulsion and halation by reflection from the glass. I reasoned that this might be overcome if the exposure were made glass to film instead of film to film, which, furthermore, would have the advantage of preventing the lateral reversal of the image, which occurs when a negative is chemically turned into a positive. Should any fog present itself it would be at the surface of the film, while the image would be next the glass; a little Farmer's reducer would, therefore, remove the former without affecting the latter. Experiment has completely verified these deductions.

The only remaining difficulty that has to be overcome is the loss of definition resulting from the intervention of a thickness of glass between the films; this is easily obviated. If the printing be done by light coming through a lens, the image is sharp, even if negative and positive are considerably separated. I print in the light coming from my enlarging lantern—an equally good plan is to remove the camera back and put the printing frame in its place and direct the lens to the *open sky*. Such being the principles involved I will now give the working details.

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* "British Journal of Photography," August 12, 1910, p. 635.

1.—Place the slide to be copied in the printing frame in contact with an unexposed plate, *film to back*, between this and the back of the frame interpose a sheet of black paper.

2.—Expose. Correct exposure is absolutely essential. This must be found by experiment. Using the light from an N. Ray passing through a lens stopped to f/32, I find about four seconds right. The light must pass through a lens.

3.—Develop fully, but not excessively, or on reversal the detail in the high-lights will be destroyed.

4.—Wash. Ten to fifteen minutes in the dark-room.

5.—Put a piece of black paper in a developing dish, half fill with water, then place the slide film-side down therein, and remove into *full daylight* for five minutes.

6.—Take slides back (undisturbed) into the dark-room and place them in a bath of 1 per cent. solution of potassium bichromate acidulated with 1 per cent. sulphuric acid. In three minutes the black silver image will have disappeared.

7.—Wash (in dark-room) for twenty minutes.

8.—Re-develop fully.

9.—Fix in hypo.

10.—If the resulting slide is too dense or any trace of fog or stain is present, a little Farmer's reducer will put the matter right.

11.—Wash.

The duplicate slide should be identical with the original. In detail and gradation it is always so. If it vary in density it is probably due to incorrect exposure during printing. As in Autochromes, underexposure will give dense, dull slides—overexposure thin ones, and high-light detail will be lost. In practice the method is easy and rapid. I am rapidly adding to my collection of slides by its use. As to the best developer, I use acid amidol—doubtless others will work as well.

The method is equally applicable to the making of duplicate negatives, and to making lantern-slides direct from prints without the intervention of a negative.

H. D'ARCY POWER, M.D.

# FLASHLIGHT IN THE STUDIO.

[Our Californian contemporary "Camera Craft," to which we are constantly advising our professional readers to become regular subscribers, prints in its current issue the following article on using flashlight in the studio in such a way that exposures with it can be alternated with those by daylight. Other American workers have differed from the author of the article in that they have held a cabinet having a solid back and permanent cloth front would be better, as then it would be impossible for smoke to escape into the room; and the cabinet, being smaller and more portable, could be moved about instead of changing the position of the sitter for different effects. Mr. Southworth's machine is a development of the Victor cabinet made by the James H. Smith and Sons Company, Chicago, by whom inquiries as to its use and capabilities will be readily answered.—EDS. "B.J."]

RESPONDING to the request of the editor of "Camera Craft" for an article on the above subject, I feel that I am forced to venture into new paths. Were it not for the fact that I happen to be the only photographer in the country possessing the particular kind of machine of which I write, I would refer the matter on to someone else who could handle it better, as literary work is very much out of my line. But, realising the value of the machine, and the utility of the flashlight, I wish others to know about them, and perhaps absorb some of my own enthusiasm. For many years there has been, in the photographic profession, a great need for the very article I am about to describe: For many years past I have yearned for such a machine myself. No doubt others have felt the same want. Hence, now that I have the very thing that my title describes, I am only too willing to tell others the good news. It will be noticed that I speak of my machine as a "practical" one; and this because I believe it is the only thoroughly practical flashlight machine for strictly studio use. This sounds like a big claim, but I leave the reader to judge as to its justness.

At the outset I hasten to explain that there is little in my method that I can claim as original. Ideas gleaned from several of my friends I have utilised in the perfected arrangement I now have in use. I have improved on some of these ideas, tearing down, discarding and remodelling, incorporating them in my present outfit. Furthermore, I must explain that the foundation of my efforts was the machine now known as the Victor Flash Cabinet, placed on the market about two years ago by Mr. Filson, an Ohio photographer. This system is fully utilised in the one I now have in use; hence the reader who is familiar with the Victor Cabinet will understand that it, with the improvements added, is the machine described in this paper. To my mind, one of the most valuable and important additions to the photographer's equipment, made in the last decade, is the Filson Cabinet. I, for one, am grateful to that gentleman for this valuable accessory.

Fig. 1 shows the machine standing in front of my skylight. It is a flashlight, made at night, to show the interior arrangement. It will be noticed that I have an arm in my machine which can be brought forward for night use, this arm holding eight forty candle-power Tantalum lamps that make a very good focussing light. But if these lights alone were used for the sitter's "seeing light," the pupils of the sitter's eyes would be expanded beyond the normal, and a stary expression would be the result. To overcome this I have an arc lamp placed close to the ceiling and well forward of the sitter. This additional illumination lights up the room beautifully, and causes the sitter to instinctively control the pupil of the eye to its natural size. For the purpose of emphasising this point more thoroughly to those who have not given this matter much

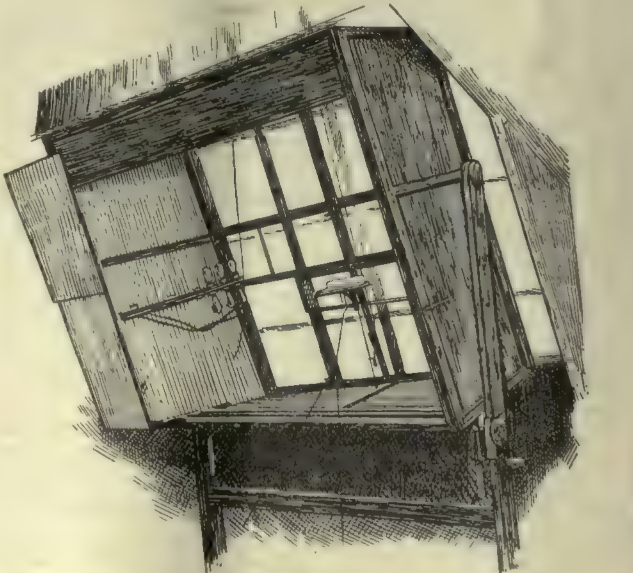

Fig. 1.

thought, I will ask you to call to mind how a person instinctively controls the pupil of the eye on a bright day when the snow is on the ground. The eye is then almost closed, and the pupil is contracted to its smallest point; let it be not so bright, and the eyelid is raised somewhat; then, let it be a grey day, the pupil is enlarged to about normal, and the eyelid is up. It naturally follows, it being a poor rule that doesn't work both ways, that since it is clearly proven by flashlights so taken that the pupil of the eye is gradually expanded, reaching its maximum in total darkness, stary expressions are not caused by the flash, as it is impossible for any change to be made, in this regard, during the duration of the flash. The remedy is obvious. In the daytime, of course, I have a flood of soft white light throughout the room.

Fig. 2 shows the machine as it appears in the daytime. Very little explanation should be required by the professional photographer to realise and understand its many points. We are all too familiar with the flashlight, its limitations and drawbacks, not to understand the advantage of these things when we see them, yet lest some may not understand what they see in the illustration, I will explain a few of the points that I consider might not be clear. It also shows the manner in which the machine is utilised for daylight use, and it is this feature that I consider the most important improvement on the early design used by Mr. Filson during the four or five years previous to his placing it on the market. The greatest drawback to the original machine was the focussing arrangement; focussing being done by artificial light in the form of several high-power incandescent electric lamps, adjusted so that they gave the same lighting as the flash, because below and near the flashpan. This point was a very nice one, in that it gave the operator some knowledge of what the resultant picture would be, as to direction of light. As the back of my original cabinet was closed up for the purpose of confining the smoke, no daylight from the skylight reached the sitter, making it rather difficult to get a good focus in quick time. I later installed an arc lamp immediately back of the flashpan and in line with where the flash-powder would be discharged. This was an improvement, but not so great as I had hoped for, as I still lacked sufficient illumination to enable me easily and quickly to perceive my opportunities with my young sitters; a very obvious drawback.

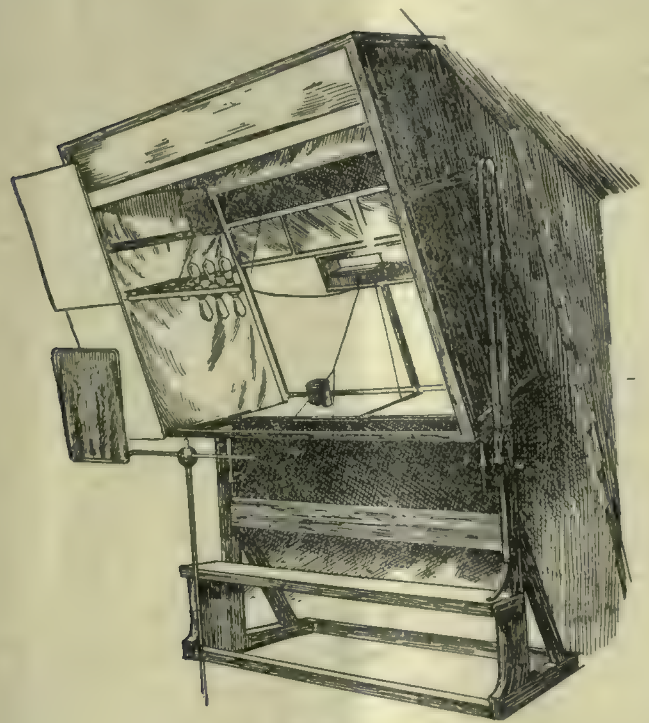

Fig. 2.

About this time a photographic friend in East Tennessee wrote me that he was having trouble along this same line, and proposed using a window back of the cabinet · thus utilising daylight for focussing, but not in sufficient strength to play any active part in the exposure. This appealed to me so strongly that I commenced the construction of a new cabinet the same night in which this idea was incorporated. The one illustrated, whilst of later construction, is essentially the same as the one just spoken of. It will be noticed that two diffusing curtains or screens, when pulled down, come between the flash and the sitter. To make the kind of negative I like, soft, delicate lightings, the addition of the inner curtain was found necessary. These curtains are both of India linen, fireproofed. I am presuming that the reader is aware that the smoke nuisance is entirely eliminated in this, as in Mr. Filson's arrangement; it making no difference how many discharges are made, or how quickly in succession, absolutely no concern need be felt about smoke, as none of it gets in the room. On the outside of back of cabinet is a curtain or shade of yellow domestic. This latter is pulled down over back of cabinet when making flashlight sittings, when the daylight is strong, for the purpose of minimising the danger of the daylight having any material action on the plate after the discharge of the flash and before the shutter has had time to close. Otherwise it is left up. It will be seen that three curtains are constantly in use, the one behind being yellow, while the two diffusing curtains in front are white. All three are mounted on heavy tin rollers. My cabinet has a raising and lowering latitude of about two feet, is supported by a standard on heavy, easy-working castors, and can be quickly pushed out of the way when desired. It is seldom, however, that I find it necessary to do this, as it was part of my plans to make my daylight sittings with light coming from the skylight right through the machine. Used in this manner, I have an available skylight area of seven square feet right through the machine, none other reaching the sitter. To make the change from a flash adjustment to a daylight arrangement, the releasing of the inner diffusing curtain and the yellow back curtain is all that is necessary, and change is made quicker than it can be told. The machine is kept charged at all times, and the change from the one method to the other is made instantly.

At this point it might be well to explain the shutter and electrical discharge arrangement. I use a "silent" studio shutter, adjusted inside the camera with electrical connections so arranged to the horizontal bar at the top that the circuit closes and sets off the flash when the shutter reaches the full open point. This does away with the use of a bulb with the contact points fastened to its side, and the annoyance of the rubber tubing continually getting tangled up with the electrical cord. A small arc is created inside the camera when the contact points come together, but this spark is easily kept from reaching the plate by a little cardboard shield fastened to the top of the shutter. This arrangement is far superior to anything I have yet seen, on account of its simplicity and the elimination of misfires.

What percentage of my sittings do I make with the flash and with daylight respectively? Anticipating this question, I will say that for two years I have made all my baby, child, and group sittings with the flash; adult sittings, when the light is good, by daylight through the machine. I am not so enthusiastic as some of Mr. Filson's followers about making everything with the flash; I rather prefer to make my grown-up sittings by daylight, but when late or cloudy I use the flash. When in doubt as to which method to use—and I seldom decide until I have posed and focussed—the only change to be made is the drawing of a curtain and the turning of an electric button.

I have often been asked if the noise does not frighten my younger sitters. My answer has been that, whilst I have not kept count, I cannot call to mind more than two or three occasions when children have been startled to the extent of my not being able to make further exposures; and in each of these cases I got my order from the one first negative. I find that children are often entertained, rather than startled, by the light and noise, and I am often asked by them to do it again for their amusement. I usually feel the most grateful to Mr. Filson along about the holiday season, when the days are so short and business is so brisk, and the mothers come strolling in a few minutes before sunset. No photographer need be reminded of the worry involved in the knowledge of certain under-exposure, poor negatives, or possible loss of business by putting them off until the next day. But, thanks to Mr. Filson, the mothers can bring them in any sweet time they please, as many negatives can be made as you please, and made as quickly as you please. One can make the so-called Rembrandt, back and shadow lightings, or any kind of lighting, and have fully ninety-five per cent. good, first-class, fully-timed, no movement negatives.

And the cost? Mine has cost me 100 dollars. I feel that a man who has any kind of a business at all, and who can realise the advantages, should care little or nothing about the cost. I use one level mustard spoonful of Victor powder with my lens at *f*/4 for the regular plain lightings. This is about ten grains by weight. My average flash, therefore, costs me not over one cent.

The distribution of the powder is rather a threadbare subject, but I feel that a brief comment thereon will not be untimely. Much powder is often wasted by lack of distribution when using large quantities in large halls and theatres. Experience has taught me that in making exposures of this kind the maximum illumination is derived from a distribution of 2ft. for each ounce of powder. Beyond this point some risk is run of slow combustion. When using smaller quantities than this, as in the studio where only two or three mustard spoonfuls are ever necessary, the difference in results is not so marked. However, I find it advisable to well distribute even small quantities, the noise not being so great. I have adopted the rule of using six inches for each mustard spoonful of powder. While there is not a marked difference between the results from maximum concentration and maximum distribution with small charges, there is much difference in the report, and in the studio it is well to see to this point. It has been claimed that six ounces of powder can be burned at one time on a certain machine, the top of which is only about twelve inches wide. Quite true; it can be burned, but it is a great waste of powder. Half the quantity, strung out in the proportion named—six feet—would yield fully as well-timed a negative.

Through the use of my machine I have gained the reputation of being an expert with children, people coming from points outside my ordinary territory to have the children's pictures made by me. I know of more instances than one in which people have come to my studio bringing children from large cities where there are photographers very much my superior—coming for the purpose of securing some of my baby group pictures. Of course, these pictures can be made by daylight, provided the light is at its best and the child is not too active; but the undertaking is entirely too large a one to make it advisable to encourage such business. Without the flash many more exposures have to be made, and fewer action pictures can be secured.

This article is already too long to allow me to do justice to the superiority of the flash in the rendition of white draperies, and also the texture of drapery of all kinds. The fact that its aid is regularly invoked by men of national reputation in the making of their convention pictures stands out as one of the strongest endorsements that can be given the flash. Using the proper apparatus, all exposures are instantaneous ones, full exposure meaning simply the use of a little more powder. Certainly a great advantage over daylight in most cases.

THOMAS SOUTHWORTH.

# SHORE AND WATER BIRDS.

(A Lecture delivered at the Second General Meeting of the Royal Photographic Society.)

IN to-night's lecture I do not intend to treat of bird life in general, but of the appearance and habits of only two divisions of birds, "Shore and Water Birds." Under the old system of dividing birds there were five different species, the perching birds, the birds of prey, the scratching birds, the wading birds, and the swimming birds. It is of these two latter classes that I am to speak to-night. There is one bird which I shall show you, however, which does not strictly belong to either, I mean that charming bird, the dipper, wrongly called the water-ousel, of which I as a fisherman see a great deal. It is not a wading bird nor (although it swims excellently by the aid of its wings) has it the webbed feet which mark the true swimming bird.

In place of showing single photographs of many different birds I have preferred to show a series of photographic studies of each of a few typical kinds. During the last two years I have spent my holidays in Holland, where these birds are to be found in great profusion, and I have also been studying our own shore and water birds. My method is where possible to go day after day taking, or endeavouring to take, photographs of a particular kind of bird. I find that in this way you can learn a great deal about a bird—often more than you are aware of at the time. I have again and again taken up a photograph of a bird and found that it showed some special feature or habit of the bird of which I was not aware before.

The best way would no doubt be to take a bioscope photograph of the bird, but I have not got that length yet, although Mr. Kearton has produced such pictures which are nearly perfect. If, however, you take a number, say six or seven, views of a bird at the same time and place, you get a very near approach to the result of a bioscope photograph.

Among the birds—of each of which I will be showing you such a series—are four separate kinds of plovers and five separate kinds of terns. I shall also show you a series of photographs of a very interesting bird, and a great favourite of mine—the oyster-catcher—which you can find up our gravelly streams, never on muddy rivers.

I notice in a very splendid book of animal photographs by Dr. Schelling, called "With Rifle and Flashlight in Africa," that he gives marvellous photographs of lions, rhinoceroses, etc., but he never tells you how they were taken. I think that is a bad and selfish policy, but perhaps the methods, if explained, might not commend themselves to you. I do not intend to follow that policy, but to tell you just how my photographs are taken.

For systematic bird photography you must make up your mind to carry a good load. I have sometimes carried 300 or 400 feet of wire and a battery to set it off with, besides a photographer's usual outfit. This spring I carried my camera, a good many slides, a not very light battery, and 100 yards of wire, and carried these eighty-five miles before I took a single photograph.

One of the great difficulties is to set off the shutter at so great a distance. The shutter must go off as nearly as possible instantaneously, and for this purpose the ordinary pneumatic release with a long tube is useless. The bird will often have shifted its position between the time you squeeze the bulb and the time the impulse reaches the shutter. I find some form of electric release is necessary, and have tried several. I am rather pleased with my latest, which is a very small dynamo, so arranged that upon pulling a trigger it revolves sufficiently to set off the shutter. This gets rid of carrying a battery. I only use this, however, as an adjunct to my dry cell, which is really the most convenient method.

A very useful way of taking some birds, especially those which, like the swimmers and waders, nest on the ground, is to so arrange your apparatus that the bird will actually take itself. Mr. Lodge first gave me the hint of this automatic method in one of his books, and, as you will see from many of my slides, I use it very often.

The latest of my devices for this purpose I call the Semaphore release, because it almost exactly resembles a railway signal in its working. A blade of grass, or a straw, is laid across the nest, or the path the bird is in the habit of taking. From this a thread is taken to my little semaphore post and attached to a pin, which holds up the semaphore arm from contact with the wire from my battery. When the bird moves the straw, the thread attached to it pulls out a little peg, and the arm falls. In falling, it passes over a spring connected with the other wire, thus making the contact and releasing the shutter, and, falling further, it breaks again, cutting off the current.

Another difficulty is how to make your camera as inconspicuous as possible. I found that to set a camera up on three legs on the ground made the birds suspicious and scared them away. It is altogether too bulky, and unlike anything in nature. I find a single leg far better. I take a broomstick, along two grooves in the sides of which run strands of strong copper wire, which end in a blunt head containing a camera screw. These slide up and down on a sort of collar, and I use them for fastening the camera. You can bend the wire to any angle you like and it retains its position.

I do not, however, put up the camera at first. I get a good large turf and tie it to the broomstick, which is usually fixed up about six or eight feet from the nest. When the bird comes it probably examines it all, but there is nothing to raise its suspicions, for it can see all round it and underneath it, and it gets accustomed to it. Then I substitute the camera for the turf. But I don't leave it just in its natural state, with the great staring eye of its lens looking right at the nest. I have made a rough mask of wood to imitate a piece of bark, with a hole for the lens—not a round hole, but a roughly irregular hole. This minimises the staringness of that black eye a great deal.

Then my camera cloth, which I use to envelop the camera, was once one side khaki and one side green, but I painted both sides with Condy's Fluid, and then relieved it with dashes of ink here and there. Now it is a wonderful mixture of what are called autumn tints, which the birds seem to think quite natural.

As to shutters, I have been seeking for years for a noiseless shutter, but have never found one that was so at a high speed. I have tried focal-plane shutters, and have one, but rarely use it. I rarely take my photographs at a greater speed than 1-150th of a second, and up to this speed I find the shutter that I have used for many years—the Volute—quite satisfactory.

I am sometimes asked if I do not find the telephoto lens useful for bird photography. I have seldom used it, because I find it gives you a photograph that is far too fuzzy for accurate scientific work. For such work nothing will make up for the vagueness which is characteristic of even the best photographs with a telephoto lens.

H. N. Bonar, F.Z.S.

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# LIGHT-TRANSFORMING REFLECTORS FOR COOPER-HEWITT AND OTHER LAMPS.

[In the following article in the "Scientific American" is described a new invention of Dr. Peter Cooper Hewitt, which promises to be of far-reaching importance in artificial lighting. Photographers will read with interest of the device by which the lurid light of the mercury-vapour lamp is brought into close correspondence with daylight in point of colour.—Eds. "B.J."]

The analysis of ordinary daylight given by its spectrum shows that it consists of a commingling of all visible wave-lengths of light, from the longest waves at the red end of the spectrum to the shortest waves at the violet end.*

The spectrum shows the distribution of these wave-lengths and the amount and the intensity of light in each. Coloured bodies give the impression of colour on account of the property of reflecting to the eye certain wave-lengths and absorbing others. If the light illuminating the object is intense in the particular colour reflected by the body, then the body will appear very brilliant, but if the light is deficient or weak in the wave-length representing this particular colour, the colour of the body will be weak or not visible (there being little or no light that it can reflect to the eye) and the body will appear dull or black.

There are a number of artificial lights which are brilliant and economical, but lacking in "quality," or colour values for certain purposes for which they may be used, and also as compared with daylight. Whether the means of producing these lights is oil, gas, or electricity, one and all are at a disadvantage in that their spectra differ in range and distribution of wave-lengths from the solar spectrum, so that fabrics have a different colour when viewed by each of them; and some are more or less unpleasing to the eye, or unsuitable to work by, especially in occupations requiring close application of the eyesight.

From time immemorial attempts have been made to "soften" the light coming from artificial sources—as, indeed, daylight also—by the use of coloured shades, which cut down the intensity of light in certain portions of the spectrum. But these attempts result in inefficiency, for the reason that a light-transmitting shade cannot colour the light which shines through it, but can only transmit certain of the wave-lengths already in the light, suppressing the others. Thus a red-tinted glass shade surrounding a powerful light-source rich in green rays will temper the disagreeable glare, but will also enormously cut down the total amount of light from the lamp, by straining out nearly all wave-lengths except those in the narrow range in the red and the blue regions of the spectrum; the shade not being able to put into the emitted light what is not there already. It would be desirable, but it has hitherto been impossible, to apply a shade or a reflector to a light-source which will have the effect of introducing into the light emitted by the lamp the rays in which the light-source itself is deficient. A shade or reflector which would accomplish this result would become an important auxiliary to that light-source, co-operating with the latter to give a satisfactory illumination from the lamp as a whole.

This result has been accomplished, it is claimed, in the new light-transforming reflector recently patented by Dr. Peter Cooper Hewitt, the well-known inventor of the mercury-vapour lamp. By utilising the phenomenon of fluorescence, Dr. Hewitt has succeeded in transforming the radiation of a light-source which is powerful, but is considered deficient or of impoverished and ill-balanced spectrum, into radiation of a wholly different range of wave-lengths, which eke out, so to speak, the distribution of wave-lengths emitted by the source; the radiant energy being transformed or converted by the molecular mechanism of fluorescent material formed into a reflector for the primary light-source. The fluorescence of the material being excited by the light from the source, the material emits its own particular colours, or wave-lengths of light due to its fluorescence, which wave-lengths, mixed with the original light, supplement the deficiencies of the last.

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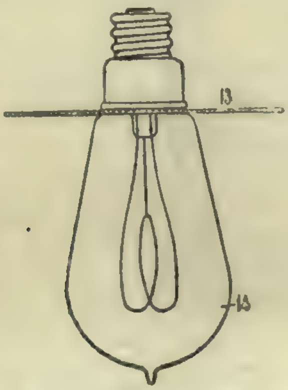
* By "daylight" is meant the best state of solar illumination, the most acceptable stage of the widely varying light of the sun between dawn and dusk and through all conditions of clearness of the atmosphere. It is, however, more than an open question whether daylight is the best illumination for certain classes of work, although it may be always the standard for colour values. It is recognised by all women that daylight is by no means the most becoming light—candle light, and the light from a wood fire, which are much richer in red and orange rays, being preferred.

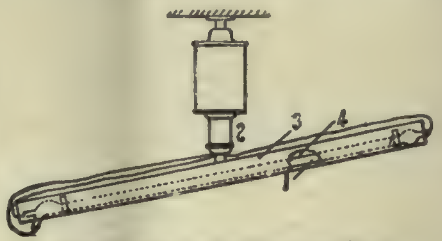
In order to understand the *modus operandi* of this invention, it is necessary to define true fluorescence, as distinguished from the mere transformation of light into heat. The conversion of light rays of all the visible wave-lengths into invisible heat rays is a well-known phenomenon, exemplified when light falls on a coating of lampblack, or on a piece of black cloth, and which is carried to the theoretical limit in the "blackbody" of the physics text-books. But when the light falls on a fluorescent body, inasmuch as the radiations from this body are in the visible region, for the purposes of this description the body may be said to be fluorescent.

The transformation of radiant energy into invisible radiations, or heat, is of no use for illumination purposes. But fluorescence, which is the action of certain optically active substances, in receiving radiations of a given range of wave-lengths and transforming them into another set of wave-lengths that are visible, is useful for illumination; and it is this property which Dr. Hewitt has conceived of as a means for transforming light from one colour into another, and which he has utilised for this purpose in his light-transforming reflector. This light transformer, described in a recent British patent,* consists of a reflecting surface, such as kalsomine, giving light scattering or diffused reflection (as distinguished from the image reflection given by a polished glass or metal surface), coated with a layer of translucent material containing a fluorescent substance. This reflector is placed back of the primary light-source—which may be, for example, a Welsbach incandescent gas mantle, a carbon or tungsten filament electric lamp, or a Cooper-Hewitt tube—so that the radiation from the primary source impinges upon the reflector, and is by the latter given back in transformed condition. A considerable amount of the energy of the emitted waves is transformed, in passing through the fluorescent substance to the light-scattering reflecting surface, into a set of a waves of a range lower down in the spectrum band—that is, in the red and orange region of the same—and in passing out again from this surface through the fluorescent substance, an additional amount of the energy is thus transformed. The total action of the reflector is, therefore, to transform a considerable portion of the original emitted energy from the light-source into red or orange light. The reflector does not interfere with the rays coming directly from the light-source, but the illumination, as a whole, coming from the light-source and the reflector, is made to possess a spectrum of far better distribution than that possessed by the light-source alone or by the same equipped with an ordinary non-fluorescent shade or reflector, and the illumination from a Cooper-Hewitt lamp may be made to compare favourably with daylight.



Reflector applied to incandescent lamp.

A striking example of this general achievement of Dr. Hewitt is the application of the light-transforming reflector to his own lamp. It is well known that this lamp emits a greenish light, which is almost wholly lacking in red rays, and which is, therefore, not adapted for general illumination, although admirable for certain special uses, such as photography and photo-engraving, on account of the richness of the light in blue and in violet, and for drawing offices, machine shops, and certain other work-rooms. The spectrum of the Cooper-Hewitt light embraces, roughly, the upper half of the solar spectrum, although with markedly different allotment of bands and lines, which result in a preponderance of green, so that many objects illuminated by the tube show certain colours as different from those familiar to their daylight aspect. Certain shades of blue become purple, and human faces look either very dark or ghastly pale, according to the amount of ruddy "colour" in the complexion. Such are the nature and the limitations of the Cooper-Hewitt light, which have barred it from general utilisation as a social illuminant, notwithstanding its high electrical efficiency, simplicity, and economy.



Reflector applied to mercury-vapour lamp.

Now place behind the mercury tube a concave, trough-like fluorescent reflector, consisting of a white reflecting surface, coated with a translucent film impregnated with "rhodomine B." The illumination is transformed, as by magic, to a close approximation to daylight, and objects and fabrics, such as wood and metal articles, coloured chemical solutions, silk ribbons, woollen rugs, and hangings, resume their normal or familiar colours, and the faces of friends clear to the "natural hue of health." In the laboratory of Dr. Hewitt, in the Madison Square Tower, New York City, the artificial daylight given by tubes equipped with his light transformer shows the natural colours of a card of silk samples at night as perfectly as the broad daylight coming in at a large north window when its shade is raised. No less striking is the appearance of the reflector and tube themselves, when viewed directly, the value of the reflector being evinced by the large proportion of the total light which it is observed to emit. The ocular impression of the fluorescent reflector itself as a true secondary light-source, by reason of its activity as a genuine transformer of radiant energy, is strong.

The results to be expected are little short of revolutionary in the art of illumination, since by the use of the fluorescent reflector light-sources which are not now commercially practicable may be brought into satisfactory utilisation with no alteration of the lamp mechanism or mounting other than the attachment of the reflector, and no change in the electrical or other supply. It is conceivable that the cost of special colour lighting may in future be materially reduced by employing primary light-sources of high radiation efficiency but ill-balanced spectra, and then equipping them with light-transforming reflectors.

**Joseph B. Baker.**

* * *

## DEVELOPERS IN POWDER.

In a recent issue of the "Photo-Gazette," M. H. D'Osmond gives a number of formulæ for the preparation of developers in powder form, suitable for the use of the tourist, or those who wish to keep developing preparations at hand in a dry state in readiness for speedy solution in water. While commending the many commercial preparations of this kind upon the market, M. D'Osmond suggests to the amateur worker that the home preparation of such developers is a task easily within his powers, and the ability to prepare a dry developer in any desired quantity may at any time stand him in good stead. The following three formulæ are the results of numerous experiments made with the object of working out suitable proportions of the constituents.

### Metol Hydroquinone.

| | | |
|---|---|---|
| A. | Hydroquinone | 12 gms. |
| | Metol | 6 gms. |
| | Potassium metabisulphite | 2 gms. |
| | Soda sulphite, anhydrous | 35 gms. |
| B. | Potassium carbonate, dry | 90 gms. |
| | Potassium bromide | 1 gm. |

One gm. of A and 7 gms. of B are required to form 150 to 200 ccs. of developer. In making up the separate powders into carton form, the 7 gms. of B are placed at the bottom of the glass tube, upon this a fragment of cotton wool, and upon this the 1 gm. of A. The tube is closed by dipping the mouth, with the cork in place, into melted paraffin wax.

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* No. 8,449, dated July 28, 1910.

PYROCATECHIN.

| | |
|---|---|
| A. Pyrocatechin | 8 gms. |
| B.—Soda sulphite, anhydrous | 20 gms. |
| Potassium carbonate, dry | 60 gms. |

One gm. of A and 10 gms. of B are taken and placed in a tube, as above directed. This quantity is dissolved in 150 ccs. of water.

GLYCIN.

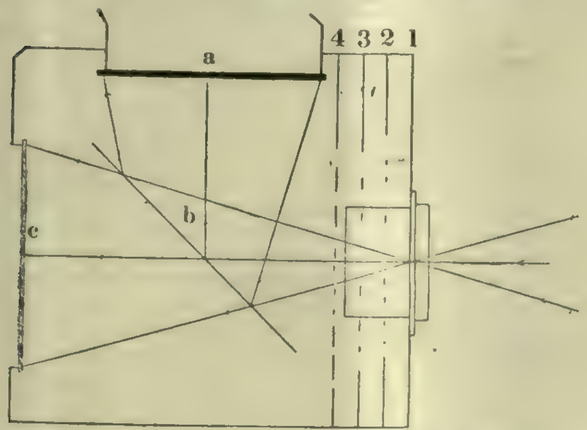
| | |
|---|---|
| Glycin | 5 gms. |
| Soda sulphite, anhydrous | 7 gms. |
| Soda carbonate, anhydrous | 28 gms. |

This developer is specially recommended. It gives excellent results and keeps readily for six months without alteration. The mixture is simply stored in a yellow bottle, the whole quantity given above being dissolved in 500 ccs. of water, or, if a lesser quantity of developer is required, 8 gms. of the powder are dissolved in 100 ccs. of water.

## A FULL SIZE FOCUSSING CAMERA OF THE REFLEX TYPE WITH FIXED TRANSPARENT MIRROR.

A DESIGN of camera, which would appear to be new in itself as applied to ordinary hand-camera work, is described in the current issue of "Photographische Korrespondenz" by the patentee, Josef Wara, of Saaz, Bohemia. Its novel feature consists in the use of a mirror of transparent glass placed at an angle of 45 deg. to the axis of the lens. Such a device, although familiar in cameras for three-colour photography, does not appear to have been hitherto used in instruments intended for ordinary hand-camera photography, and the inventor dwells upon the advantage of such a type as this as regards reduction of weight, freedom from mechanism, and facility for the use of lenses both of long and short focus. Since there is no movement of the mirror when making the exposure it is obvious that the lens can be brought much nearer to the plate than can be done when space has to be provided for the upward swing of the mirror.

The illustration will show the construction adopted—*a* is the focussing screen, *b* the fixed mirror of glass .2 mm. in thickness, and *c* the sensitive material, which may be either a plate or roll-film, and is provided with a self-capping focal-plane shutter. Herr Wara gives the following figures for the distribution of light from the lens, which falls on the mirror *b*:—Fifteen to 20 per cent of the light is reflected by the mirror on to the focussing screen *a*, whilst 75 to 80 per cent. passes through the mirror and is utilised for the exposure of the plate. Thus, when using a lens of $f/4.5$ aperture the image upon the ground glass is of a degree of brilliancy such as would be obtained by the direct employment of a lens working at $f/10$, an aperture which the inventor considers to be large enough for focussing purposes. The illumination on the plate, using the same lens, will thus be equal to that afforded by an objective working at $f/5$. As there is no movement of the mirror at the time of exposure, it is obvious that means require to be taken to shield the plate from light entering the camera through the focussing screen *a*, and this the inventor provides by making the focussing screen of a somewhat deep yellow ground glass, and at the same time building above it an efficient hood, the mouth of which is closed by the head of the photographer at the instant of exposure. Two examples of the results obtainable with this type of camera, when photographing objects at close quarters, are reproduced: the subjects are animals evidently taken at a few feet only from the lens, but rendered with quite satisfactory sharpness.



Obviously this method of construction, while it reduces weight and cost, does not lead to any considerable reduction in the bulk of the apparatus, and in this respect cannot be superior to the customary type of reflex instrument. Also, we fear that many photographers will scarcely be content with an aperture of $f/10$ for focussing purposes, especially when the illumination on the focussing screen is further reduced by the yellow colour of the latter. In conjunction with a properly adjusted eyepiece on the focussing hood it would, nevertheless, seem that there is something to be said for this type of instrument, but before expressing any opinion on its likelihood of coming into general use, we should prefer to have an opportunity of testing the capabilities of an actual instrument made in accordance with the invention.

## COMBINED DEVELOPMENT.

(A Note in the "Photo-Revue.")

THE following is a description of a method of development which, while it possesses the advantages of the two-dish method, using acid diamidophenol, yet allows of a fair number of plates being rapidly developed without much experience on the part of the worker. Slow development in a tank or large dish fulfils these conditions, but it has certain defects. It not unfrequently yields negatives which are too weak, and, although compensating to a certain extent for errors in exposure, the compensation is insufficient. A better method, that now described, is to use a slow bath in conjunction with one more rapid, and I have now worked out formulæ on these lines which have proved absolutely satisfactory in practice. The slow bath is made up so that, with under-exposed plates, the maximum detail is obtained. From the fact that the bath *is* slow there is a slight correction of errors of exposure; it is suitable also for the development of plates which have been normally exposed. In consequence of the relative latitude in slow development the action is less energetic than a two-dish method for under-exposure, and it gives further the same result in the case of insufficient exposure.

On removal from the dark-slide all the plates are put in this bath, where those which are under-exposed, or normally exposed, are developed without any other means, for a time varying from thirty-five minutes to an hour and a quarter. In the case of over-exposed plates, however, if left in this bath, the results would be flat. Such plates are removed as soon as it is seen that there has been over-exposure, and their development is completed in a bath of the normal strength in order to increase contrasts.

SLOW BATH.

| | |
|---|---|
| Diamidophenol | 1 gm. |
| Solution S[1] | 40 ccs. |
| Solution BB | 13 ccs. |
| Water to make | 1,000 ccs. |

RAPID BATH.

| | |
|---|---|
| Diamidophenol | 1 gm. |
| Solution S | 25 ccs. |
| Solution BB | 15 ccs. |
| Water to make | 100 ccs. |

These baths should be used at a temperature of from 60 to 65 deg. F.

The plates are placed in lots of six in a vertical tank containing 1,000 ccs. of the slow bath. At the end of three or five minutes they are examined, and it will then be seen that in the case of normally or under-exposed plates there is a distinct image with a slight tendency to a hard appearance; in the case of over-exposed plates a tendency to greyness will be seen at this stage. These plates are then transferred into an ordinary dish containing the rapid bath. Here they quickly gain density and contrast, development being arrested when it is seen from the back of the plate that the process has been continued far enough. The gelatine surface of the plate will then be uniformly black all over, but after fixing the result is an excellent negative of good density and gradation, but thorough development is a *sine quâ non* in the process.

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[1] Solution BB.—Sodium bisulphite liquor, 100 ccs.; potass bromide 10 per cent. solution, 60 ccs.
Solution S.—Sulphite of soda anhydrous 20 per cent. solution.

As regards the plates which are left to develop in the slow bath, it is sufficient to turn them over every ten minutes, and then take them out when thoroughly developed, and to give any which show a tendency to greyness a short immersion in the rapid bath. The shorter the exposure the longer the development, which may be from thirty-five minutes to a maximum of an hour and a quarter. It is useless to develop longer; this only leads to dichroic fog. Development is complete when the image is clearly seen from the back of the plate. For the beginner, who has only a few plates to develop, and wishes to put these through with as little chance of failure as possible, the above is an excellent method. It works excellently with orthochromatic plates, and is seen at its best with plates of the anti-halation type. G. UNDERBERG.

# Photo-Mechanical Notes.

## A New High-class Printing Journal.

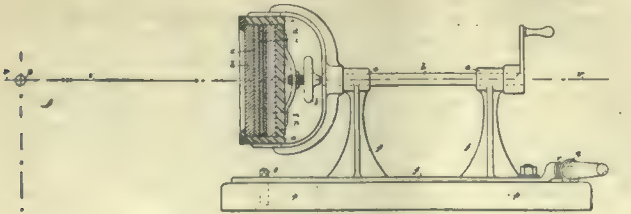
THE announcement is made of the immediate issue in Boston, U.S.A., of a new monthly journal, called "The Graphic Arts," dealing with all branches of printing and photo-engraving. The editor is H. L. Johnson, who founded "The Printing Art" in 1903, and has conducted it ever since. As this has long been recognised as the standard of attainment in printing, the new magazine under the same direction promises to be very good. The foreign subscription will be $4 per year.

## Rotating Frame for Printing Half-tone Plates from Full-tone Negatives by Aid of a Screen.

AN invention, the subject of a patent (No. 29,431, 1909) taken out by Mr. W. G. Rennie, 28, Forth Street, Edinburgh, has been devised with the object of printing direct on the metal plate from full-tone negatives, and so obtaining half-tone engraved plates of the kind produced from screen-negatives made in the camera.

The apparatus consists of a frame *a*, which is mounted on the end of a shaft *b*, the axis of which passes approximately through the centre of the frame at right angles to the plane of the screen *c*, or sensitive plate *d*, held in the frame. The shaft *b* is supported in journals *e*, in a frame *f*, and is free to revolve, by which it can rotate the frame with its contained sensitive plate, screen, and negative (or positive) all about an axis coincident with a normal through the screen, etc.

Fig. 2.



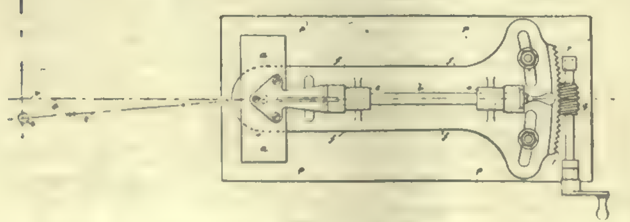


Fig. 1.

In Fig. 2, *h* is the plate-glass front of the printing-frame; *c*, is the screen; *i*, is the negative or positive of the original; *d*, is the sensitive plate prepared to receive the impression; *m* is a felt cushion; *n*, the cramping-board; and *k*, the cramping-screw. The felt cushion, cramping-board, and screw secure the screen, negative, and sensitive plate in the frame in the usual manner.

The frame *f* is supported on the base *p*, and can rotate about the pivot *o* through an angle in either direction equal to the maximum angle of incidence. The rotation of the frame *f* relative to base *p* is effected by the worm *q* and worm segment *r*. The base *p* requires to be tilted and fixed in such a position as to bring the axis of rotation *v* of the shaft *b* into alignment with the source of light, but the method of doing this is not shown, as it may be accomplished by any suitable means in common use. *s* is a source of light and *t* a ray emanating therefrom, which intersects the axis of rotation *v* and is incident on the plane of the sensitive plate at an angle of incidence represented by $\theta$.

In operation the action of the apparatus is as follows:—The frame *a* is rotated about the axis *v*, during exposure to light under a suitable angle of incidence, thereby changing the direction of the light falling on the plate. The suitable angle of incidence can be obtained because the frame *f* is movable, and is so moved with respect to the source of light that the axis of rotation *v*, of the shaft *b*, makes at any moment the desired angle of incidence with the rays of light intersecting it in the case where the rays are parallel, and so moved in the case of light emanating from a point that the axis of rotation *v* is at any moment at a distance from the source of light equal to the distance of the source of light from the screen multiplied by the sine of the desired angle of incidence of the ray to the centre of the plate. Thus by rotating the printing-frame and moving the frame which supports the shaft thereof, the direction of the light and the angle of incidence on the sensitive film are simultaneously changed. The rate of change of angle of incidence, effected by changing the position of the axis of rotation with respect to the source of light, by means of the worm *q*, may be variable or constant, or the change of the angle of incidence during an exposure may be periodic, in a sequence depending on the contrast of light and shade in the original, and on the nature of the sensitive film which is being acted on by the light. This change of the angle of incidence during printing enables the operator to expose the plate first for the high-lights and afterwards for the shadows of the original, or vice versa, and thus to obtain a small dot in the highest lights without entirely obliterating the effect of the screen lines in the deepest shadows. By uniformly rotating the shaft *b* while the sensitive plate is exposed under a suitable angle of incidence approximately round dots are produced on the film, irrespective of the form of the screen aperture; while by rotating the shaft intermittently—giving periodic rests in the course of each revolution, or by giving synchronous lineal motion to the lamp in the case of artificial light—various forms can be given to the dots or screen-points produced on the sensitive plate. The maximum angle of incidence to be given to the light depends on the index of refraction of the glass composing the screen, when the glass intervenes between the screen and the sensitive film, on the distance of the sensitive film from the screen, also on the size of the screen-aperture and its relation to the width of the opaque screen-lines.

## PHOTO-MECHANICAL PATENTS.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

PHOTO-MECHANICAL PROCESSES.—No. 27,482. Processes for photo-mechanical reproduction. Dupuis and Dupuis.

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LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.—With the beginning of the new year the "L. and P." has moved its headquarters from Cursitor Street, Chancery Lane, to the Gardenia Restaurant, 6, Catherine Street (next door to Drury Lane Theatre), W.C., where the meetings will in future be held every Thursday at 7.30. The new rooms are most comfortable, and a hearty welcome is extended to our readers to pay a visit to any of the meetings. An interesting programme for the current month is offered. The hon. secretary, Mr. Ernest Human, will gladly supply full particulars of membership on application to him at 43, Whitta Road, Manor Park, Essex.

# Exhibitions.

## WISHAW PHOTOGRAPHIC ASSOCIATION.

The eighth Arts and Crafts Exhibition of the Wishaw Photographic Association, opened by Mr. Charles Reid, of Wishaw, maintains the reputation of its predecessors. The feature of the show undoubtedly is the twenty-eight pictures by Alexander Keighley—he was represented at the second Scottish Salon, but this is a much larger exhibit and is a revelation to all who visit the show; in the collection a wide variety of subject is treated. The Wishaw folks are to be congratulated on re-introducing the work of Keighley to Scotland. Mr. Charles Reid also sends a small collection of his work, including eight Autochromes. As will be noticed from the prize list, England figures prominently; but then there has always been good support from the South for the Wishaw show. We congratulate Mr. Telfer, secretary, and his enthusiastic committee on the result of their labours. The following is the prize list:—

Portraiture.—Bronze plaque, Elliot Peel, London; silver medal, George Rose, Motherwell; diploma, James Fallow, Wishaw.

Landscape, Seascape.—Bronze plaque, Thomas Farmer, Edinburgh; diploma, George Cleland, Edinburgh.

Flower, Fruit, etc.—Bronze plaque, F. A. Tinker, Sheffield; silver medal, George A. Booth, Preston; diploma, R. G. F. Banks, Hartlepool.

Novice.—Bronze plaque, John Wanless, Edinburgh; silver medal, Mrs. Alexa Massue, Edinburgh; diploma, D. M. Philips, Edinburgh.

Lantern Slides.—Bronze plaque, Clarence Ponting, Great Missenden; silver medal, Edwin Marks, Stoke-on-Trent; diploma, F. A. Tinker.

Federation.—Bronze plaque, R. B. Penman, Edinburgh; silver medal, C. D. Nairn, Stirling; diploma, George Cleland, Edinburgh.

In the members' classes, first prizes were taken by James Fallow (3), Andrew Hughes; second by Adam W. Russell, John Sandilands (2); third by Adam W. Russell, Robert Andrew, junr., John Sandilands.

Mr. W. C. S. Ferguson, Glasgow, was judge. Lectures, lantern slides exhibitions, and concerts were given during the week.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between December 28 and 31.

Cameras.—No. 30,056. Improvements in and connected with cameras. James Robert Wood, 154, St. Vincent Street, Glasgow.

Plates.—No. 30,088. Improved means of packing sensitive photographic plates or cut films and exposing same in the camera. Horace Everest and Percy Craven, 16, Warmington Road, Herne Hill, London.

Printing-frames. — No. 30,148. Improvements in photographic printing-frames. Frederick William Hockaday, c/o Houghtons Ltd., 88, High Holborn, London.

Dark-slides.—No. 30,272. Improvements in or connected with photographic dark-slides. Charles John Evans, Birkbeck Bank Chambers, Southampton Buildings, London.

## COMPLETE SPECIFICATIONS ACCEPTED.

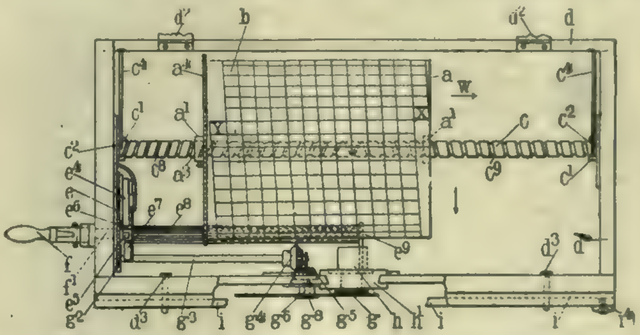
*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Cinematograph Camera.—No. 1,546, 1910 (February 6, 1909). The claim is for a cinematograph apparatus for plates, with pictures in superposed rows presented in succession to the lens by a carriage reciprocated transversely, stopping for each picture. The rows of these plates are replaced one by the other by means of a vertical elevator, and the plates conducted one after the other into the elevator by a double lever connected with the operating roller acting in combination with two racks. The arrangement is such that the carriage remains stationary during an oscillation of the double lever produced by the displacement of the roller by the cam, while during the other oscillation of the double lever the carriage advances simultaneously with the roller, but at such a velocity that it recovers its retardation relatively to the roller due to its stationary period, this displacement corresponding to the width of a picture. René Achille Robin, 62, Rue d'Allemagne, Paris.

Cinematograph Camera for Flat Film. — No. 1,140, 1910 (January 15, 1910). This invention relates to cinematographic apparatus of the kind in which a large number of successive small photographs are taken in a helical path upon a sensitised flexible band, from which, after developing and fixing, a positive is made and placed in the apparatus whereby the photographs can be observed through a magnifying lens or projected on to a screen through a lens, while the flexible photographic band is being caused to travel in a helical path past the lens by suitable mechanism. With apparatus of this kind, as heretofore proposed, the flexible film bearing the photographs has been used in the form of an endless band suspended loosely upon a rotary and laterally movable member actuated by suitable mechanism, so as to successively bring the photographs opposite the aforesaid lens.

According to this invention, the photographic film is affixed to a rotary cylinder or drum, *a*, in such a manner that it is held tightly around the drum in a more or less rigid manner, and can be easily removed when desired. The drum is provided with means for enabling it to be revolved intermittently at a predetermined speed by hand, and with means whereby it also receives a longitudinal movement to an extent depending upon the pitch or inclination of the helically arranged photographs on the photographic film. The drum is arranged within a box, which is capable of being closed in a light-tight manner, the box being provided with a lens, *h*, through which the exposure of the sensitised film takes place when the apparatus is being used to take the photographs. Situated adjacent to the lens is a movable shutter, *g*, which is so arranged relatively to the mechanism employed for actuating the drum that it screens the lens during the intermittent movement of the drum and exposes the lens during the intervals between the intermittent movements, so that the exposure of the sensitised film only occurs while the drum is at rest.



When the film or band on which the pictures or finished photographs are printed is affixed to the drum and the apparatus used to obtain the cinematographic effect, the photographs may be observed through a suitable magnifying lens detachably mounted on the box or casing, appropriate means being provided to direct the light on to the pictures as they pass the lens. If the photographs are required to be projected upon a screen, the drum on which the "positive" film is mounted may be made of transparent material and an electric lamp may be situated within the drum so as to project the photographs through a lens or lenses suitably arranged in the apparatus. Thomas Horace Bolam, 173, Uxbridge Road, West Ealing, Middlesex, and Sidney Norman Barnard, South Road, Puckeridge, Ware, Herts.

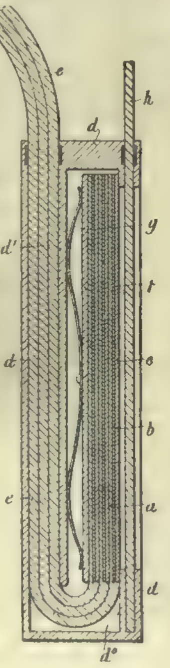
Folding Reflex Camera.—No. 19,231, 1910 (August 16, 1910). Mirror reflex cameras as hitherto used have a fixed horizontal support or frame for a single ground glass plate pivoted to the back of the camera that can be turned downwards for the purpose of folding the camera. This construction is accompanied by the disadvantage that when opening out the camera it remains open, allowing the penetration of dust, etc., until the single ground glass plate has been turned into the horizontal position and closes over the camera at the top. It has been proposed to support a removable rigid frame with the focussing screen on a frame required for securing the edges of the opening in the bellows, and to make the latter frame in two halves hinged together and to the front and back frames of the camera respectively, and fastened to the bellows, in order to allow the camera to be collapsed.

This disadvantage is avoided with the mirror reflex camera, according to the present invention, by making the ground glass plate, together with its frame, in two parts pivoted to each other, one of which is pivoted to the back portion of the camera and the other to the lens portion, and both portions are connected with the upper edges of the bellows, so that even when folded together or when opened out the camera is closed by the ground glass plate divided into two portions corresponding to the two parts of the frame for the same. Richard Walaschek, 58, Langegasse, Vienna VIII.

Film Packs.—No. 4,836, 1910 (April 16, 1909). The invention consists of a film pack, consisting of tabbed members, each of which is composed, in addition to the tab, of a carrier impermeable to light, and a film sheet, consisting of a transparent backing and a sensitive layer, this film sheet being attached to the carrier with its sensitive layer immediately facing the latter.

The figure shows a section through the film pack.

To each carrier *a* a film sheet *b c* is fixed in such a position that the sensitive layer *b* immediately faces the carrier. The backing *c* of the film sheet serves as a covering, which prevents the layer *b* from being damaged, when the film sheet, having become the foremost by the operation of changing, after exposure is being pulled along the inner surface $d^0$ of the casing *d* in the next operation of changing. In the example shown, the operating extension *e* of each carrier has the same thickness as both the carrier proper *a* and the sheet *b c* together. With regard thereto, the front wall $d^1$ of the rear chamber is an immovable part of the casing *d*, a special loose plate *f* and a pressure spring *g* being provided for automatically shifting, during each operation of changing, the contents of the front chamber towards the exposure opening shown as being closed by a shutter *h*. Carl Zeiss, Carl-Zeiss-Strasse, Jena.



Colour Screen-film.—No. 23,138, 1910 (October 29, 1909). In the manufacture of colour-screens on celluloid films or coatings, two different processes have been used hitherto. In one of such processes a sequence of superimposed layers is obtained by means of different protective layers put on the celluloid surface successively and the colours are distributed on the single layers by means of mechanical or dyeing operations. In the other process the colours are produced inside the celluloid film, either in several superposed layers or with the assistance of several protective layers put on successively.

A process has also been suggested according to which the use of a single protective layer is sufficient. It is based on the fact that colour solutions do not stain such portions of the celluloid surface which are already coloured if only the time of action is sufficiently shortened, and that in spite of such a shortening of the time of action, a sufficiently strong colouring is obtained on the still unstained portions of the surface.

The present invention relates to a process which is carried out in a somewhat similar manner, and consists in using solutions of colours, the solvents of which are gradually diluted for the next colouring operation, instead of gradually decreasing the times of action of the successive stains.

Whilst it is difficult to limit in a sufficiently accurate manner the times of action, which amount to a few seconds, in such a manner as to get the desired graduation of intensities, the concentration of the solvent can be graduated easily in the most accurate manner.

The process can be carried out, for instance, as follows:—

A celluloid film is covered on both sides with a protective layer by dipping it into a solution of rubber in benzole, and in one of these layers a series of lines are scratched in such manner as to expose the celluloid surface. The film is then dipped into a solution of a blue dye, which is, for instance, obtained by dissolving 2 gms. of Victoria blue in 100 ccs. of absolute alcohol. The film is rinsed in water, in order to wash off the excess of the dyes. The protective layer is then again cut up into parallel lines, preferably arranged at an angle of 90 deg. to the direction of the first ruling, and these second lines also reach only to the celluloid surface. The celluloid surface will be thus decomposed into blue and non-coloured lines, the latter of which are alternately decomposed into protected and unprotected squares.

By dipping into a solution of 2 gms. auramine and 1 gm. ethyl green in 150 ccs. of alcohol of 80 per cent., the unprotected parts will be coloured green, whilst the portions already coloured blue will remain unaffected owing to the greater dilution of the solvent.

The remaining portions of the protective layer are then washed off from the celluloid film, which now represents a screen consisting of blue lines and green squares, and the third colouring can be effected with red dye stuff in a still more diluted solvent. To that end is used, for instance, a solution of 2 gms. of rubin and 1 gm. auramin in 150 ccs. of alcohol of 60 per cent. When the screen is treated with this stain only the non-coloured portions will be stained. The result will therefore be a colour-screen consisting of blue lines and green and red squares, and the non-treated protective layer is then removed from the back of the colour-screen in any well-known manner. Carl Späth, 41, Rheinstrasse, Steglitz-Berlin, Germany.

Cinematograph Cut-off.—No. 2,168, 1910 (January 28, 1910). The invention consists in the employment with cinematograph apparatus of a gate having means whereby the slot through which the film passes can be instantaneously closed or choked up above and below the picture hole. Henry Hunt, 51, Ryder Street, Birmingham, and William Ernest Jennings, 84, Oval Road, Gravelly Hill, near Birmingham.

## New Trade Names.

K.—No. 325,103. Orthochromatic filters for photographic use. Wratten and Wainwright, Ltd., 76 and 78, Canterbury Road, West Croydon, Surrey, manufacturers. July 7, 1910.

C. A. (Device).—No. 317,257. Photographic plates and photographic films, both bearing taken photographs. George Frederick Lutticke, trading as C. Armstrong, 57, Bushwood Road, Kew, Surrey, artist. October 15, 1909.

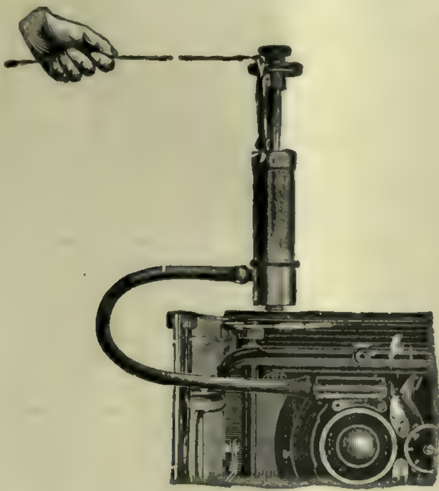
Fultomatograph.—No. 328,577. Cinematograph apparatus included in class 8, and films therefor. Otto Fulton, 3, Rupert Street, Leicester Square, London, photographic material manufacturer. November 17, 1910.

Vergoline.—No. 327,557. Chemical substances used in manufac-factures, photography, or philosophical research, and anti-corrosives, but not including glazing compounds, size, sizing compounds, glue, colours, varnish, enamels, paints or lacquers, and not including any goods of a like kind to any of these excluded goods. Allgemeine Petroleum-Industrie-Aktien-Gesellschaft, Unter den Linden, 35, Berlin, W. 8, Germany, manufacturers. October 12, 1910.

# New Apparatus, &c.

**The "Primus" Distance Shutter Release. Sold by W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London.**

A handy little accessory for actuating any type of pneumatic-release shutter, when at a distance from the camera, is supplied under this name. As shown in the drawing, it consists of a plunger provided with a spring. The plunger rod is pulled up out of its tube and held by a light metal lever to the end of which is attached a stout thread. The cylinder of the plunger is connected by a rubber tube to the nozzle of the pneumatic shutter. A slight pull on the thread disengages the plunger rod and operates the shutter. The accessory is supplied with a screw by which it can be inserted into the bush of a hand camera, but the makers also send out with it a heavy base which can be stood near to the camera—or upon it, where it is not possible to use a bush. The thread is wound on a reel, mounted in a neat case after the manner of a fishing-rod reel. In this way 24 yards of thread are carried within the space of a circular case measuring 2 ins. in diameter by ½ in. thick. The thread is rapidly re-wound into its case after use. For the purposes of the nature photographer, the inclusion of the photographer himself in a group or landscape, etc., this is a most useful accessory. Most strongly made in nickelled brass, the price is 10s. 6d.



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## CATALOGUES AND TRADE NOTICES.

Edelweiss Photo. Papers.—A 16-page handbook, just issued by Messrs. F. E. Jones and Co., Ltd., 22, Gray's Inn Road, London, W.C., gives the prices of the collodion, P.O.P., bromide, and gaslight papers supplied by Messrs. Jones. The bulk of the booklet, however, is devoted to working instructions for the manipulation of these types of papers, and we can recommend in particular the very useful hints given on the working of collodio-chloride. The booklet, together with free samples of the papers, will be sent free to any bona-fide professional reader of the "B.J."

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"Nyte-Lyte" Weekly Postcard Competition.—The cash prize of 10s. 6d. for the best "Nyte-Lyte" postcard sent in during the week January 2-9 has been awarded by Messrs. Marion and Co., Ltd., to Mr. T. R. Brown, Heathcote, Ramsgate.

Serious Fire at a Bath Photographer's.—Between six and seven o'clock on the morning of Tuesday in last week a serious fire was discovered on the premises occupied by Mr. Mower, a photographer, of 19a, Westgate Street, Bath. Happily, the prompt action of the fire brigade prevented the fire from spreading beyond the upper floors of the building, occupied by Mr. and Mrs. Mower, the shops on the ground floor only sustaining damage by water. The loss, which is estimated at nearly £700, is practically covered by insurance.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, January 13.

West Surrey Photographic Society. Annual Social Meeting.
Birkenhead Photographic Association. "Tramps Abroad with a Kodak." W. F Slater.

### Monday, January 16.

Catford and Forest Hill Photographic Society. Print and Lantern Slide Competition.
Scarborough and District Photographic Society. "Mounting the Print, Making a Frame, Staining, and Finishing." T. F. Brogden.
Southampton Camera Club. "Demonstration of Leto Printing Processes." A. E Henley.
Stafford Photographic Society. "Duplicating Negatives and the Making of Positives." Herbert A. E. Hey.
Kidderminster and District Photographic Society. "Village Homes and Crosses." C. A. Allen.
Bowes Park and District Photographic Society. Annual General Meeting.
Shropshire Camera Club. "Noctona Gaslight Printing." A. Webb.
Southport Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Tuesday, January 17.

Royal Photographic Society. "High Power Photo-Micrography." Max Poser.
St. Helens Camera Club. "Factorial Development and Bromide Paper." H. R. Lacey.
Rotherham Photographic Society. Affiliation of Photographic Societies' 1910. Prints and Criticism.
Oldham Photographic Society. Annual Supper.
Hackney Photographic Society. "Way Down Along." W. A. Furse.
Halifax Camera Club. Criticism of Slides. The Members.
Leeds Photographic Society. "The Evolution of Landscape Art." H. Barratt.
Sheffield Photographic Society. "Lantern Slides." F. J. Cribb.
Keighley and District Photographic Association. "Portraiture." Harry Crossley.
Warrington Photographic Society. "Noctona Gaslight Printing." A. Webb.
Nelson Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Wednesday, January 18.

Croydon Camera Club. Annual General Meeting and Election of Officers and Council.
Coventry Photographic Club. Exhibition of R.P.S. Affiliation Prints.
Borough Polytechnic Photographic Society. "Oxford." A. H. Verstage.
Partick Camera Club. "The Chemistry of Photography." J. H. Hart.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. "How and Why in Photography." Burroughs Wellcome.
Ilford Photographic Society. "Noctona Gaslight Printing." A. W. Green.
Rochdale Amateur Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.
South Suburban Photographic Society. Members' Slides.

### Thursday, January 19.

Liverpool Amateur Photographic Association. Annual Meeting, Election of Officers, &c.
Midlothian Photographic Association. "Combination Printing." W. J. Hart.
Batley and District Photographic Society. Autotype Carbon Demonstration.
Cardiff Camera Club. Autotype Carbon Demonstration.
Greenock Camera Club. Autotype Carbon Demonstration.
London and Provincial Photographic Association. "Supplementary Lenses." W. T. Wilkinson.
The Sutton Photographic Club. Open Evening.
Oldham Photographic Society. "The Amateur Photographer and Photographic News" Prize Slides.
Hackney Photographic Society. Whist Drive.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Pin-Hole Work." J. R. Coulson.
Northampton Natural History Society and Field Club (Photographic Section). "Noctona Gaslight Printing." A. W. Green.
Darwen Photographic Association. "Noctona Gaslight Printing." A. Webb.
Handsworth Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, January 10, Rev. F. C. Lambert in the chair.

The object of the meeting was the opening of an exhibition of biological photographs by various workers, under the direction of Mr. F. Martin-Duncan. Mr. Duncan, in giving a description of the various exhibits on the walls, laid special emphasis on the fact that it was not advisable for those taking up natural history photography to attempt to copy leading workers who had been successful in getting photographs of rare specimens, such as specially rare birds, but should strike out some line for themselves, as the field of biological research was so wide that there was no need for anyone to copy another's work. In connection with this fact he said that this desire to copy leading workers had been the cause of disturbing these wild birds in their haunts, and, in some instances, had led to grounds being closed to the public.

Mr. Lambert also gave advice to younger workers as to suitable subjects for their camera, and the meeting closed with a hearty vote of thanks to Mr. Martin-Duncan and those who had assisted him in getting the collection together.

Balham Camera Club.—The eighth annual general meeting of the above club was held at headquarters (1, Balham Grove) on January 4, when the balance sheet and the report of the committee showed that the club was in a very flourishing condition. A notable feature about the year's work was the large number of demonstrations by members of the club, and it is hoped this will continue. Mr. C. W. Coe was again elected president, and Mr. H. S. Freestone, 183, Boundaries Road, Balham, accepted the post of hon. secretary.

SOUTHAMPTON CAMERA CLUB.—Mr. E. W. Harvey Piper, Hon. M.S.A., gave a very interesting lecture on Monday last, the 9th inst., before the members of the Southampton Camera Club at the Philharmonic Hall (small hall) on St. Paul's Cathedral, illustrated by about 110 slides. Mr. W. Burrough Hill, F.S.I., president of the club, occupied the chair. It was over two hundred years, the lecturer remarked, since, in the presence of the architect, Wren, and the master builder, Edward Strong, the topmost stone was laid of the lantern over the dome of St. Paul's, a cupola which had ever since been the central, the most familiar, and the most characteristic landmark in the City of London. The story of St. Paul's went back another eleven hundred years, and the present was at least the fourth great church which had occupied the site, each of its predecessors having been destroyed by fire. So well supported was the extra heavy lantern that were the dome and its outer framing destroyed, as had been the case of many other church roofs, by a plumber's carelessness, the cone would still bear its cross and ball. The outline of the dome and its finial was, in the lecturer's judgment, the most graceful and harmonious in Europe or Asia, not even excepting that of St. Peter's at Rome. The lecturer then spoke on the exterior of the building from the west front, past the Dean's doorway in the south-west tower, to the south transept, and having surveyed the east front in bird's-eye perspective from Bow steeple, the circuit was completed by way of the north front. Fears had often been expressed during late years as to the stability of the fabric, but recent investigation had proved that, although there had been settlements, these had been checked by underpinning. The lecturer then described the interior of the building in detail, comparing and contrasting it with that of St. Peter's at Rome, and although that structure was very much larger than St. Paul's, the advantage as to the constructional standpoint lay with the smaller edifice. The mosaics, carving in the choir stalls and its aisles, the iron work, and modern additions to the gates and grilles, and the statues and effigies of distinguished people, were then dealt with, and finally the crypt, the closing slides being devoted to the tombs of Wellington and Nelson and the grave of Wren. In conclusion, the lecturer observed:—We turn away from St. Paul's forgetful of its solecisms and shortcomings, our minds filled with a pleasant memory of the fine proportions and largeness of scale which give it a repose peculiarly its own. As we glance across the river at the mighty mass which towers over the wharves and warehouses, we realise that no nobler, no simpler, no more impressive memorial of the Great Fire could be desired than this grey pile which dominates the City and constitutes its central and culminating feature.

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# Commercial & Legal Intelligence.

BOGUS PHOTOGRAPHER.—Before the Devizes Divisional Magistrates recently, Ralph Gordon Lewis, described as a photographer, and recently occupying lodgings at 73, New Park Street, Devizes, was charged on remand with obtaining sums of money by false pretences. Prisoner was first charged with obtaining 6s. by false pretences from Mrs. Drew. Prosecutrix re-told her story of how, on prisoner's solicitation, she and her husband sat for their photographs, and on his representing that he had received an order for 16s. 6d. worth of work from Mr. Hutchings, a local poultry farmer well known to them, she, at her husband's request, paid him 6s. for the photographs. They never received any proofs as arranged, and when she went to the prisoner's address in Devizes she could not find him. She ascertained that Mr. Hutchings paid no money at all to the prisoner.—The prisoner cross-examined the witness with some ability, but did not shake her evidence, which was corroborated by her husband and Mr. Hutchings.—Inspector Hancock having repeated his evidence, the Clerk adduced from him that the prisoner had a camera with him. He gave the number of plates in the prisoner's box, and, in reply to the prisoner, said he was present when Mr. Herridge, a local photographer, examined the camera, and pronounced it all right. Prisoner had acted fairly with his landlady.

Prisoner said when he came to Devizes a few weeks ago he intended to establish a photographer's business, and had executed other orders given to him. He might have been neglectful, but, like a good many others, he got the election fever. He could have got the photographs finished away by a Manchester firm named Steel, and produced a letter dated November, 1910, to that effect. —Supt. Scott said he could prove that that letter was written in 1900, but prisoner suggested that a figure was miswritten.

The second charge against the prisoner was that of obtaining money by false pretences, from Mr. Chivers, of 4, Bath Road, a dynamo attendant at the Wilts County Asylum. The prisoner employed the same means. He called upon Mr. Chivers, and, representing that he had taken the photograph of the Rev. W. H. Weekes, Chaplain at H.M. Prison, witness had himself and his family photographed, paying prisoner 3s. in two sums. He received no proofs or photographs.—The Rev. W. H. Weekes denied that the prisoner was given an order at his house, and said no photographer had called there in his absence.

Prisoner pleaded not guilty, but the Bench intimated that they intended to convict.—Supt. Scott then showed that the prisoner was five times previously convicted for stealing and false pretences. —The Chairman said the prisoner's record was a very bad one, and he would go to prison for six weeks in each case, the sentences to run consecutively.

LEGAL NOTICES.—The partnership between Walter Bell and Arthur Blackhurst Kenworthy, carrying on business as photographers, 31, Bold Street, Liverpol, under the style of Brown, Barnes, and Bell, has been dissolved by mutual consent.

The partnership between Charles John Stewart Reed and Wallace Edward Allan, carrying on business as photographers, 54, Market Street, Manchester, under the style of Sticky-Backs, has been dissolved by mutual consent. All debts due to and owing by the late firm will be received and paid by C. J. S. Reed, who will continue to carry on the business in future on his own account.

Notice of intended dividend is given in the bankrupt estate of Albert Edward Seaman, photographer, 5, Hady Lane, near Chesterfield, in the parish of Hasland, Derbyshire, and carrying on business at 13, High Street, Chesterfield, and lately residing and also carrying on business at 7, King's Road, Brighton. All proofs must be lodged on or before January 27 with Mr. E. W. Humphreys, 47, Full Street, Derby.

Notice of intended dividend is given in the bankrupt estate of Max Muenzer (lately carrying on business under the style of the Great Britain Art Company), now managing director of a limited company, lately manufacturer of photographic materials, photographic artist and enlarger, etc., lately residing at 369, Moss Lane East, Manchester (in apartments), lately carrying on business at the Helios Photographic Works, 336-42, Chester Road, Cornbrook, Manchester; also lately carrying on business at 71A, 73, and 75, Grosvenor Street, Manchester; at 240. West Gate Road, Newcastle-on-Tyne, 22, Foyle Street, Sunderland; 14, Bishopton Lane, Stockton; 74, Springbank, Hull; 146, Woodhouse Lane, Leeds; 18, Broad Street, Wolverhampton; 191, Bristol Street, Birmingham, 28, Upper Parliament Street, Liverpool; and 56, Hanover Square, Bradford. All proofs must be lodged on or before January 20 with W. R. Sharp, 30, Brown Street, Manchester.

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SYLVAX PAPER AND PRINTING.—The Sylvax Photo. Works, 47, High Street, Tunbridge Wells, advise us that they have purchased outright the business, including goodwill, formulæ, negatives, and reproduction rights, of the Falla-Gray Photo. Paper Company, and the Speediq Photographic Printing Works, both of Park Road, Tunbridge Wells. The Sylvax Company will continue to manufacture the "Falla-Gray" and "Speediq" specialties, and are prepared to quote favourable terms for all varieties of rapid postcard production, for which their combined business is now most efficiently equipped.

# News and Notes.

"**South African Photographic Journal.**"—Owing to lack of support, the proprietors of the "South African Photographic Journal" have been reluctantly compelled to discontinue publication.

**The Scottish Salon.**—The Scottish Salon at Glasgow is receiving much attention, the attendance putting up a record that will not be easily beaten, as example, Monday, 2nd inst., 5,000 visitors; Tuesday, 3rd, 3,000; Wednesday, 1,300. Of course, these are during New Year Holidays, and other days cannot be expected to be in like ratio, but the gross total should be a revelation.

**Gold-Smith Exhibition at Manchester.**—At the annual exhibition of apparatus and supplies for the professional, held by Messrs. Gold-Smith, Ltd., of Manchester, during the first fortnight of the New Year, there were many evidences of the enterprise of this firm. The novelty of greatest importance was probably the Jobson Reflector, for use with arc-lamps for control of the light in portraiture. This was demonstrated in use with the new pattern of Jandus arc-lamp, for which Messrs. Gold-Smith are the agents, by the inventor in person, and many excellent negatives were made on Warwick plates, receiving much commendation from the visitors. Among written testimonials to the efficacy of the reflector was one from Mr. Warwick Brookes, the well-known Manchester photographer. There was to be seen in use a special camera back and slide for taking a Cosway border on the same plate as the portrait. This was priced at £5 5s., with two designs. It is worthy of note that only one photographer in a district is supplied with this specialty.

A Cosway enlarger, for printing a border on a postcard in one operation from a midget negative, was especially notable among many new labour- and time-saving apparatus for the bromide worker. In addition to this, a practical demonstration of printing and toning on the "Manchester" bromide paper was a feature of the exhibition. The results were seen to be very fine, and the tone of sepia prints from various negatives was remarkably even. Some very nice backgrounds were shown, as well as several new ideas in accessories of the collapsible variety, such as a set of folding doors and a window corner, both of which were made to resemble the real thing as closely as possible. They were priced at £7 7s. and £6 6s. respectively. A set of backgrounds in miniature, four feet square, and hinged to open like a book, was a novel and very convenient way of showing new designs, especially as they were painted by the same artist who would execute the orders, which could be in any desired size. A nursery ground was one of the original ideas, and was supplied with a foreground, and a rocking-horse among other toys. A series of headgrounds, arranged on the panorama principle, was shown to be a very convenient way of ringing the changes, of which there were six, at a cost of 70s. Several stuffed dogs of various breeds were a pleasant variation on the birds and kittens shown last year, and were exceptionally life-like. The prices were quite reasonable, ranging from 15s. to 30s. A white "Pom." was perhaps the best shown.

**Ensign Roll-Film £200 Competition.**—The following are the awards in this competition, organised by Messrs. Houghtons Ltd. Cheques are being sent off this week to the successful competitors, and all the unsuccessful films are now being returned:—

Class I.—First prize, £50, Albyn Bunce, 25, Bridge Road West, Battersea, S.W.; second prize, £20, Lionel Stones, "Northwood," Seymour Grove, Old Trafford, Manchester; third prize, £10, Veda Robertson, Coghlan, Warenda Station, Queensland, Australia; fourth prize, £5, Miss M. Hawley, Oak Arch, Main Road, Kenilworth, Cape Colony.

Class II.—First prize, £20, George Dutilh, Crédit Lyonnais, Alexandria, Egypt; second prize, £10, Alfred Scott, 6, Argyle Road, Stratford, London, E.; third prize, £5, Major A. B. Stone, Binton Barn, Farnham, Surrey.

Fifteen prizes of £2 each:—A. Critchlow, Burslem, Stoke-on-Trent; Miss Gertrude Morris, Hounslow, London, N.W.; S. A. Millard, c/o Maspero Frères, Ltd., Cairo; T. Newns, King Street, Dukinfield; Mrs. D. Forbes, Sway, Hampshire; Mrs. H. Toole, Ipswich, Queensland, Australia; Mrs. M. J. Taylor, Essex Lodge, Woodstock, Cape Colony; M. J. Rendall, The College, Winchester; A. J. Bennett, St. Cross, Bournemouth; A. H. Hathouth, Station Bacos, Ramleh, Egypt; E. Hoch, Toronto, Ontario, Canada; G. H. Revill, 90, Ordnance Street, Chatham; Miss M. R. Jennings, Walberswick, Southwold; Robert T. Wilson, Winnipeg, Manitoba, Canada; T. B. C. Hardman, Albert Park Road, Malvern Link.

Class III.—First prize, £10, Stanley J. Milner, 20, Rutlin Gardens, Cardiff: second prize, £5, W. J. Bassett Lowke, Kingswell Street, Northampton.

Five prizes of £2 each:—E. Colbeck, Peel Road, South Woodford, Essex; W. E. Parry, 3, Church Street, Bootle, Lancashire; C. R. Barnham, 19, Middlesex Street, Barnsley; A. B. Cook, 40, Priory Road, Kew; A. C. Thomson, South Road, Weston-super-Mare.

Twenty-five prizes of £1 each:—Miss L. Dodd, 34, Sydney Road, Enfield; J. S. White, Fentiman Road, Clapham, S.W.; A. Davidson, Valetta, Malta; F. Wheeler, Broadway, Bexley Heath; F. Cowley, Maryville-Bray, Co. Wicklow; E. Bellamy, 29, Streatham High Road, S.W.; F. Curran, 17, St. Mary Street, Weymouth; E. L. Brown, Malvern, Victoria, Australia; J. D. Mitchell, Mackay Street, Montreal, Canada; P. W. Simpson, Polperro, Cornwall; J. H. Cardew, Crafton House, West Sandgate; Miss M. H. Bicknell, The Bencher, Monmouth; G. J. Bayley, Rectory Place, Woolwich; H. Fuller, Maberley Road, Upper Norwood, S.E.; Miss Gray, Elyne Road, Stroud Green, N.; E. J. Hughes, Melksham; J. W. Lofts, Park Avenue, Blackpool; James Balfour, Oxhill Road, Dumbarton; E. H. Burris, Redland Road, Bristol; Miss Mottershead, Stafford Street, Longton; C. W. Irving, Highbury New Park, N.; F. G. Martin, Greenbank Road, Darlington; J. H. Williams, Rhosneigr, Anglesey; Miss Laura Pudney, Earls Colne, Essex; J. Davis, Woronzow Road, London, N.W.

The judges, Messrs. Austin Edwards, E. D. Smith, and Percy G. R. Wright, in their report, write as follows:—"Many thousands of negatives were submitted, and the average standard of excellence was remarkably high, notwithstanding that (according to the conditions) whole strips of film had to be sent, and not merely single negatives. Many of the films entered for Class II. might have had a good chance of winning one of the big prizes, if they had been entered for Class I. In the 'Ensignette' Class the judging was a very difficult matter. So many of the entries were particularly good that we should have liked to have had twice as many prizes to award. Competitors entered from all over the world, and the variety of subjects taken was most extraordinary."

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

### SUNDAY WORK IN PHOTOGRAPHIC STUDIOS.

To the Editors.

Gentlemen,—We have read with much interest the letters in the "British Journal" re opening of photographic studios on Sundays, and, as you seem to invite expressions of opinion on this matter, permit us to say that we have been engaged for over thirty years in this city working a large business in the cheaper lines, chiefly with the artisan classes, and have never found it necessary to open our studios or take photographs on Sundays. Of course, we have sometimes been asked to do so, but have declined, believing, as business men, that it would be a mistake (apart from the religious aspect of the question) to spread over seven days work which can and ought to be done in six. The working classes, being mostly free on Saturdays, can come to be photographed on that evening. We do not think we have lost anything by this action.

Some years ago a correspondent stated in your columns that six days' work, followed by one day's rest every week was an obligation binding upon all mankind, and, further, that if this principle was observed it was not of so much importance which day was kept as the rest-day; but he said if we could all be agreed about the day so much the better. We cannot see how these statements can be controverted, or why the assistants in the photographic business should not have their day of rest as in other trades, and any effort to secure this will have our support.—Yours faithfully,

Reid Bros.

81, High Street, and 114, Royal Avenue, Belfast.

To the Editors.

Gentlemen,—In reference to "Sandgrown's" letter in the "B.J." for December 30 last, during the Christmas holidays (*sotto voce*, are photographers ever allowed holidays?) I met a former colleague who had been associated with me as an assistant in a well-known West-End house. He had fallen on evil days (although a very fine operator and black and white artist), and, through no fault of his own, had been forced to take a berth with a so-called popular firm of photographers who resort to Sunday opening. He informed me he had been with them three years, and during that time had been given seventeen days holiday all told, having, as you will notice, worked considerably over 1,000 days during his engagement. Now, Mr. Editor, I will ask you what time has my old confrère for recreation of mind and body?

My remarks to him were something of this variety: Well, old man, yours is an El Dorado; or, I hear Utopia Limited are looking out for new ideas.

"Sandgrown" seems to look upon Blackpool as a sort of *sine quâ non*. He certainly must sit up on one of his native sandhillocks and look at Blackpool through a very powerful magnifying glass. Surely we cannot all obtain employment there, even in the summer time. Photography is not essential, therefore why break up a day of rest? If people were not pandered to so much they would come quite as readily on a Saturday.

A house that is built on the sand, etc., etc. Personally, I wish the new Government good luck with their "Shop Hours Bill." I hope it will be placed on the Statute Book next Session.

In conclusion, I would ask old operators if they remember Mr. Field's efforts of twenty-one years ago, when he tried to form a trade union? Why not do so now, and band ourselves firmly together?—Yours truly, Nimrod.

### DIVERGENT DISTORTION IN TELEPHOTOGRAPHY.

To the Editors.

Gentlemen,—We are much obliged for the references which you gave us in the "British Journal" for December 30, 1910, and we have read the articles referred to with interest. Yet, while we fully acknowledge the priority of Mr. Marriage in drawing attention to the presence of divergent distortion, and also in suggesting the remedy of allowing the back to tilt with the camera, we are quite unable to reconcile this advice with what appears to have been his subsequent practice.

The letter from Mr. Evans, in which he partially quotes one of our statements without the preceding qualification, is of particular interest, coming from a worker of such large experience, and we are glad to learn that the practice of tilting the back is so widely known and so generally adopted; but the fact remains that anyone taking up architectural telephotography, and seeking advice from textbooks or photographic opticians, would be led to believe that his camera back must always be kept vertical, as he would naturally regard a recommendation from such sources as authoritative.—Yours faithfully,

E. A. Reeve,
G. R. Reeve.

11, Oxford Road, Putney, S.W.,
January 11, 1911.

### THE STUDIO ROOF.

To the Editors.

Gentlemen,—Without trespassing on your valuable advice in last issue re studio roof, or the details given in this year's "B. J. Almanac," will you allow me to give briefly my experience, as it may be helpful to one who seems to contemplate a new roof, a rather serious item at best.

Many years ago I came into possession of a studio, facing south, of the ridge type and rather flat (I need not enter into the needful details for portraiture in such a studio, though good work was done). This roof was constantly leaking more or less, not so much where the glass touched the bars as where the separate pieces of glass lapped to complete the length. Had it been possible to remove the glass intact and relay it with enough space between at the laps to avoid capillary attraction (though that would have admitted more dust), it would, no doubt, have succeeded, but as that was impossible we removed carefully all the glass and laid in fresh 26-oz. sheets the whole length from ridge to eaves, bedding same down in putty, but not putting on any top putty as was usual. Doing this by bars—i.e., two panes at a time—avoided having the whole uncovered—a risk in this changeable climate. The putty was cleaned off level with the glass. When all was glazed the bars and about half an inch of the glass were painted with white lead mixed with turpentine and gold size only (no oil). The result was a perfect success, no wet has come in since, but each autumn a coat of the same paint is given. Before, we could have no carpet down with safety; since, one has been always down. A glazier would, of course, see that the third pane was hacked out before the second new one was bedded in, as also that each bar was painted before new putty was put in. This is an important item.

Old Pro.

### REVERSAL BY DICHROIC FOG.

To the Editors.

Gentlemen,—I have a nice little riddle for you to solve, Mr. Editor. I cannot. I am sending you the plates to see. I opened a fresh packet of plates to take some pictures of my children. I exposed the first four. These were all right. I then put the next packet of four in the same slides, two out of the four turned out as you see. Imperial half-plates, exposure by T.-P. shutter, supposed to be twenty-fifth of a second, developed by pyro metol, and the light used was the green safe-light I use for Autochrome work. The remaining four plates were all right (no green fog). I hate mysteries, and should like to clear this up.—Yours faithfully,

Forty Years a Reader.

[The riddle set by our correspondent is very interesting, as the plates sent us are fine specimens of reversal and dichroic fog. Stale developer may have been the cause, and we cannot make any other suggestion. The portrait of the little girl is the best example of reversal we have seen, and we should certainly frame it as a transparency.—Eds. "B.J."]

## Answers to Correspondents.

⁂ *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

H. E. Pearse (Sheffield).—Please send us your address.

H. Marks.—We advise you to try Carl Ernst, 27-31, Earl Street, E.C.; The Tress Co., 4, Rathbone Place, W.; and Jonathan Fallowfield, 146, Charing Cross Road, W.C.

Old Negatives.—Will you kindly answer me, through your journal, where I can dispose of about a ton of half-plate negatives?—M. I. C.

Charles Bowen, 58, Grove Road, Holloway, London, N.

Oxygen Generators.—Please inform me, through your paper, address of firms selling oxygen generators beside Kamm's.—Subscriber.

Messrs. Gaumont and Co., 5 and 6, Sherwood Street, Piccadilly Circus, W.

Studio Reflex.—Will you kindly inform me the most reliable firm I can get a really good whole-plate reflex camera (studio) with the finest lens, chiefly for the portraiture of children?—Reflex Camera.

Messrs. Fallowfield, 146, Charing Cross Road, W., supply a reflex camera specially for portrait work. Their instrument will take the largest portrait or anastigmat lens.

London Photographers.—Can you tell me where I can procure a list of professional photographers in London, with addresses of same? If such a list is not published, possibly you could give me the addresses of a few leading photographers, such as Elwin Neame, Elliot and Sons, Messrs. Downey, and others.—Inquirer.

You will find a list in "Kelly's Directory of London," a copy of which is doubtless in your free library.

Hypo Stains.—I should be very pleased if you will inform me, through the columns of your paper, how to remove stains from the negative that have been caused by drops of acid fixing falling on to it. I might say the bath is made up of sulphuric acid and sulphite of soda 1 part, to 7 parts of hypo.—E. B. R.

The bath ought not to cause stains unless it acts in some exceptional way—e.g., drops falling on an unfixed negative. Without seeing the negatives we are unable to advise you.

Portraits of the King.—1. Will you kindly tell me where to obtain negatives of T.M. the King and Queen, to make Coronation souvenirs for publication? 2. Which is the best Continental photographic paper for advertisements? 3. Can it be obtained in London?—Photol.

1. Apply to leading London photographers, such as W. and D. Downey, Ebury Street, S.W.; H. Walter Barnett, Knightsbridge, S.W. 2. "Photo-Revue," 118, Rue d'Assas, Paris. 3. No.

Avoiding Grain.—Will you kindly advise me, through the medium of your paper, the best way of making negatives from prints so as least to show the grain of the paper. The prints are in semi-matt Velox, views, and I am bothered rather with the grain.—J. M.

Use an even illumination, daylight or two incandescent gas-burners, one on each side of the copy-board. Also development has a good deal to do with the grain showing. Exposure should be sufficient for the plate to develop up easily without forcing.

Sepia Bromide.—Can you give me formula and details of any method of obtaining a real sepia plat. tone on bromide papers, and one which does not intensify the original print? Is such a formula practical, and are results as permanent as true sepia platinotypes?—S. E.

We know of no satisfactory substitute for sepia platinotype. You can obtain a fair sepia by the method of platinum toning given on page 770 of the "Almanac," under "Platinum Toning," but the method is costly and the results not permanent in every case.

Australia.—As I am thinking of emigrating to Australia, and should like the fullest information as to prospects for operators in that country, I should be greatly obliged if you could, in your next issue of "B.J.," furnish me with the addresses of (1) the Agent-General for Queensland; (2) ditto for Victoria; (3) ditto for Western Australia; (4) New South Wales, etc.—F. S.

(1) Hon. Sir Horace Tozer, 1, Victoria Street, S.W.; (2) Hon. J. W. Taverner, 142, Queen Victoria Street, E.C.; (3) Hon. C. H. Rason, 15, Victoria Street, S.W.; (4) Hon. T. A. Coghlan, 123-125, Cannon Street, E.C.

View Postcards.—I enclose two postcard views. No. 1 is my own taking, and is a self-toning. No 2 is by a London firm. Is it a P.O.P. gold toned, and how is the title put on? I have only just come across this competition, and wish to turn out just as good work. I shall be obliged by your reply.—Ogwen.

The No. 2 card is evidently an ordinary P.O.P. toned, but not overmuch, with gold. The title is done by the usual method of setting up the lettering in type, photographing an impression on a process plate, and transferring, by stripping, to the landscape negative. See the "Almanac," p. 751.

Book on Photography.—Could you, please, through your valuable paper, recommend us a good book on photography, dealing with all branches? We require specially portraiture, retouching, and lighting, but would like to get a book dealing with all subjects.—G. Williams.

The best general text-books on photography are purely on the amateur side, and we doubt if any one of them would answer your requirements. Our advice to you is to get handbooks on the special subjects, the best books on which you will find named in the "B.J. Almanac," 1911, pp. 854-855.

Copyright.—In the beginning of last year, on invitation, I secured a sitting from a local clergyman, and afterwards had the photograph copyrighted. To such members of his congregation and general public as wanted them I sold cabinet copies at 1s. 6d. each. Since then one of these copies has been reproduced, being used as an advertisement for a lecture by the clergyman photographed. Are the publishers or those who instructed them liable in the reproduction fee or does the selling of the copies mentioned nullify this?—J. C., Junr.

They are liable. The copyright being yours in the first instance, subsequent sale does not deprive you of it.

Engraved Plate.—I have a small line drawing, together with some large printed matter, in black and white, on a piece of thick drawing-paper. It is my wish to produce this drawing and printed matter, etched about 1-10in. deep on to sheet of brass. I believe that this could be done by some kind of photographic process, but I have been quite unsuccessful in my attempts up to the present. If you could offer me a suggestion on this matter I would feel greatly obliged.—R. Smith.

Better get a photo-engraver to make a zinco, and from this have a brass electro prepared. It depends on the original what depth you can get. From your description, we should not expect you will be able to secure so deep an etch as you wish.

Various.—1. Which is the best Australian photographic paper in which to advertise for a situation as operator and retoucher? 2. As an experienced man, age thirty-four, what wage am I likely to obtain there? 3. What is your opinion of the prospects there? 4. Do you know of any solution which I could spray with a scent-spray all over a bromide enlargement upon rough paper to give the shadows a gloss and not affect its permanence—that is, turn a matt surface into a semi-matt?—Burnt.

"Australian Photo-Review" (379, George Street, Sydney), or "Harrington's Photo-Journal" (386, George Street, Sydney). 2. Much about the same as here. 3. Not particularly brilliant; competition is very keen and prices severely cut, even by good studios. 4. We would recommend Lustralene, which is rubbed over the print, not applied with a spray. An alternative is to wax the print, and this often gives a very pleasing result.

Sulphide Toning.—I herewith enclose two sepia prints, and request you to fully criticise the colour of toning in your correspondence column, and suggest me the mistakes done therein. The quality of the paper is Wellington Platino-matt Smooth S.C.P., and the following solutions were used in the whole process:—

1.—Bromide Developing.

| | |
|---|---|
| Soda sulphite | 500 grs. |
| Amidol | 50 grs. |
| Potash bromide | 2 grs. |
| Water | 10 oz. |

2.—Bleaching Solution.

| | |
|---|---|
| Ferricyanide of potassium | 20 grs. |
| Bromide potass. | 30 grs. |
| Water | 5 oz. |

3.—Sulphide Toner.

| | |
|---|---|
| Sulphide of soda | 12 grs. |
| Water | 10 oz. |

—T. R. Thakar.

The tones seem to us to be very satisfactory, and we can suggest no improvement in procedure.

P.O.P.—1. What is the matter with the enclosed P.O.P.? I cannot get any depth with it; and there is quite a lot of it in the studio I have taken over. Is there any remedy? 2. Is it possible (beyond putting out of focus) to diffuse the image of an ordinary portrait lens? I have a Clement and Gilmer anastigmat. Would unscrewing slightly, the back, answer? 3. I also wish to keep some natural flowers in studio. Is there any way to preserve them, such as ivy, creeper, to twine on background? 4. The dark-room I have taken over is saturated with hypo. Persistent washing seems of no avail; the whole room glistens like frost. Would it be feasible to paint it?—R. J. S.

1. No P.O.P. has been received. 2. No doubt it would. Try it. 3. We can only suggest that you plant them in pots. 4. Your dark-room seems to be in a very bad way. We suggest you should scrub it well with hot water, and, if you do not mind the stain, put permanganate in the water. If the place still glistens like frost, it would appear probable that the trouble is not hypo at all. We should finally cover walls with American cloth and floor and benches with linoleum. You need not then fear any trouble with your plates.

BACKGROUNDS.—I wish to paint a background on ordinary fine canvas. How shall I mix the water colour to prevent the background cracking or peeling when rolled up, or do I have to treat the canvas first?—HONDDU.

Backgrounds are usually painted with distemper colour, which is made by mixing ordinary whiting with lamp black and any other colour to the desired tint—lampblack, whiting, and a little Venetian red give a very nice warm grey. It is advisable thoroughly to mix the colours while they are in a dry powder, as a better idea of the tint will be obtained, than mixing them wet. Common size dissolved in water is used to bind the colour, only enough being put in to prevent the paint from rubbing off when dry. The canvas should be stretched on a frame, or, failing this, on a floor, some old newspapers being placed underneath to catch any distemper which may come through. The distemper must be quite cold before using, and should be like thin cream, not a jelly. It works better if kept for several days. When it begins to smell badly and to froth on the surface it works much better than when freshly made. The evil smell will go off when the work is dry. Damp the canvas and work the colour well in. Remember that the colour will be much lighter when dry.

PRESS PHOTOGRAPHY, ETC.—(1) Am an inside man, but am now accepting a situation in which outside work (press work) will be part of my duties. I have the publication, "Photography for the Press." (2) What other publications are there to help me in this work? Also, is there a book published giving all the important coming events? (3) Should like to bathe my plates to get the greatest possible sensitiveness (not particular to exact colour rendering). What dye shall I use, the proportion, and where on sale? (4) Also, can the effect of the dye be removed after exposure, and how, so that development can be watched to overcome errors in exposure? Would I be working on wrong lines to attempt this?—PRESS WORK.

(1) The book is the only one of its kind. The best advice that can be given you is to study the papers for which your work is chiefly intended. (2) None that we know of, except the annuals dealing with sport, etc. (3) As a rule, you will not get increased speed except when you start with a medium speed plate, and then chiefly for artificial light. If you really require the greatest attainable speed for daylight work, apart from orthochromatic correction, you cannot do better than use the ultra-rapid plates of ordinary manufacture. (4) When plates have been bathed, the developer reduces red-sensitiveness to some extent, but it is, nevertheless, necessary to use a properly adjusted safe-light.

THREE-COLOUR WORK.—Sur le "B.J." je vous prie de me répondre aux questions suivantes: Je désire faire la réproduction de quelques tableaux à l'huile, au moyen de la Pinatypie, et comme appareil, je possède une chambre de A. Horn, à repeating back, pareille à celle de Sanger Shepherd and Co., du format 9 x 12 centimètres. (1) Quel est le meilleur objectif, apochromatique, pour faire les trois négatifs de selection? (2) Un tel objectif, est-il également bon pour faire des négatifs de sélection d'après nature? (3) Le *ratio* des *filtres* sélecteurs est fait ordinairement à la lumière du jour: mais se sert-on de la lumière en *plein air* ou dans l'atelier? (4) La teinte d'un ciel *bleu*, peut, de quelque manière, avoir quelque influence sur le *ratio* des *filtres* ou sur la vraie couleur des objects?—B. S. L.

Probably as good a lens as any is Zeiss' "Apochromatic Tessar," a cheaper lens, that is most excellent for colour work, is the Ross "Homocentric." (2) Such a lens will do equally well for other purposes. (3) The ratios of the filters should be found for the conditions of lighting to be actually used. They should not, however, be much, if any, difference between the ratio required for work in a daylight studio, and the ratio for open air. (4) It is possible that the ratio might slightly alter under an extremely blue sky, but in England we have never suffered unduly from this. If the ratios are correctly adjusted the reproduction of the colour of the objects should be as they appear. This is their "true" colour under that particular light, although it may not be the same under some other form of lighting.

GROUND GLASS IN ENLARGING.—I notice a paragraph in your number for December 30 recommending the use of a piece of ground glass in the enlarging lantern. I should be glad to know (1) where it should be placed, i.e., close to or away from the condenser, and (2) whether it is likely to help me in the following case. I have a lantern, with 7-inch condenser, which I use with a 6½in. Protar lens, working at $f/6.3$, and a Nernst lamp, for enlarging from 5 x 4. As I usually only require a x 2 or x 3 enlargement the exposures are sometimes inconveniently short for accurate timing with a cap or test exposures (from one second upwards); but I cannot stop down the lens, because the image of the lamp filaments comes into focus, and I cannot move the lamp farther back than the body of the lantern allows. The maximum distance from condenser to filament is 7 inches. (3) Using rather thin negatives (such as give a decidedly flat print on platinotype), I have been getting very harsh results in the enlargements, and generally of a bad colour. If the exposure is increased with a view to softer results, the colour departs still more from true black or grey. My experience of enlarging has been mainly with a daylight enlarger, with which I never had any difficulty in producing good tones, using a dilute Ortol developer and Wellington Platino-matt bromide paper. (4) Would the use of a slower paper be likely to help me, or will the ground glass behind the condenser be of any use?—AQUARIUS.

(1) For the simple purpose of diffusing the light it is best to put the glass as near the light as possible, as this position does not lead to such a great increase in exposure. (2) The ground glass will necessitate a longer exposure, and will have the greatest effect in this respect if kept well away from the light, especially when placed between condenser and negative. Also, the interposition of the ground glass will enable you to use the lens stops, so that it will help you in two ways. As you may have a difficulty in getting the glass between light and condenser, we should experiment by trying a piece behind the negative. If this cuts down the light too much you should get the lantern altered in such a way as to permit the glass to be put behind the condenser. With a Nernst burner we should advise the use of ground glass in any case. (3) The colour of the enlargements may be due to the developer, and the harshness may be remedied by ground glass immediately behind the negative. We should try this, and also experiment with amidol instead of ortol. (4) A slower paper would, we think, be likely to give even greater harshness.

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## The British Journal of Photography.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2646. Vol. LVIII. FRIDAY, JANUARY 20, 1911. Price Twopence.

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## SUMMARY.

Some perplexing defects produced on a particular batch of plates by tank development is the subject of a letter from Mr. Gordon Chase on page 53.

Sparkle without hardness in portraiture by artificial light is the subject of a hint on page 38.

The recent paper, read before the R.P.S. by Mr. A. J. Lyddon, describing a method of colouring and finishing photographs in oil by means of a special medium, is printed on page 40.

The professional photographer can save himself trouble in replenishing his show window by keeping a separate index of negatives suitable for the purpose. (P. 38.)

A correspondent recommends "Christia lint" as a suitable backing pad for negatives in the printing frame. (P. 54.)

One or two reminders on posing arms and hands in a portrait will be found in a note on page 38.

Particulars have been published of an improved form of starch for mounting purposes. (P. 44.)

An American worker, Mr. W. S. Davis, has brought together the essential hints for success in moonlight photography. (P. 42.)

At the Optical Society last week Mr. T. Smith, of the National Physical Laboratory, read a paper describing the results of tests of photographic shutters. A brief report of the paper appears on page 50.

The adoption of the principle of the thermos flask to tanks for development is the subject of a leading article on page 39.

In an editorial note we comment on recent methods of preparing lantern-slides direct from positive prints. (P. 38.)

A hint on modifying the enlarging lantern for use in making slides by reduction is given on page 37.

A self-portrait studio mirror, plate-racks, and a shutter-speed control occur among "Patents of the Week." (P. 46.)

The Scottish Salon is able to record a most satisfactory attendance, over 30,000 persons having visited the exhibition during three weeks. (P. 52.)

Foreign process schools, the Levy screen, and economies in process work figure under "Photo-Mechanical Notes." (P. 45.)

## EX CATHEDRA.

**Small Enlargements.** It seems to be an article of faith with some photographers that no customer can possibly want an enlargement less in size than ten by eight inches, and in consequence many orders are lost. Photographs are much less in evidence in the average home than they were formerly, and, except with the working classes, there is a growing disinclination to show mechanically finished ancestral portraits upon the walls. A visit to one of the more important photographic exhibitions should suggest that to a cultured class a picture measuring, say, 7 by 5 inches, soberly mounted and framed, is much more likely to be acceptable than one eight or nine times larger, even at the same price. The old C.D.V. portraits, from which so many orders for enlargements come, lend themselves excellently to this style of reproduction. By suitable control in printing, and especially by the use of an oil process, it is possible to get a rich effect from a very poor original, the aggressive furniture and ugly costume being almost merged into the background, while the features retain their original value. For lighter effects platinotypes, with the dress barely indicated in the print, and carefully finished in pencil, will be found most suitable, a light gilt or polished wooden frame being appropriate. The object of the better-class photographer is to produce something that the modern picture mills cannot turn out for a few pence, and small pictures, well finished, tend to this end. It is now possible to get a well-finished 15 by 12 sepia bromide for three shillings, quite equal in appearance to pictures shown by the older West End firm at from three to five guineas, hence the necessity for a distinctive style. Many of the cleverest of the modern school of portraitists will not concern themselves with the attempt to make an artistic picture from some one else's inartistic portrait, but this is so much the better for the technically skilled photographer of artistic instincts, especially if he commands the services of a clever finisher.

* * *

**Slide Work and Extension in Enlargers.** Whether from considerations of space, cost of apparatus, or convenience and ever-readiness in working, the professional requires apparatus which will serve a variety of purposes. We are no advocates of the pen-knife which becomes a joiner's tool-chest on occasion, but in purchasing a camera we should, other things being equal, prefer to get one which focussed from the back instead of, or as well as, from the front, simply because, for copying work to any pre-determined scale, such an arrangement renders focussing-up an easier and more quickly accomplished undertaking. We have recently been working with an enlarging lantern which fulfilled the functions of an enlarger admirably, but when we wished to reduce some half-plates to lantern slides we found that the extension was a mere trifle too short. The lens we had in use was, if anything, rather short in focus for the half-plate condenser, being eight inches where we should have preferred nine inches. Examination of the base-board showed that it would have been an easy matter to give another six inches of extension, and this would have been ample for our purpose. Of course, we resorted to a shorter focal length lens, but the only one at hand at the moment did not fit the same flange, and the screw had to be wound round with fine twine and then screwed into the flange thread. In some cases a temporary panel might have had to be cut. Where a number of lenses of varying focal length are at hand, fitting the same flange or fitted with adapters, all is well, but the point is one which might be seen to by the makers when designing an instrument, and should be seen to by the purchaser when selecting one.

* * *

**Posing Hands and Arms.** In most cases the hands and arms are as characteristic as the face, and although outsiders might not be able to recognise a lady by her hands and arms there are little points in the positions which a sitter assumes which are so characteristic as to be at once recognised by her intimate friends as very natural. These spontaneous poses should always be watched for and secured whenever possible, but in doing this care must be taken that an unsatisfactory view of the position is not obtained. A hand, for example, may be badly foreshortened if taken from one position, while by moving the camera a little, and, if necessary, turning the sitter's head towards the camera, an entirely satisfactory picture may be obtained. A point which needs constant watching when the sitter is in evening dress is the thickening of the muscles of the forearm, and consequent appearance of muscularity. If the elbow is much bent, so that the forearm is brought up against the biceps, this thickening will almost inevitably be produced where the sitter is at all inclined to be fleshy. With such sitters the arms should not be bent, as in a pose, say, with the hand to the cheek, and special care should be taken to keep the hands and arms from being nearer to the camera than is the head. Rarely should an arm be posed with the wrist straight, that is, with hand and forearm in a straight line. An abnormal length from elbow to hand is suggested. A bent wrist prevents this, gives a more graceful line, and the appearance of a smaller hand, a point which is always appreciated.

* * *

**Sparkle in Electric Light Portraiture.** Judging from the specimens one sees of portraiture produced by electric light installations, the principal difficulty would appear to be to get sufficient sparkle in the modelling and at the same time to avoid unduly heavy shadows. Either a strong, flat lighting from the front is employed, when poor modelling results, or a side light is used, the shadows being harsh unless they are softened by means of a reflector, which is not infrequently so placed as to produce cross lighting of a very vicious kind, and also false reflexes in the eyes. What is wanted for general work is a light a little in front of the sitter and coming at an angle of about 45 degrees. The area of illuminated surface which forms the source of light for the purpose of lighting the sitter should be something like 5 ft. by 4 ft. for head and shoulders, or half-length pictures. This illuminated surface may be a large reflector on to which the light from the arc or arcs is directed, or it may be a diffusing screen, if direct instead of reflected light is being employed. Assuming a light of ample power, a second diffusing screen may be interposed between the light and the sitter, a kind of glorified head-screen, in fact, six or seven feet square. Such a screen need be nothing more than a light frame covered with tracing cloth and suspended from the roof by means of thin steel wire. The sitter will now be lighted very softly and shadows will be present, but will be in consonance with the adequate rendering of flesh tones. The high-lights, however, will require a touch of sparkle, and this may be obtained by cutting a hole about 2 ft. in diameter in the screen, so that a beam of more direct light reaches the sitter. In this way a combination of softness and sparkle so desirable in portrait work may usually be obtained.

* * *

**Lantern Slides Direct by Reversal.** This appears to be a subject of general interest, judging by the numerous methods that have been published. The basis of all is naturally the Autochrome method, which is delightfully simple, though workable only with the Autochrome film, and not with the much thicker film of an ordinary dry-plate. The difficulties in the way of producing perfectly clean and satisfactory results seem to have been first surmounted by Mr. D. J. Carnegie, and the modified process described more recently by Mr. Balagny and Dr. D'Arcy Power differ from the Carnegie process in only one important respect, and that is that the first black negative image is dissolved away *after* the second exposure, instead of before it. This is not a very essential difference, because the red image left by the Carnegie solvent solution of ammonium bichromate and nitric acid affords just as efficient a protection to the underlying silver salt as does the black silver image. Dr. D'Arcy Power, in his article which we published last week, claims as an original improvement the exposure of the plate through the glass when making the original image, but this was an essential feature of the Carnegie process, and even then was not an original device, as Messrs. Arthur Payne and Fenske both suggested it earlier. The use of a black dish for protecting the reverse side of the film was another feature of the same process. With regard to the question of making the second exposure before or after the application of the silver solvent, the first-mentioned procedure, as recommended by M. Balagny, seems to be open to the objection that the reversing-bath ultimately used seems likely to undo the effects of the second exposure. It is, indeed, the solution sometimes used for restoring fogged plates, and we are somewhat surprised that the plate will develop at all after its application and without the assistance of further exposure. The same idea no doubt deterred Mr. Carnegie and the earlier experimenters from trying this expedient. The other method has the advantage of allowing exposure and development to proceed simultaneously, and in this way time is saved. It is also noteworthy that the washing after reversal was limited to one minute in Mr. Carnegie's method, which is a considerable saving as compared with the twenty minutes advocated by Dr. Power.

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**An Index to Specimens.** The furnishing of the showcase or window with specimens is, to many photographers, the most irksome part of their business. There is no immediate return from it, and the trouble of hunting for suitable negatives is often a deterrent for such a period that positive harm is done by the exhibition of soiled and obsolete pictures. Some photographers trust to over-printed orders and rejected proofs for specimens, but such a practice is hardly to be commended. Specimens should naturally be examples of the very best the photographer can do, and, needless to say, the ordinary run of work should be kept closely up to standard. A very simple aid to the regular provision of good specimens will be found in a special index of negatives suitable for specimens. As soon as the order is completed the number and a brief description should be entered in a small book kept for the purpose. Thus:—19387, Williams' group of three children, cabinet; 19746, Thompson, head of old man with beard. This would enable a well-chosen set of pictures to be promptly put in hand when required. It is always desirable to ask permission of the sitter before exhibiting a portrait. This is rarely refused, often being given by a person who would otherwise strongly resent it. In many cases, if permission is asked for an enlargement to be made and exhibited, it results in an order for the picture, after it has been shown for a few days.

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## PRESERVING TEMPERATURE IN DEVELOPMENT.

In a recent Ex Cathedra note referring to the troubles caused by a fall of temperature when developing in a tank we remarked that no developing tanks are yet constructed on the Thermos flask principle. It is, however, obvious that they could be so constructed without any very great difficulty, and such tanks would be of great service.

The principle of the Thermos flask is simple enough. The flask is a double one, one flask being hermetically sealed inside a larger one in such a way that the inner flask is surrounded by a vacuum incapable of conducting heat either away from or into the contents of the flask. A metal tank could quite easily be constructed on the same principle, and, indeed, it is not a difficult matter for any photographer to make it for himself if only he can use the soldering iron. A brass tap with nozzle for rubber tubing should be soldered into the outer jacket, and then by connecting this to an ordinary filter pump a quite sufficient vacuum can be produced and maintained as long as desired. We may note that a very powerful pump for use on an ordinary water tap can be obtained for one and ninepence, so the cost is not prohibitive.

A tank of this kind would have many advantages. By letting air into the outer space and putting a lamp under the tank we could warm up the contents to any desired temperature. When the right temperature is reached the air could be rapidly exhausted and the lamp put out, and then the contents of the tank would retain the temperature for quite a long time; not quite so long as a Thermos, because metal is a much better conductor of heat than is glass, but still, quite long enough for most photographic purposes. Another, and perhaps simpler, though not so effective a method of preserving the temperature would be to put one tank inside another, filling the space between the two with slagwool or asbestos rammed in very tightly. Dishes can, of course, be constructed on similar principles, and seeing the universal nuisance that low temperature is to photographers in this country we are somewhat surprised that manufacturers have not given attention to the construction of both tanks and dishes calculated to minimise the trouble.

It may be as well to point out that the chief thing the photographer should guard against is a change in the temperature during development. If the temperature is rather low but keeps the same throughout development, then a little extra time will give practically the same result as development at a higher temperature, but if the temperature falls during development the gradations of the negative are materially affected and very much falsified. In the absence of any effective means for preserving constant temperature, prolonged development should be avoided in cold weather, for the longer the time the worse are the effects.

Now that flasks, etc., constructed on the principle of the Thermos have been put upon the market at prices of only a few shillings the photographer may well consider the uses to which they may be put in the dark room. Obviously one use is that of keeping a supply of water for development purposes, while another is that of keeping a stock of developer ready for use. All we need do is to first adjust the solution to the right temperature and then put it in the flask, when it will remain practically at that temperature for many hours.

With the aid of a supply of hot water it is quite easy to adjust temperature if we go the right way to work, and as so few as yet seem to know the right way we describe it, though we have already done so in a previous leader. Suppose we want water at sixty-five degrees. Take some cold water, find its temperature, and note how much it is below sixty-five. Next do the same with some hot water, and note how many degrees it is above sixty-five. These are the only readings required, and the numbers obtained give at once the quantities of hot and of cold water that when mixed will give a temperature of sixty-five degrees. If, for example, the cold water is fifteen degrees too cold and the hot water thirty-five degrees too hot, then thirty-five parts of cold water added to fifteen parts of hot water will give us a supply of water at sixty-five degrees. Suppose, again, we want to use ten per cent. rodinal for development. We proceed in the same way. If the rodinal is fifteen degrees too cold and the hot water thirty-five degrees too hot we add thirty-five parts of rodinal to fifteen parts of hot water, and then add enough water at sixty-five to make 350 parts in all. Putting this into a flask, we have a stock of developer ready for use and at a normal temperature which will be retained for many hours. We may mention that we have such a flask in use for this very purpose, and we find that if it is filled in the morning with developer at about sixty-five degrees F. the temperature does not drop more than one or two degrees by the night, though other solutions put in ordinary bottles may fall ten degrees or more.

Of course, it is of little use putting the developer into a stone-cold dish, for this will bring about a rapid fall of temperature at the worst possible time, that is, during development. To avoid this effect we recommend the worker to give up the use of porcelain or glass dishes for development during the winter months, and instead to adopt vulcanite or xylonite dishes. Wooden dishes are very serviceable for large work. Naturally, a warm plate of some kind upon which the dish can be stood would be a very desirable thing, but so far as we know, only one maker, Messrs. Griffin, supply such an accessory. It is, however, not difficult to arrange some such device, and we have often watched a friend working quite comfortably throughout the day at normal temperature with no more elaborate appliances than a biscuit tin and a bunsen burner.

A large empty biscuit tin with the lid on was placed on a tripod stand with the bunsen underneath. On the top of the tin the dish filled with water, and also the bottles and measures required, were all grouped together. A thermometer was placed in the dish and watched occasionally for the first half hour. The burner was adjusted from time to time in accordance with the readings of the thermometer, and after a few adjustments the apparatus could be relied upon for the rest of the day. Of course, everything put on the box was first warmed up to the right temperature, then if the thermometer ultimately fell more gas was turned on, while if the temperature rose the gas was turned down slightly and the lid of the box removed for a few moments to allow cold air to enter.

# FINISHING PHOTOGRAPHS IN MONOCHROME AND COLOUR.

(A paper read before the Royal Photographic Society.)

The purpose of my appearance before you this evening is to demonstrate some advances in the modes of finishing photographs. These, while essentially professional in their nature and giving the finisher a facility of work over all other methods, both in variety of technique, rapidity, and value of result, at the same time do not lose sight of, but rather give an impetus to, our aim at the Polytechnic to raise the artistic quality of finishing. As to our ideals in this respect, if we have not already attained them yet I have been encouraged by a well-known artist, who has expressed his approval of the methods as being greatly superior in results to ordinary methods. As to the professional value, a photographer who has a very large output told me they are the smartest things in finishing he has ever seen.

I suppose it is not often that an artist submits to the loss of artistic friends as I have done. To be looked down upon from their greater eminence as only a photographer was galling, but it was in the hope that it would be possible for me to help to make the art of finishing a real art. To give the student the benefit of artistic knowledge that I have gained by hard work and training, and to enable him to use that knowledge thoroughly in his own particular branch, has been my aim. To this end a knowledge of surface anatomy and the action of the muscles of expression, not only by diagram, but with the living model, is taught—of course, as a painter has to learn them, not a doctor. Also without going into the chemistry of colour, in which I had the benefit of a course of instruction at the Academy Schools under Professor A. H. Church, I give a palette in which not only are the colours as permanent as it is possible to have them, but with the added benefit, that in mixing, no care need be taken to prevent deterioration by the chemical action of one on the other. I also give a diagram of mixtures of colours to give the complementary colours to use in dresses, backgrounds, etc.

One has many discouragements, and no doubt they will come over these newer methods because they clash with the conventional in photography. That is the fate of every new thing at first, because the eye is not accustomed to it. However, these methods are very elastic and give results which are tinted photographs, as delicate as you like and as photographic as you wish, or, in skilful hands, results which look like a sketch with very little photographic basis. But, if I have my discouragements, I also have my encouragement. Three students who have learned with me right through, from tinting photographs to painting ivory miniatures without a basis, have exhibited two of them in the Royal Academy and one in the Dublin Academy. One of these students, a lady, was showing at no less than nine art exhibitions in one year.

In finishing professional work, surface finish covers a multitude of sins. Have a surface finish by all means, but let it be a drapery over truth that it covers but does not conceal. The true basis of good finishing, I take it, from the photographic point of view, is lengthening the gradation, while the underlying principles of art are employed to beautify and eliminate ugly form, correct tone values and mass the lights and shades by suppressing unimportant detail. I have purposely left out the putting in of detail, as this is a very prevalent fault with most finishers. Why detail where a blaze of light blurs it, or where absence of light does not reveal it? Shadow is an appeal to the imagination and gives that sense of mystery which is so essential to art, and insistence on excessive detail in the high lights only makes them muddy.

A few fundamental truths well rubbed in materially assist the student once the manipulative difficulties have been mastered; I will give you some of these truths in tabloid form:—

First point.—Highest lights and deepest darks are always small.

Second point.—The tones next in strength to both should be broad, and certainly in the case of shadows, not cut up with detail.

Third point.—A cast shadow is always darker than the shadow side of the object casting that shadow, unless there is a difference in colour value of the two surfaces.

Fourth point.—Darkest darks are usually near the highest lights. This is by reason of the cast shadow. Another cause of this is that the broad mass of shadow shows a certain amount of reflected light which the eye does not easily detect in a small shadow.

Fifth point.—Shadows with definite shapes are darker towards the edges. This, if acted upon, would stop that fluffy softening off which too often covers a lack of knowledge of form.

Sixth point.—In monochrome do not, except broadly, try to represent colour value by tone value. You see the futility of this if you try to show the pink of a cheek by using black lead. On the other hand, it is necessary that the light on dark hair should be many tones darker than the light on a face; and, again, the light on a white collar lighter than the light on a face. If colour value is not represented thus broadly you would only get the effect of a marble bust.

Seventh point.—There are no mechanical curves in nature, but each curve is made up of straight lines of varying length.

Eighth point.—There is no such thing as outline. Form should be represented by tone values and planes.

Ninth point.—Variation in form, tone, and spacing.

Tenth point.—That a following of form by a similar form is incorrect.

Eleventh point.—That curly hair depends for its beauty on a straight line.

Twelfth point.—That a background is necessarily behind the figure.

Thirteenth point.—That the direction of slight form in the background will often correct an ill-balanced figure.

With these few truths remembered and put into practice, and a due mastery of the mechanical medium added, the student has made a good start.

In colour finishing the principles are the same as in black and white, with the addition of colour value. In painting, pure and simple, you have to make your colours the proper tone value. In colour finishing you have a tone basis which you have to kill, if you are to approach pure and clean colour. This necessitates the use of brighter and more transparent colours than in ordinary painting. You have a wider scope, inasmuch as you have the subtle factor of colour value to express form as well as tone value.

Before leaving this section I would like to remark that a finisher is first or third rate according to his faculty of observation. That is the great thing needful. If the knowledge is in his brain, his hand can convey it. Lack of observation is fatal to art. I saw an old coloured print while in the Trossachs, of Christ blessing little children. His beard was joined to the hair behind the ear. Some years ago I came across a landscape with cattle. It struck me as being peculiar, but in what? One of the cows was in the act of lying down hindquarters first; in fact, sitting down. A very curious breed that! And have we not all seen the highly finished enlargement with eyes that would be a physical impossibility to close, or mouths that, if the person yawned, would split across the cheek, because the structural form had been disregarded? not to mention the numerous enlargements with collars as white on the shadow side as on the light. Of course, white takes a shadow the same as everything else. Of course, the finisher must not see too much, like a celebrated deceased Academician who used to paint eye-lashes on his cows which were at least a quarter of a mile distant. Have you heard of yet another Academician who painted long after he should have retired? He had a predilection for painting angels—possibly because he did not have to pay his models. Once he painted six toes on one of the angels' feet. On varnishing day one of his brother R.A.'s kindly painted the feet afresh with the usual number of toes, but could not help remarking to him afterwards, "Why, man, whoever saw an angel with six toes?" With a successful wriggle, the old painter gave his answer. "Well, did you ever see one with less?" All of which proves that unless you apply common sense to your observations and train the eye properly, perhaps you had better keep to the conventional.

Coming now to the manipulative side of the subject, what does a good finisher look for in his materials? Taken broadly, three things:—

(a) Their suitability of matching tone and surface.

(b) The ease of their modification or removal.

(c) The rapidity of their application.

Let us take the advantages and disadvantages of several of the older methods of finishing.

### Chalk Finishing.

Advantages.—Ease of modification and removal. Fairly rapid.

Disadvantages.—Needs preparation by pumicing. Difficulty of matching tone and surface. Requires fixing.

### Monochrome Water-colour Wash Work.

Advantages.—Ease of matching tone and surface and easy to remove. Requires no fixing.

Disadvantages.—Not easily modified, difficulty in flowing on flat washes without hard edges, also difficulty of applying a second wash without removing a first wash in patches. This does not apply to Platinotype paper; but with this paper there is an added difficulty of removal without detriment to the surface. Slowest of all methods.

### Aerograph Work.

Advantages. Rapidity of work. Can be used on any surface including negatives. Ease of removal.

Disadvantages.—The mechanical difficulty has to be mastered. Not easily modified. Tends to monotony by reducing various materials to one kind of surface.

### Finishing Imitation Silver Point with Lead Pencil.

Advantages.—Easy of removal, modification, and matching tone and surface.

Disadvantages.—The finisher must know lineal perspective and how to apply it and to be able to sketch to obtain the best effect.

### Pastel Finishing.

Advantages.—Ease of modification and alteration of colour.

Disadvantages.—Small detail hard to manage. Obliterates the basis if worked as pastel should be worked. This necessarily requires a finisher who has had a training in drawing. Must be fixed. This operation spoils the subtle and delicate beauty.

### Oil Finishing.

Advantages.—Easy to cover surface or to paint out mistakes. Defects in the photograph removed with facility.

Disadvantages.—Obliterates the basis. Being essentially an impasto process only a trained artist should attempt it; but as this is not always possible a finisher will compromise by using his paints transparently, which is the essential attribute of water-colour, but using a more or less thick medium, which gives an oily surface, with the result that the shadows look like a water-colour glazed with gum; the lights painted impasto look like an oil painting. Thus you get neither the one thing nor the other.

We now come to the improved method of finishing, which I propose demonstrating. In result it has the appearance of a water-colour, but with all the ease of working in oil.

The advantages of the new method over the old ones, even in the three elementary heads that we noted a finisher would require, are:—

(a) Suitability of matching tone and surface.—It will match any tone or colour and any surface, rough, matt, or smooth, or the shadows can be made just short of being matt to give richness, or the whole can be made semi-glossy, or if preferred, varnished when dry.

(b) Ease of modification or removal.—Perfect in both ways, and portions can be removed without leaving hard edges, or the whole removed, leaving the surface as it was originally. No fixing is required.

(c) Rapidity.—Quicker than the Aerograph, while it can match varying surfaces of material, thereby allowing for individuality in the work.

### Other Advantages.

No preparations of the print necessary.—Colour permanent if you use the palette of which I shall give a list later. Correction, spotting, or stippling can be done when dry with ordinary water-colour which takes easier than on the ordinary bromide paper.

Tone value may be altered or colour added by the Aerograph, or the actual modelling may be accentuated by working with lead pencil even over colour work. But with a little practice with the first process, with the exception of spotting, one can soon dispense with these aids.

There are two disadvantages compared with processes other than oil finishing.

(a) It takes about twelve hours to dry.

(b) Work in the first process must be finished at a sitting.

The essentials of this process are:—

(a) The paper must have an oil resisting surface such as gelatine, medium rough bromide paper being the most suitable.

(b) For colour finishing the print should not be quite fully developed, but coming near to a perfect enlargement.

(c) It should not be pumiced in preparation for the work, or spots scraped; in a word, the surface must not have been abraded, as it is detrimental to colour and permanency if the oil should penetrate through these abrasions.

(d) If a smooth paper is used, I should advise a little of No. 1 medium being rubbed over and left on to prevent hard edges. This is best applied with cotton wool.

There are two mediums:—

No. 1, which is used for all matt surface work.

No. 2, for dark shadows in matt surface work if you wish them not to "dry in" or what an artist would call, technically, "bloom."

No. 2 medium is used for semi-glossy paper.

The outfit for this process, both black and white and colour, would comprise a white wood palette, palette knife, double dippers, a selection of hog-hair brushes, one or two sable brushes, a soft rubber, plenty of cotton wool, and No. 1 and No. 2 medium.

The list of colours is a restricted one for the sake of permanence. Flake white, aureolin, raw sienna, burnt sienna, rose madder, vermilion, light red, ultramarine, transparent emerald oxide of chromium, burnt umber and ivory black.

You will see that up to the present I have only dealt with bromide paper. This is chiefly because the ordinary variety does not require preparation, but some platino matt papers, together with platinotype paper, will need the application of some oil resisting surface, such as gelatine. Professor A. H. Church, in his course of lectures on Chemistry of Painting at the Academy School, recommended a specially prepared collodion for the priming of canvas, and I think this could be used equally well as a coating for absorbent papers. I may remark here that the method of work I am demonstrating is still in the experimental stage, but the measure of success obtained promises well for the broadening of the basis, so that it can be used on all papers.

New work looks strange at first, because one is unaccustomed to see startling changes in method, but the examples shown here are varied and perhaps daring, in order to show the scope of the process. You can have it as photographic as you will, or so sketchy that one doubts if it have a photographic basis, while its possibilities for expressing various fabrics are also shown.

Up to the present we have dealt solely with portrait work, but not because this is the only field of usefulness. In landscapes sky effects can be tried and altered time after time till one gets the right effect. This can be done to produce a finished result, or merely to arrive at the kind of sky suitable to print in. Body colour—that is, opaque colour such as flake white—can be used sparingly in colour work, but I do not advocate it, and it is most unsatisfactory in black and white work on the print, whatever medium you use, but I should say it could be used to force the contrast of a print if it was then copied. In this paper I have merely touched on a few of the points which constitute finishing when raised to an art.

I am well aware of its shortcomings, more especially one, that I am not a lecturer, but essentially a worker and a teacher, and as such, accustomed to marshal and condense the salient points. With this explanation I will conclude, trusting you will overlook the disintegration which would not be so apparent in the paper of a trained lecturer. **Albert J. Lyddon.**

At the conclusion of his paper, Mr. Lyddon proceeded to give a demonstration of his new method. Taking a portrait enlargement, which was upon the easel, he rubbed a little of the medium over it, although, he said, this preliminary rubbing was not always necessary and was done on this occasion owing to the warmth of the room. After one or two minutes he proceeded lightly to put the colour on with the brush, and then rubbed it over with a pad of cotton-wool, producing in a very short time admirable flesh and hair tints. Where the colouring had gone slightly over the outline of the face he was able to remedy the defect with the application of a little of the No. 1 medium and the sable brush, wiping out with cotton-wool. In applying the colour to the eye, he pointed out that in this case the cotton-wool should not be given a rubbing action, but that it was sufficient merely to put the wool on the spot and give it a slight turn round. A very slight streak or two of colour sufficed for the background after it had been rubbed in with the cotton-wool, and the least touch of black was able to make it darker. In laying on the colour for the background it was necessary to bring it up to the face, and to work away from the face with the cotton-wool.

Subsequently Mr. Lyddon gave a demonstration of finishing a landscape in monochrome. The landscape was one which purposely had not been properly printed, in order to show the amount of variation that could be obtained upon it. In black and white work, unless blue-black were used, one was not sure of his colour. In working with ivory-black it was well to mix with it a little French ultramarine. It was necessary, if the after-work was not to show, that the medium should go over every part of the surface of the print, although the paint need not do so. He demonstrated with what facility sky effects could be obtained, and also the ease with which it was possible to remove the work done, reproducing the original flat-looking print. If it was required to darken any portion a clean brush should always be taken and the paint used nearly dry. The demonstration was highly successful.

# MOONLIGHT PHOTOGRAPHY.

[In the following article in our New York contemporary "American Photography," the author, Mr. W. S. Davis, admirably sums up the essentials in effective photographs of moonlight scenes, and gives a useful series of hints as to methods to the success of which the reproductions of prints from his own negatives clearly attest.—Eds. "B.J."]

Night photography has within a few years attracted considerable notice, and at least one society is now devoted to its advancement; yet practically all the work accomplished so far has been done with the aid of artificial light. Very beautiful studies of buildings and street scenes illuminated by incandescent or arc lights have been obtained, it is true, but I believe equally interesting and pictorial work may be done in the open country by moonlight only, and, considering the fact that town views by electric light are not available to every worker, this hitherto neglected branch of night photography should prove of interest to many.

In calling it a neglected field of work I do not forget that winter views occasionally appear, but they are few in number, and are always taken when there is snow on the ground. The other views which pass as "moonlights" are simply "fakes," made by snapping against the sun with the shutter set at high speed; and, however pleasing the results obtained by such a method may appear at a glance, they cannot, in my opinion, compare in interest with genuine night scenes.

While I have been interested for several years in moonlight effects as subjects for paintings, it is only recently that I have done any systematic photographic work by night; still, having kept careful notes regarding that already accomplished, it is hoped the information given here will prove of practical value to others who may be interested.

### The Effect to be Rendered.

Before taking up the technical side of the work, it may be well to consider the salient features of night scenes, for, unless one understands both cause and effect, it is impossible to produce with certainty in a picture the sensations conveyed to the mind by a particular effect in nature, and all the knowledge possible regarding chemical and mechanical manipulations, important though they be in making one master of the means of expression, will not be of any service if a proper understanding of the *subject itself* is lacking. However, so far as this phase of the matter is concerned, nothing which one may say can take the place of personal observation, and those interested should never lose an opportunity of getting out in the open and studying directly from nature; so what I have to say should simply be taken as suggestions regarding the most important features which should be especially noticed.

### Masses and Shadows.

Probably the first impression generally produced by moonlight is a feeling of vagueness about the forms of individual objects composing the view, which, instead of standing out separately with more or less distinctness of outline, as they do by daylight, are grouped together into broad masses of dark tones with shadows of mysterious depth and impenetrability, in which the lines of the minor parts are fused or blended together until they are quite lost in the uniform tonality of the deepest shadows.

The half-tones will form but a small part of the whole, unless one is looking over flat fields, meadows, or water. Their proportion will, of course, vary according to the height of the moon.

If the moon is within the composition it should be the brightest spot in the picture, and the other "lights" must give way to it, but if not included, then its reflection on the edges of objects against the light, or upon the water, will constitute the lightest tones of the picture. In either case the high-lights will be concentrated on a clear night and somewhat diffused on a foggy or hazy one.

### Rules in Moonlight Photography.

From the foregoing observations these general rules suggest themselves:—

1. The transition from half-tones to shadows, or vice versâ, must be extremely delicate, and the dark and half-dark tones will be largely in excess over all others.

2. The deepest shadows should be flat in tone, and not contain much, if any, detail. This does not mean that they should necessarily be represented by pure black in a picture, but rather a dark grey, for the diffused light in the atmosphere is generally sufficient to produce a sense of greyness in the deep shadows, especially in and beyond the middle distance.

3. Keep the highest tones together near (not in) the centre of the composition. By so doing there will be a gain in brilliancy without loss of delicacy, and as the darker tones surrounding them melt in with the margin of the picture, the feeling of space outside the limits of the composition will be increased.

If these points have been secured in the negative one should have a good basis to work from, but as it is the print which tells the story of success or failure, a note here regarding the "key" in which the finished picture should be pitched may be in place.

### The "Key" of the Moonlight Photograph.

We know that moonlight is many thousand times weaker than sunlight, and theoretically a scene illuminated by moonlight would be proportionately darker, yet experience proves that visually such is not the case, and a study of successful pictures of moonlight shows that they need be not much, and sometimes no lower in tone than many daylight effects, as the feeling of night is secured rather by the proportion and distribution of the various tones than by their depth, as already suggested.

This lessening of the differences in tonality between day and night scenes may be accounted for in several ways. From a visual point of view, the eye, not being able to measure accurately the immense differences in intensity of light which can be demonstrated as a scientific fact, accommodates itself by the use of an iris diaphragm which closes in strong and opens wide in feeble light; so the retina never receives the impression of as great a difference as really exists. Pictorially considered, one thing which helps an artist is that every picture must be regarded by itself, independent of the relative tonality of others by which it may be surrounded, which is fortunate, as the tonality of all works of art is limited by the physical, one might say conventional, tonal scale to be found between the extremes of pure black and white. Such being the case, it follows that the success of a picture depends not upon giving the actual contrast found in nature (which, as shown, is impossible), but upon the vividness with which the work *suggests* to the mind of an intelligent observer the *actual subject* as seen by the artist. For this reason a selection of those tones which are nearest in *relative* value in our limited scale to those in nature will serve to produce a sufficient illusion to convey the desired impression.

Having only touched upon the very important subject of "values," I would recommend to those who wish to look into it more thoroughly a careful reading of the chapter on that subject in Birge Harrison's book on 'Landscape Painting" (published by Messrs. Scribner's Sons), which, by the way, contains much other information of value to photographers who are working for pictorial results.

### Suitable Compositions—and How to Seek Them

In arranging the composition of a moonlight picture it is most important to consider well the lines formed by the edges of the objects against the sky, as much depends upon the pleasing decorative quality which these possess. It may be the graceful line of a twisted tree trunk cutting the space into interesting divisions, or the curving line of a winding stream; but, whatever it is, one strong line should predominate.

When hunting for suitable compositions I generally go over the ground by daylight with a pocket compass in hand, and in this way locate the position of the moon, or its reflection on the water. During the summer months it rises when full nearly in the south-east in this latitude (Long Island, N.Y.), and in winter more in the east; so by keeping this fact in mind one can decide upon the best place to set up the camera beforehand, which not only saves time and trouble later, but also the disappointment after reaching what was thought to be a desirable spot of finding that the moon will not come where it is wanted in the composition.

Morning is a good time to look up subjects, as the sun is then in a similar position to the moon, so by half closing the eyes one can see the subject *en masse*.

### The Best Form of Outfit.

Coming now to the "field tactics" and after manipulations; the outfit best adapted to the work deserves a little notice. The two requirements in the camera are that it should be of the focussing type, and sufficiently simple to manipulate, so that all the working parts may be operated by sense of feeling if necessary. A suitable instrument is a long-bellows, reversible-back view camera of simple and substantial construction, fitted with a good rapid rectilinear lens having a working aperture of *f*/8. This is the smallest opening which can be used conveniently in night work, and on account of lessening the time of exposure it is all the better if a lens with a larger aperture is available.

A strong tripod, rubber focussing cloth, and some pieces of black gummed paper (the use of which will be explained presently), will, I believe, complete the field outfit.

In loading the holders select the fastest grade of some good brand of colour-sensitive plates. I cannot see that it makes any difference in this work whether the plates are backed or not, but in some cases it might be an advantage if they were.

### Times and Subjects.

As a rule the most convenient time in each month for securing the pictures will be one or two evenings before the moon is full, as it then rises early enough to allow one to start out while a little daylight still remains and put in a full evening's work. For moonrise effects the diffused light of the afterglow may be used to shorten the time of exposure without danger of losing the desired effect, and if the moon is to be included the slight flattening of the disc will not be noticeable when it is so nearly full.

In marine work in harbours or on tidal rivers where vessels are shown at a wharf, or the water line along a flat shore is included in the picture, it is better, if possible, to make the exposures at "slack water"—that is, either at full or low tide—as then no rise or fall takes place for half an hour, which will prevent some of the objects being blurred from a change of level during the exposure.

If any difficulty should be experienced in locating the image properly, on account of the weakness of the light, the old trick of rubbing a little vaseline or glycerine on the ground side of the focussing screen may be resorted to.

For many subjects, such, for instance, as a clump of trees in full foliage, some diffusion of the image will greatly help the general effect, but, like some other things, this is best left to the individual judgment of each worker.

### Exposure.

Exposures will range from ten to thirty minutes on a clear night, with average class of subjects, using stop *f*/8 and fast plates. There is considerable latitude in the matter, except on the side of under-exposure, for, of course, if the image is not on the plate it cannot be produced by the developer, so do not be afraid of over-exposure. Those suggested are given as the shortest which would be likely to give good results, but in any given case twice as much would probably do no harm.

### Including the Moon.

How to include the moon in the picture without showing motion, due to the length of exposure needed for the landscape, or doing any "faking" on the negative, seems to be a puzzle to many; but I can assure the reader that where the moon appears in the pictures shown here it was obtained without hand work or other retouching on the negatives; and it is not so difficult "when you know how."

There are two methods by which it may be accomplished, one being as follows:—Wait until the moon is high enough to be out of the field of view included by the lens, focus and expose for the foreground as usual, remove plate holder, then tilt the camera or raise the front until the moon comes where it is wanted in the composition, replace holder, and give a short exposure for the moon alone. From ten to thirty seconds will be ample with the lens at full opening, and that amount can safely be given without danger of showing any motion, or of obtaining a double image of the landscape, provided it is really dark when the work is done. For early moonrise effects it is safer to adopt the other method—namely, that of exposing a separate plate for the moon and laying this negative back of the foreground plate when printing.

Care must, of course, be used, especially where the first method is employed, to locate the moon exactly where it is wanted, and to facilitate this I take along some gummed black paper, referred to previously as part of the field outfit, and before moving the camera to include the moon I decide upon the spot it should occupy (care being taken when its light is reflected upon water to have it line properly), and then attach a piece of the gummed paper, in which a hole about a quarter of an inch in size has been made, to the focussing screen, so that the image of the moon when seen through the opening will come in the desired place.

### The Size of the Moon in a Photograph.

A point worth considering here is that the image of the moon produced by the short-focus lenses usually fitted to cameras at the present day does not *appear* as large as the eyes see it. For this reason it is better to use a lens of about ten-inch focus on a 4 x 5 plate, for while the image of objects in the foreground can be made larger with a short-focus lens by moving the camera nearer, the size of the moon depends entirely upon the focus of lens. If, however, one has only a short-focus lens to work with, the size of the moon may be slightly increased, and the atmospheric effect improved, by drawing out the bellows a little beyond the point of sharp definition.

### Development and Printing.

With the exposures already indicated the plates should develop up quickly in any good developer of moderate strength. I like edinol-hydro, which works clear and soft without bromide, and the following formula will be found a good one:—

| | |
|---|---|
| Water | 8 ounces. |
| Edinol | 5 grains. |
| Hydroquinone | 7 grains. |
| Sodium sulphite (dried) | 50 grains. |
| Sodium carbonate (dried) | 75 grains. |

At a temperature of 65 deg. Fahr. this developer should yield good negatives from plates which have received the exposures mentioned, in from five to fifteen minutes.

Much can be done by suitable printing and mounting to increase the effectiveness of the finished pictures. Bromide or "gaslight paper" prints are good, especially for small sizes, and they can generally be improved by slightly staining the film in a weak bath of blue aniline, which will add to the feeling of moonlight. The gum process is also well adapted to these subjects, the texture of the coating being most effective in the broad, flat masses of tone which occur in moonlight pictures. If carefully prepared very delicate prints can be obtained even from negatives of small size.

In mounting, black or very dark green in combination with grey will set off the prints to the best advantage by keeping the general effect simple and unobtrusive.

WILLIAM S. DAVIS.

## PROTAMOL MOUNTANT.

PARTICULARS of a new adhesive substance, for which special suitability to photographic purposes is claimed, are given in a recent issue of "Wiener Mitteilungen." "Protamol," as the substance is named, is said to be a preparation of rice starch and albumen prepared according to a patented process. The material is placed on the market by the well-known Vienna firm of Lechner. It is a soft, extremely fine powder, without taste or smell, which keeps indefinitely and is insoluble in ordinary liquids. A mountant prepared with "Protamol" is perfectly neutral and has no effect on papers, even of delicate tint. It is claimed that it is free from hygroscopic qualities, and will thus keep for a longer time than ordinary pastes, its permanence being still further increased by a slight addition of an antiseptic body, in which form the mountant is specially recommended for use in the tropics. The "Protamol" paste takes the form of a gelatinous, grainless mass of considerable consistency, free from lumps, and without tendency to become lumpy in use or to dry up. It can be prepared of any required consistency by addition of cold water.

In point of economy "Protamol" is described as cheaper in use than other starch pastes. Its adhesive qualities are such that one kilogramme may be used in place of 1.3 to 1.4 kilos of starch, so that one kilo of "Protamol," costing 45 h[1], works out at some 200 per cent. cheaper than arrowroot sold at 1.6 K[2] per kilo, and about 10 per cent. cheaper than arrowroot sold at 1.6 K per kilo, and about 10 per cent. cheaper than weakened starch, price 70 h. per kilo, representing a saving by the use of "Protamol" of from 50 to 240 per cent. The prepared paste will keep for about fourteen days without losing its adhesive power, a convenience in practical work which marks the product from rice or wheat starch, which, particularly in summer, is liable to become acid if kept overnight. "Protamol" serves as an adhesive for attaching prints to paper, board, glass, metal, and linen, and dries more quickly than ordinary starch paste. It is thus suitable, not only for the mounting of ordinary prints, but also for attaching prints to other supports, as well as a preparation for lantern-slide binding strips. It can also replace arrowroot in the sizing of platinum and other sensitive papers. Its adhesive qualities were found to be such that any considerable pressure on the corners and edges of the print with a squeegee, when mounting, was not found necessary. The "Protamol" paste is made up in very much the same manner as that with ordinary starch material, by mixing one part of "Protamol" with six parts of water. This is then brought to the boil and allowed to cool. A very good formula for the preparation of the paste is the following of the manufacturers:—250 gms. of "Protamol" are mixed with 250 ccs. of cold water, the two being well stirred together until a uniform cream, free from lumps, is obtained. This cream is now poured slowly in small doses into the following boiling solution:—

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[1] Heller. 100 h. equal about 10d., i.e., 10 h. is the equivalent of one penny.
[2] Krone. Sterling value 8s. 4d.

| | |
|---|---|
| Potash alum | 5 gms. |
| Water | 1,250 ccs. |

The whole mixture is then brought to the boil and allowed to cool, when the paste is ready for use. This gives 3 kilos of gelatinous, even, thick paste, which, if necessary, can be further diluted with cold water, requiring no further boiling. From these figures it will be seen that some 300 gms. of paste are obtained at a cost of about 2 h., serving for the mounting of seventy 13 x 18 cm. prints. The cost, using arrowroot paste, works out at 4 h. In the case of those pastes which are made up with gelatine or dextrine, it should be noted that in the customary formulæ any starch may be substituted by 30 to 40 per cent. of its weight of "Protamol."

# Photo-Mechanical Notes.

### Some Foreign Schools.

The report of the Royal Academy for the Graphic Arts and Bookcrafts at Leipsic for the last two years, just to hand, is a model of good taste. The type is a beautiful one, the paper is cream-coloured and silky in texture, and the type-setting and arrangement is all that can be desired. It is no wonder that Germany is making rapid strides in the improvement of her book production if standards like this are inculcated in the schools. The contents of the report give full details of the numerous activities of the Academy, the number of students was 577 in 1910, of which 205 were day students and 100 women. The occupation providing the greatest number of students was lithography. We note that £530 was spent on the equipment of the photo-mechanical department, bringing up the total value of the equipment of this department to nearly £2,500.

### The Ecole Estienne in Paris.

This School has now ready the new buildings recently erected for photo-mechanical instruction, and has just issued the programme of studies. The course will extend over three years, and is divided the first year into twenty-one hours of general instruction and thirty hours of practical craft work per week, the second and third year into fourteen to sixteen hours' theoretical and thirty-three to thirty-five hours' practical instruction, which are longer hours than in any other school that we are acquainted with. Admission will be by competitive examination, the age limits being fourteen to seventeen years. The fact that the School is under the direction of Professor Charles Féry is sufficient guarantee that the courses will be thoroughly scientific. That Paris no longer need envy either London, Leipsic, or Vienna, is a justifiable boast of the prospectus.

### The American Bissell College.

Unlike the institutions mentioned above, this is a purely private enterprise, and, judging by the prospectus and book of testimonials from students sent out, it is a highly successful one. A course may be taken in either photography or photo-engraving, extending up to nine months, the fee for which is $130 (£30), *plus* a charge for materials. On these terms it is stated that 300 students are turned out yearly, and apparently so great is the demand in America for such labour that many of them appear to have secured good positions. We notice that although the text of the prospectus is copyright, several portions of it relating to the photo-engraving section are "lifted" from the former prospectuses of the L.C.C. School of Photo-engraving and Lithography, which the latter, if "imitation is the sincerest form of flattery," ought to take as a compliment.

### A Swedish Year Book.

The "Bookprinter's Calendar" issued by W. Zachrisson, of Gothenburg and Stockholm, is interesting because it is entirely produced by this firm of printers, who have their own engraving, lithographic, and bookbinding plant, in addition to the purely letterpress equipment. Moreover, Herr Zachrisson is a progressive printer with a thorough knowledge of the history of his art and a wholesome respect for its worthy traditions. Every issue of this year-book, therefore, contains reproductions of some of the early efforts of printing, together with an article by an expert; thus this volume gives some account of the beginnings of printing in Sweden.

There are many other articles of interest to the printer who wishes to know the latest advances in the craft as well—for example, on "Newspaper Photogravure," with an example, on "Offset Printing" (by A. J. Newton), with two English examples. The book naturally contains many illustrations in every variety of photo-mechanical relief process, including some very pleasant three-colour work printed on matt paper. There are high-light half-tones of the portraits of all the contributors, and the volume concludes with a directory of all the printers and lithographers in Sweden, Norway, and Denmark.

### Levy Screen Patent.

As is well known, one of the good features of the Levy Ruled Screens, which are so largely used for the half-tone process, is the aluminium framing, which protects the edges of the screens from deterioration or damage due to soaking in the silver solution in the wet-plate process or the separation of the glass by atmospheric influences, or chipping of the edges and corners by careless handling. A patent was taken out by Mr. Levy for this idea on the ground of the novelty in the frame being depressed below the surface—an important point when the screen is being used close up to the plate, as the thickness of the frame would otherwise make the screen distance greater than it should be. The invention was duly patented in America, England, and France, but in Germany it has been a subject of a protracted and strong opposition. The application was severely contested on every possible ground, and a very large amount of evidence adduced by the opposition, but the patent was nevertheless granted by the German Patent Office. This contest undoubtedly adds great strength to the patent, as it is extremely likely that all the evidence that could be produced before any court was brought to bear on the German Patent Office.

### Process Camera Economics.

I believe it to be true (writes Mr. Harold Hood in Hunter's "Pocket-Book and Diary") that there is a sad lack of system, even yet, in quite the majority of process studios. How do I know? I don't know; but I feel my deduction to be a certainty, gleaned from personal observation of the products of other process firms, from individuals, and from the character and habits of workers from other shops with whom I have come into personal contact.

Despite the pessimists, machine-etching must increase in the near future, and it is well, now that etching will compulsorily be systematised, that we should also systematise camera practice a little more still, to keep pace with etching advances.

It has always seemed to me that it ill accords with the excellence to which process-camera manufacture has been brought, when one compares the complete lack of system applied to the matter of variation of copies sent in for reproduction.

But how can you systematise anything so outrageously variable in character as photo-engraving copies?

There is a firm named William Johnson and Sons, of 18, Union Street, London, who are specialists in album making. These people make a loose-leaf photo album, the "Seymour," at 5s. 6d., or the "Reedsdale" at 12s., with very thick mount leaves, which bind up with laces into strong covers. Invest in one of these, and collect up as a nucleus all the copies (or portions of copies) you can lay your hands on, which differ in the least in surface or tone, and mount these into your "exposure" album, one or two copies to each page; and as the months go by, keep a sharp eye on copies of an unusual character, either as to surface, or colour, or process. It is often possible to secure copies of no particular value by a little persistence, particularly if the principals will try to get *or make* them.

The whole of the prints should be numbered boldly, from 1 upwards, respectively, and it is important to have a clear index, and, in some cases, a cross-index.

It can hardly be conceived by those who have not tried this method what an intensely valuable time-saver and negative-saver it proves. Against each type of copy there is written the exposure that would be required for same-size production, with given lamps, known stops, and a certain screen distance. It is much better to work out, by a simple sum, all the types of copies as for "same size," because the conversion into any other proportion of reproduction can generally be done mentally and simply.

An operator may feel, as some people do of all attempts at systematisation, that all this is too much trouble, and that, with one or two trial exposures, the thing could be settled by instinct and a moderately good guess at exposure. But I think it is a detestable practice to condone a percentage of spoils simply because the copy is an unusual one; if its exposure can be hit off correctly in the end, why not at first?

I believe it to be a well-known fact that, for instance, when the average operator has to deal only occasionally with a flat matt bromide, for instance (the contrast of which must be much increased in reproduction), he nearly always badly over-exposes at the first attempt. Whereas, if this same average operator would take his very flat bromide print to my "exposure album," he would find there a record based on a previous successful deal with a similar, or sufficiently similar, flat bromide print; and would thus avoid, with a fair degree of certainty, a very common mistake, all too frequently repeated.

An obvious improvement in this album would be to amplify the exposure records by the inclusion of screen distances for reductions, such as three-quarter linear, two-thirds, half, quarter, and, perhaps, also for slight enlargement.

# Exhibitions.

## NATURE PHOTOGRAPHS AT THE ROYAL PHOTOGRAPHIC SOCIETY.

On Tuesday, January 10, an exhibition of photographs illustrating the application of photography to biological and natural science was opened by an address given by Mr. F. Martin Duncan, F.R.P.S., who was responsible for the collection and arrangement of the exhibits. Some of the subjects have been shown before, but there is a great deal of new and interesting work also on view. Among the more important exhibits are two sets of photo-micrographs by Drs. Orr and R. S. Rous, showing the degeneration of nerve fibres, cells, and spinal cord in cases of acute insanity. Mr. Max Poser has some very fine photo-micrographs of bacteria, while Dr. C. Thurstan Holland contributes a number of radiographs of great surgical interest. The fur and feather section of natural history work is well illustrated by Messrs. W. Farren and J. Cyril Crowley, while apes have received a goodly share of attention at the hands of Mr. Martin Duncan. Radiography is finely represented by Dr. Rodman, as well as by Dr. Thurstan Holland, and photomicrography by several workers, among whom we note Messrs. A. E. Smith and Inderwick Pigg and Dr. Drake Brockman. Geology is illustrated by Messrs. T. E. Freshwater and Martin Duncan, and by Dr. Tempest Anderson, and plant life by Rev. F. C. Lambert, Henry Irving, and Percy G. Dallinger. A number of very fine Autochrome slides by the last gentleman were also shown on the screen during Mr. Martin Duncan's lecture. Mr. Hugh Main and Dr. Gray Duncanson complete the list of exhibitors, and show some very interesting subjects. The exhibition is a pleasant change from the series of one-man pictorial shows that have usually occupied the walls at Russell Square, and it is to be hoped that the Council will be able to find yet another way of modifying the programme in the future.

◆

**Wellington and Ward in Canada.**—Mr. A. H. Ward, the representative in Canada of the famous firm of manufacturers of plates and papers, writes to us as follows from Montreal:—

"Allow us to call your attention to the fact that this office and the business is now under the name of Wellington and Ward in the place of Ward and Company as it was for the past years."

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been made between January 2 and 7:—

**Print-Drying Apparatus.**—No. 397. Postcard or photographic print drying apparatus. James Mason.

**Combination Pictures.**—No. 457. Process for making photographic combination pictures. Erminio Mioni.

**Dark-Slides.**—No. 483. Photographic dark-slides. James Wyndham Meek and Sydney Alfred Drysdale.

**Cinematographs.**—No. 90. Process and apparatus for cooling films of projectors, cinematographs, and the like. Lucian Giess.

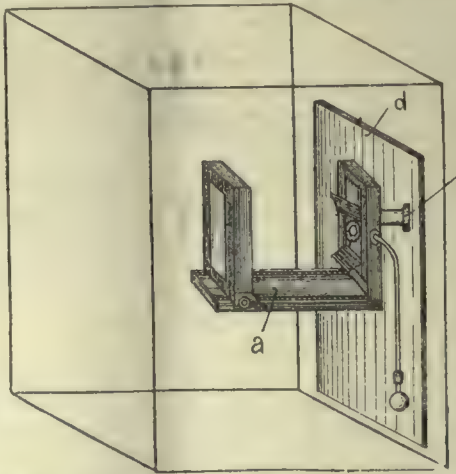
**Cinematographs.**—No. 493. Process for reducing the size of pictures on cinematograph films, and of projecting such pictures to their normal proportions. Ernesto Zöllinger.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

**Self-Portrait Studio Mirror.**—No. 17,092, 1910 (August 2, 1909). A mirror impervious to light is fitted to the front of a casing enclosed on all sides, such, for instance, as a cabinet, and is rigidly combined with the camera or the lens thereof in such a manner that the lens always remains in an opening in the mirror. In consequence of the entire enclosure of the camera space, the person photographed is not distracted or disturbed by the movements of the operator.



In the figure the lens is shown in combination with the mirror *d* attached to a curtainless camera, as may be made use of in consequence of the application of a non-transparent mirror. Hubert Lill, Mannheim, Germany.

**Diaphragm Shutter Speed Control.**—No. 3,682, 1910 (February 15, 1910). The invention has for its object to provide means for regulating the speed of photographic shutters, such that, while a wide range of exposures may be provided, the regulation is not subject to variation by these various factors which disturb the regularity of controlling devices.

Essentially, the invention consists in applying to a moving part of the shutter (and to control its period) a rotatory mass, rotated first in one direction and then in the other, after the manner of a clock balance wheel. Means are provided for rotating this mass with reversal a series of amounts different for the different exposures it is desired the shutter should give—from zero (no) movement for the maximum speed of the shutter to a maximum for the minimum speed thereof.

Where the shutter is of that now well-known type opening rapidly and closing rapidly, and in which the parts are held for the duration of exposure in the open position by a detent or released to close the shutter at the termination of the exposure, the balance-wheel may be operated by the impact of a tappet operated with or by the opening shutter and engaging a co-acting tappet on the wheel. A spring buffer is placed to receive the wheel upon its performing a prescribed travel, and reacts to return it, means being provided and operated by it on its return to release the detent retaining the shutter open, whereupon the latter closes. Variability of the amount of the movement of the wheel and so of the period is obtained by varying the position of the buffer. Such a form of device is obviously applicable to any form of shutter held, or adapted to be held, by a detent in open position during the period of an automatic exposure.

Where the shutter is of that type in which there is no determinate holding open of the parts at mid exposure—that is, in which exposure takes place during a more or less constant movement of the parts—there is applied a modification of the device (also applicable to the first type of shutter), in which the balance-wheel is rotated with reversal by suitable gearing, such as a toothed quadrant, engaging a pinion on the balance-wheel spindle. The toothed quadrant is reciprocated by link or like motion from a moving part of the shutter, and through the resistance of the balance-wheel controls directly the speed of movement of that part, and so the duration of the exposure given by the shutter. The amount of reciprocation given the quadrant is varied by means of any convenient form of link or variable-stroke device interposed between it and the part from which it receives its motion. Wilfred Hunt, 28, Bute Gardens, Hillhead, Glasgow; and William Taylor, Stoughton Street Works, Leicester.

PLATE RACKS.—No. 4,165, 1910 (February 19, 1910). The invention consists in a rack or holder for photographic plates, comprising opposite grooves or pairs of grooves connected together by means of a frame, several frames being hinged together for the purpose of forming a rack capable of being folded into a small space when in use. Each groove or pair of grooves *a* is connected with the opposite groove or pair of grooves *b* by means of a rectangular frame which may be formed entirely of wire or partly of wire *c* and partly of a metal strip or strips *d*, the wire *c* and strip *d* forming the upper and lower members of the frame, while the grooves or channels form the side members of the same.

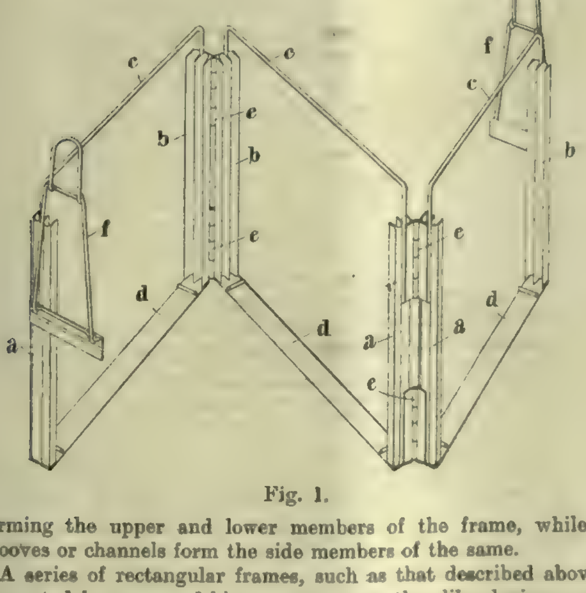


Fig. 1.

A series of rectangular frames, such as that described above, is connected by means of hinges *e* or some other like device, so that the series of groove-carrying frames may be opened out as shown in Fig. 1, somewhat after the manner of a clothes-horse or draught screen. As only one or two grooves or channels are then opposite to each other it is easy, even in total darkness, to locate each groove and its opposite fellow by touch and to insert a plate in its correct grooves.

When the whole or any required number of the frames have been filled with plates the series of frames may then be folded together so as to lie parallel with each other, as shown in Fig. 2, in which position the frames may be inserted in a tank or deep dish for development. For inspection of the progress of development in the dark-room the series of frames may be lifted out of the tank and opened out so that each negative may be inspected without withdrawing a single plate from the grooves.

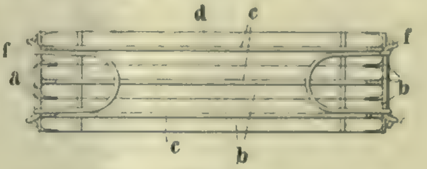


Fig. 2.

After development, fixing, and washing, such a series of frames may be used as a draining and drying rack when opened out and stood in an upright position, as shown in Fig. 1, or the series of frames may be suspended vertically by one end. James Wyndham Meek and Sydney Alfred Drysdale, 124, Holborn, London, W.C.

STORING SENSITIVE PAPERS.—No. 11,084, 1910 (May 4, 1910). The object of the invention is to provide a convenient, and reasonably cheap, form of light-tight storage box for sensitised papers, such as "blue print" paper, "Vandyke process" paper, etc. The invention relates to receptacles having an outer fixed casing provided with a longitudinal slit and an inner rotating casing within which the material is wound on a reel, the inner casing having an outlet adapted to be brought into and out of coincidence with the slit in the outer casing. Devices comprising slotted cylinders for storing rolls of paper and other material have been previously provided with a cutting edge formed by one side of the slot and with means such as a spring tongue for retaining the material in position when unwound, but the invention relates to a novel combination of parts constituting a receptacle particularly adapted for the purpose in view and comprising a fixed outer casing having a longitudinal slit, one side of which is formed as a straight edge for use in detaching a portion of the paper, an inner rotating casing in which the web of paper is mounted and having its edges in overlapping relation to form an exit opening, adapted to be brought into and out of register with the slit. A spring shutter is secured to the outer overlapping edge of the inner receptacle and series both as a closure to prevent light from entering the inner casing and to prevent retraction of the cut end of the paper into the inner casing. George Chalmers Brown, 163, Willetts Avenue, New London, Connecticut, U.S.A.

CINEMATOGRAPH SPOOL.—No. 4,384, 1910 (September 22, 1910). The invention relates to an improved method of attachment of the film to the spool or bobbin in cinematograph machines. In machines of this description the attachment of a new film to the clip provided on the hub of a spool under the usual conditions is often a matter of considerable difficulty, owing to the narrow width between the flanges of the spool and the distance between the periphery and the hub thereof, necessary in consequence of the long lengths of film at present in use. To obviate this difficulty it has been proposed to connect the end of the film to the hub of the spool by a short length of tape, this tape being secured to the hub of the spool at one end and provided with a suitable clip at the other end for attachment to the film.

The invention consists in providing the hub of a spool with a short length of flexible material (preferably fire-proof) such as, for instance, narrow cotton webbing, of an approximate width equal to the width of the distance between the flanges of the spool and of such a length as to be equal to or greater than the distances between the periphery and the hub of the spool. The inner end of this flexible band is secured in any convenient manner to the hub of the spool, the outer end being provided with an improved construction of spring-clip, so that, when winding a film from one spool to another, as the end of the film passes off the spool it will readily slip away from the spring clip without any danger of tearing the film.

Means are also provided at the hub of the spool to ensure the clip conforming with the surface of the hub, so that the film will be wound symmetrically upon the spool in perfectly even layers, and there will be no danger of the layers of the film "humping" or bulging to one side of the spool.

With this construction the possibility of the film prematurely slipping from the clip (as it very often does from the clip usually provided) is avoided, thus preventing the possibility of the film stopping in the "gate" and firing. Frederick Toop, 45, Diamond Road, Watford, and James Frederick Hailes, 23, King Street, Watford.

## New Trade Names.

PROMINAL.—No. 329,205.—Photographic apparatus included in Class 8. Actien Gessellschaft für Anilin Fabrikation, an der Treptower Brücke, Berlin, Germany, manufacturers. December 9, 1910.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Lantern-Slides Direct in the Camera.

The process consists (writes Mr. W. L. G. Bennett in the "Amateur Photographer and Photographic News" for January 17) in developing the image in the usual way, toning it with uranium, so as to substitute a deposit of this metal for the original one of silver; exposing to light, so as to print through this image an opposite one on the remainder of the sensitive film behind; developing this new image, and removing the old one. The new image, which is all that remains on the plate, will therefore be of the same value as the original, either positive or negative, as the case may be.

After development the plate must be rinsed in two or three changes of water for about two minutes, and then the uranium toning bath is applied. Directly this has been poured over the plate, lift it out, hold it up to the red light, and carefully note the density of the darkest parts, and then return it to the toning bath. If examined again in two or three minutes, the dark parts will appear much lighter, due to the substitution of the red uranium deposit, which looks light in tone by red illumination. With a little practice it will be easy to see when the original silver image has been entirely displaced. This examination is not really necessary, as with fresh solution the action is certain to be complete in five minutes, or less. Thorough toning is absolutely necessary. When this is judged to be the case, pour off the toning solution, and wash the plate thoroughly in three or four changes of water for two minutes or more.

For the exposure to the magnesium the plate must be removed from the dish, unless the latter is made of dark-coloured xylonite, or else the light will be reflected on to the back of the plate and cause a certain amount of fog. It is, therefore, best to lean it against a piece of black or dark-red paper, which, in its turn, should be propped up against some article on the table. Having measured out two inches of magnesium ribbon, a match should be struck and the ribbon kindled, and held at about four or five inches distance from the plate. Then return the latter to the dish and again pour on the developer.

Judging the time of development is the most difficult part of the process. If insufficient, the half-tones will be fully out, but the shadows far too weak. If over-done, the slide may be foggy, but this is of less importance, as the fog may be cleared away by subsequent reduction. It should be continued until the positive image looks strong and full of detail, when held up to a fairly bright red light, and the whole surface looks black by reflected light, the high-lights being still blocked up by the negative uranium deposit. At least, this is the case with amidol, but with rodinal the uranium may dissolve away at once, in which case development may be judged as when making a slide in the ordinary way.

Fixing is carried out as usual. I strongly advise not admitting white light until this is nearly completed.

### Toning P.O.P. after Fixing.

In "Photography and Focus" for January 17 a correspondent, under the *nom de plume* of "Vector," writes as follows:—"I find it is possible and convenient to fix P.O.P. prints first and tone them afterwards. The prints must be darker than is sufficient for the ordinary toning and fixing: and for this, as for almost any P.O.P. process, the negatives must be fairly vigorous. After fixing and washing, a formalin bath of a strength of one ounce of formalin to nine ounces of water is then given them, and after a couple of minutes or so in this they may be rinsed and toned.

"The toning bath is made by dissolving eight grains of alum, five grains of citric acid, and fifteen grains of ammonium sulphocyanide in each ounce of water. The water should be hot, and the dish put where it will keep warm all the time of toning. Just before immersing the prints three minims of gold chloride solution (one grain in one dram) should be added to each two ounces of the bath. The prints must not be put into the solution if it is more than just perceptibly warm to the hand, and the formalin bath must on no account be omitted. The tone obtained is a rich purple, and the prints only need a good washing after toning, to be finished."

### An "Explosion" Theory of the Latent Image.

IN a letter to "The British Journal of Photography" (writes Mr. C. E. K. Mees in "Knowledge," for January), Mr. F. F. Renwick makes a suggestion for a new theory of the latent image, though various facts pointing in the same direction have been published at intervals. This theory is based on the observation of Dr. W. Scheffer, that a silver bromide grain on exposure violently throws off a part of its substance, rupturing the surrounding gelatine in its passage.

Mr. Renwick suggests that, in an emulsion, the silver bromide grains are wrapped round by a tangled meshwork of gelatine, and can only be attacked either through the extremely minute channels left, or by diffusion through the substance of the gelatine skeleton. Now, if Dr. Scheffer's observations be accepted, then in the neighbourhood of an exposed grain the densely tangled network is broken through, and channels of relatively large size, giving far readier access for the developer to the silver bromide grains, are formed.

In some respects this theory seems to be more satisfactory than any hitherto held. It has generally been assumed that the commencement of development depended upon the provision of a nucleus, upon which the silver produced by the interaction of silver bromide with the reducer could precipitate. This remains probable, but a difficulty was that, in this case, once fogging from an unexposed developer had commenced, it should have proceeded at the normal rate. This does not seem to be the case; if measurements be taken of the increase of fog with time of development for an unexposed plate, it is found that the function obtained is similar to that given by an exposed plate, but with a much lower velocity constant.

This is accounted for at once if the exposed grains have literally become "exposed" to the attack of the developer, by blasting passages through their surrounding network.

This explosion theory is also valuable in that it enables one to give a meaning to the "ripening" of an emulsion. A "ripened" grain would be one which was in the most explosive state; that is, in which the crystallisation occurring during cooking had reached the limit of stable equilibrium, so that any further access of energy would result in its disintegration.

The theory is certainly fascinating in its possibilities, though it will have to face much criticism, especially from a consideration of the destruction of the latent image by oxidisers, and of the desensitising action of some metallic salts, when added to the emulsion.

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THE ILLINGWORTH COMPETITION.—The awards for December are as follows:—Open Class—A. H. Robinson, Derwent House, West Ayton, Yorks. A Snow Scene. Print on "Slogas" Paper. Novice Class—H. Longbottom, 6, Firth Street, Oldham. Berries and Leaves. Print on "Zelvo" Paper. Junior Class—S. Castleman, Upper Woodcote, Purley, Surrey. Roadside Cottages. Print on "Slogas" Paper.

MR. BISHOP HITCHENS advises us that he is establishing himself as a consulting photographer at 240, Gray's Inn Road, from which address he is prepared to give expert assistance in the designing of apparatus, in studio construction and equipment, including artificial light installations, as well as instruction and help in special branches of photography, such as photomicrography, etc. Mr. Hitchens has had a varied experience, first in the photographic trade in London, and for a year or two past in Jamaica and with the Kodak Company in Italy. His assistance should be of value both to professional photographers and to those needing expert advice in procuring an equipment for use abroad, or for specially difficult work.

# New Books.

"Photographische Hilfsbuch fur Ernste Arbeit."—A second edition of Part I. of this manual, by Herr Hans Schmidt, has appeared from the press of Gustav Schmidt, Berlin. It follows the lines of the previous issue, but has evidently been thoroughly revised and brought up to date, as witness the particulars given of the latest form of cameras, such as the Goerz folding reflex, and of recent introductions in anastigmat lenses. The author occupies most of the 220 pages with a description of apparatus coupled with instruction in the principles of its use. He does not trouble the reader with mechanical details, for example, of instantaneous shutters, but for each particular type of shutter explains the practical advantages and the precautions necessary in securing the best effect. Similarly in the part of the volume devoted to the methods of making exposures —a section for the title of which we have no word in English equivalent to the German "Aufnahme"—he uses to great advantage photographs and diagrams showing the effect of close and distant standpoints on perspective. He discusses in this section distortion from tilting of the camera, its correction, as well as the eternal question of depth of focus and focussing scales. In the part devoted to the chemical methods of the production of the negative there is an interesting series of diagrams representing the condition of negatives of hard, normal, or soft character, produced by various methods of development or after treatment. The volume is essentially one for the student who wishes to know the why and wherefore of photographic processes. It is not in any sense a manual of instruction in practical photography, but it fulfils its more scientific purpose admirably. We could wish that there were more books like it in the English language. The price is 4 mk. in paper, 5 mk. bound.

"Deutscher Camera Almanach."—The seventh issue of this annual from the press of Gustav Schmidt makes its appearance under the editorship of Herr Otto Ewel, with the customary selection of technical articles, but its pages are chiefly filled by many reproductions of the pictorial photography of the day. The publishers use a highly surfaced art paper and thus secure great brilliance in their reproductions, yet we could wish that—like some German producers of art volumes—they would be content with a non-surfaced paper and thus secure a quite sufficient degree of brilliance without the presence of the glare from a surfaced paper. The frontispiece is an example of production on these lines, and is an agreeable contrast with the rest of the volume. The technical articles include contributions on portraiture, colour photography, instantaneous night photography, development, etc., and, in not a few instances, are admirably illustrated. The photographs reproduced by Herr Otto Mente in illustration of rapid photography at night are particularly fine examples of a most difficult branch of work. Those who read German and wish to obtain a handsome volume containing much of both technical and pictorial interest cannot do better than select the "Deutscher Camera Almanach." It is issued at a price of 4 mk. 50 in art paper covers, or 5 mk. 50 in linen binding.

Portraits of the King.—Messrs. Hood and Co., Ltd., St. Bride Works, Middlesbrough, send us a specimen of a portrait of King George V. which they are issuing in 12 by 9 size on mount 16 by 11. The reproduction is done in Messrs. Hood's "Poynter" full-tone process, and is a handsome and effective piece of printing. Complete, with silk suspension cord, and the King's name and crown blocked in gold underneath the portrait, the retail price is 1s., and the portrait is worthy the attention of photographers and photographic dealers, by whom it may be obtained from Messrs. Hood at trade prices.

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Our New Zealand Contemporary, the Christchurch "Weekly Press," in its issue of November 23 last, devotes considerable space to an interview with Mr. Herbert G. Ponting, F.R.G.S., photographer to the British Antarctic expedition under the command of Captain Scott, in the course of which Mr. Ponting gives an interesting account of his photographic work in the various countries he has visited. Several of Mr. Ponting's well-known pictures of scenes and incidents in China and Japan are reproduced, together with a new portrait of himself, specially taken for the purpose by the "Weekly Press."

# New Materials, &c.

"Mimosa" Carbon Sepia Toner.—In reference to the review of this one-solution sepia toner in our issue of November 25 last, we are asked by the vendor, Mr. C. A. Rudowsky, to supplement the directions for the preparation of the bisulphite bath used after the toning operation. The bath is prepared from a stock bisulphite solution made up as follows:—

| | | |
|---|---|---|
| A. Soda sulphite | 125 gms. | 4½ ozs. |
| Water | 400 ccs. | 13 ozs. |
| B. Water | 100 ccs. | 3½ ozs. |
| Sulphuric acid, conct. | 15 ccs. | ½ oz. |

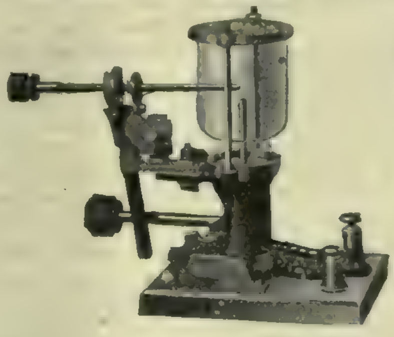
When cool, mix the B solution with A, using 1 oz. of the mixture to 20 ozs. of water in preparing the bisulphite bath for the "Mimosa" toning process.

The same bisulphite stock bath is likewise used in preparing the acid fixing bath for the "Verotype" carbon gaslight paper, 80 to 100 ccs. being used per 1,000 ccs. of bath, or 4 ozs. per 40 ozs.

# New Apparatus, &c.

**The Westminster Enlarging Arc Lamp. Made by the Westminster Engineering Co., Ltd., Victoria Road, Willesden Junction, London, N.W.**

A most practical and convenient lamp for the optical or enlarging lantern has been introduced by the Westminster Company in the form shown in the illustration. As will be seen, the lamp is of the enclosed type, of which the Westminster Company have long been specialist manufacturers. The carbons are arranged at right angles, thus giving a powerful light of the kind best suited for effective use in an optical system such as that of the enlarging lantern. The lamp stands 7 in. in height, on a base 4 in. by 5 in., so that it can be employed in practically any lantern, and without exception in the enlarging lanterns on the market. The current is obtained from the ordinary electric current supply, the plug, supplied with the lamp, being fitted into the ordinary holder of the standard size. The resistance supplied with the lamp is connected in series with the latter, and, the connections having been made, the light is started first by feeding the horizontal carbon forward until its end is just over the centre of the lower carbon, and then winding up the latter until it momentarily touches the upper carbon. On bringing down the lower carbon by means of the large milled head seen in the lower part of the drawing, the arc is made, and may be examined through a piece of coloured glass in order to ensure its being of the right shape. It should "bow" out away from the operating handles. If it "bows" the other way, the lamp is wrongly connected. These simple directions, supplemented by the hints given by the makers with each lamp, are all that is sufficient for practical work, and from a trial of the lamp we can assure our readers that, like the other manufactures of the Westminster Company, it is a thoroughly well made and workmanlike tool, providing an ideal illuminant for the enlarging or optical lantern, and, at the same time, proving of frequent service in taking off odd prints from small negatives on printing-out or other daylight papers. The mechanism of the lamp allows of its running without attention for half an hour, but the neces-



sary adjustment of the arc is done in an instant by means of working parts which are free from liability to derangement. Complete with resistance, connecting cable, and plug, the price of the whole outfit is £2 10s., not a large sum for an instrument of this power and workmanship.

**The Busch Special Reflex and New Bis-Telar Lens. Made by the Emil Busch Optical Company, 35, Charles Street, Hatton Garden, E.C.**

The Busch Co. have introduced a new series of the well-known Bis-Telar lens, which includes lenses of longer focus than those originally available. The New Series II. A includes two lenses, No. 1 of 24 inches focal length, and requiring only 7 inches camera extension, and No. 2 of 40 inches focal length and 11¾ inches camera extension, both of full aperture *f*/9. This series has been designed especially for balloon and aeroplane work, in which long focus, coupled with very short extension, is an eminently desirable feature. No. 1 lens, which is the one submitted to us, is designed to cover a quarter-plate, and its price in ordinary iris mount is £18. It is mounted in a focussing jacket for use in the special reflex camera, the weight and bulk of which, of course, is proportionately diminished by the absence of bellows and focussing arrangements. The complete outfit of reflex and lens is, in fact, extraordinarily compact and light, and it should be just as serviceable in nature photography as in aviation and balloon work. The camera has a well designed hood that opens and closes very readily, and is also fitted with a mirror that enables the operator to focus when looking horizontally. This mirror is not above the hood but inside it, and the image is observed through an opening in the back of the hood—a very convenient arrangement in practice. For focussing in the ordinary way by looking vertically down the hood, the back opening is closed by a flap, and the mirror is raised up out of the way. Another special feature of the camera is the fact that setting the shutter to time automatically raises the camera mirror out of the way. The price of the camera, with lens and three slides, is £33 15s., and the instrument is an eminently serviceable outfit for extra long focus work. The workmanship is, of course, of the best, and the design thoroughly reliable, as is always the case with apparatus designed by the Busch Company. Naturalists would be well advised to consider the possibilities of this camera, which seems to us to be eminently well suited to their requirements.

## CATALOGUES AND TRADE NOTICES.

Trade Printing, Etc.—A price list of trade work reaches us from J. Asquith, Prospect Works, Eccleshill, Bradford, from whom it is obtainable post free. Mr. Asquith states his readiness to execute any small order at the list price, paying carriage in this instance as an inducement to professional photographers to make themselves acquainted with the reliability of his work.

Second-Hand Apparatus.—A sixteen-page list of bargains in second-hand apparatus reaches us from the City Sale and Exchange, 26 and 28, King's Road, Sloane Square, W. It includes hand-cameras, lenses, and field and stand cameras.

Burglary in Bond Street.—In a raid committed on the premises at the corner of Bond Street and Piccadilly on Tuesday night in last week, the photographic studio of Messrs. Foulsham and Banfield was opened, and a sum of about £15 stolen from a desk, which was prised open.

The Polytechnic, founded by Quintin Hogg in 1882, is being rebuilt in 1911 at a cost of £90,000. This rebuilding fund was inaugurated by a grant of £20,000 from the London County Council, and a loan of £20,000 from the City Parochial Foundation. The £50,000 needed to complete the fund has been subscribed and promised by Lord Leith of Fyvie, the governors, members, and students of the Polytechnic, and other friends intimately associated with the institution, as a memorial to His Majesty King Edward VII., who, through his whole reign, showed deep and sustained interest in the physical and moral development of his youthful subjects throughout the Empire, and by his personal efforts secured for his country an era of peaceful growth. The scheme has the approval of His Majesty the King.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, January 20.

West Surrey Photographic Society. Social Evening.
Camaman Photographic Society. Autotype Carbon Demonstration.
Nottingham Camera Club. "Noctona Gaslight Printing." A. W. Green.
Birkenhead Photographic Association. "Noctona Gaslight Printing." A. Webb.
Loughboro' Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Monday, January 23.

Kidderminster and District Photographic Society. Bromoil Practice.
Leek Photographic Society. "Colombo and Back." G. C. Wardle.
Bournemouth and District Camera Club. "Ozobrome." A. Thomas.
Bowes Park and District Photographic Society. "Enlarged Negatives." E. H. Down.
Cleveland Camera Club. "Autotype Carbon." N. Bunting.
Southampton Camera Club. Lecturette Competition.
Scarborough and District Photographic Society. "In and Around Lugano." B. A. Kenny.
Wallasey Amateur Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Tuesday, January 24.

Royal Photographic Society. "The Photography of Spectra, with Notes on the New Féry Spectrograph." F. Stanley.
Hackney Photographic Society. The Thames Colour Plate Demonstration.
Halifax Camera Club. "Ozobrome." W. H. Womersley.
Leeds Photographic Society. "Criticism of Members' Lantern Slides." Godfrey Bingley.
Sheffield Photographic Society. Royal Photographic Society's Affiliation Slides.
Worthing Camera Club. Exhibition of the R.P.S. Affiliation Prize Winning and Selected Prints, with Slides and Criticisms by Walter Morgan.
St. Helens Camera Club. "The Latest Wellington Specialities." H. Wade.
Manchester Amateur Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Wednesday, January 25.

Croydon Camera Club. "Night Photography." J. Keane and S. J. Tayler.
Sale Photographic Society. A.P. Prize Slides.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. Lecture and Exhibition of Lantern Slides. Thornton-Pickard Manufacturing Co., Ltd.
Partick Camera Club. "How and Why in Photography." Burroughs Wellcome.
Borough Polytechnic Photographic Society. Third Lantern Slide Competition.
Coventry Photographic Club. "Flower Photography by Artificial Light." E. Seymour.
South Suburban Photographic Society. "Mounting and Passe-Partout." J. C. Spurgin.
Edinburgh Photographic Society. "Negative Making." W. Bruce Mount.
South Essex Camera Club. "Bromide Enlarging." J. W. Adamson.
Acton Photographic Society. "Noctona Gaslight Printing." A. W. Green.
Ilkeston Arts Club. "Tramps Abroad with a Kodak." W. F. Slater.

### Thursday, January 26.

Maidstone and Institute Camera Club. "Home-Made Photographic Appliances." Mr. Gadsceu.
Liverpool Amateur Photographic Association. "An Informal Talk on Portraiture." Furley Lewis, Esq.
Oldham Photographic Society. Monthly Meeting and Members' Slides.
Rodley, Farsley, Calverley, and Bramley Photographic Society. Members' Night.
London and Provincial Photographic Association. "Finishing Photographic Prints." W. R. Stretton.
Handsworth Photographic Society. "Lantern Slide Making by Contact." A. E. Cope.
Nottingham Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, January 17, the President, Lord Redesdale, in the chair.

A paper and demonstration on high-power photomicrography were given by Mr. Max Poser, of the firm of Carl Zeiss. Mr. Poser laid special stress on the proper adjustment of the arc used as the illuminant in photomicrographic work. He showed on the screen the wrong form of crater produced by too close proximity of the carbons. Although the arc was an almost ideal illuminant, yet satisfactory work in high-power photomicrography might be done with the limelight, acetylene, incandescent gas, or even an oil lamp. Mr. Poser proceeded to describe and illustrate the proper adjustment of the illumination in photomicrographic work, and dealt also with the use of filters specially fitted for various types of subject. After a brief discussion the proceedings closed with a hearty vote of thanks to the lecturer.

## THE OPTICAL SOCIETY.

At a meeting of the Optical Society, held at Burlington House, Piccadilly, W., on Thursday evening, the 12th inst., Mr. S. D. Chalmers presiding, Mr. T. Smith read a paper on "The Results of Some Tests of Photographic Shutters at the National Physical Laboratory." The results showed a considerable percentage of error, both in regard to focal-plane and between-lens shutters, and Mr. Smith said it was evident that there is a great deal of room for investigation as to the suitability of brakes of various types for shutters, and there ought to be no difficulty in carrying out such investigations. In regard to focal-plane shutters, they did not consider the question of granting a certificate if the efficiency at high speed was under 50 per cent. and there were, of course, other conditions that had to be satisfied as to the markings of the speeds. To improve shutters at high speeds meant increase in the spring tension or reduction of the separation between plate and blind, and he thought special effort should be made to increase the spring tension and so increase the velocity of the blind. An advantage beyond the increase of speed by this means would be the lessening of distortion, due to consecutive exposure of various parts of the plate. One of the most noticeable differences in the two sets of shutters—the between-lens and the focal-plane—was the difference in the ratio of exposure that could be obtained. Although in the focal-plane one could retain an object moving faster than was possible with the between-lens without showing any appreciable blurring, yet in the focal-plane there would be under-exposure to a very much greater extent than with the between-lens. At the lowest speeds the between-lens gave as much as twenty times as long an exposure as that obtainable with the focal-plane. One of the tests proposed to be instituted as part of the regular work of the laboratory was to have shutters deposited and tested under all sorts of conditions as regards temperature, etc., and tested at regular intervals, subjecting the shutters to regular use, so that effects of wear and tear could be ascertained. He had not, so far, had any shutters sent in for these tests to be carried out, but he thought it was quite likely that in the near future tests would be supported on these lines. He hoped to get makers to send them in and extend the period of tests over possibly twelve months, and he also hoped to get the makers to give permission to publish the results, which would be of great interest to the general photographer. With regard to the proportionality of the exposure with focal-plane shutters, the diagrams which he had secured showed that the width of opening with a definite spring tension was proportionate to the length of exposure obtained. Unfortunately, some manufacturers did not appear to have realised this, and the marked speeds gave results which were based upon almost any law but this. It quite frequently happened that a maker would have a slit opening of, say, 10 centimetres for a particular speed, and when he reduced it to 1 centimetre, instead of expecting to get an exposure of one-tenth as long, which was what he did obtain, for some reason or other he marked his speed as one-fiftieth of what it was before. It was owing to practices of this kind that the markings of focal-plane shutters as well as of between-lens shutters were made unreliable. There was some excuse for a man making wrong markings upon the between-lens shutter, but he had not been able to think of anything which would mitigate the offence of incorrectly marking the speeds of focal-plane shutters. At the extremes of speed the better class of between-lens shutters was good in results, but on change from one speed to another error, more or less marked, occurred. In the majority of cases there was difficulty in getting through the range from 1-100th to 1-25th. In the cheaper shutters the tendency was for the highest speeds to be the same as the intermediate.

Southampton Camera Club.—Mr. F. S. Albert gave a very instructive demonstration at the Club's headquarters on Monday last (the 16th inst.) on the Leto Co.'s "Boardoid Photography." He fully explained the method of leaving a broad border round the print by masking and then plate-marking with the Leto plate-marker, which new method of finishing prints not only enhanced their pictorial value, but formed a very artistic novelty, which is appreciated by every photographer. Mr. Albert also described the new titling method for negatives and prints, which he said was far more simple than the old method of reversed printing or rubber stamp.

# Commercial & Legal Intelligence.

Eastman Kodak Company of New Jersey.—The Directors of the Eastman Kodak Company of New Jersey have declared an extra dividend of 5 per cent. upon the Common stock of the company, payable on March 1 to stockholders of record at the close of business on January 31. The usual quarterly dividends will be paid on April 1.

Legal Notices.—The first meeting of creditors of James Hawke Moody, photographer, 20, Tanygroes Street, Port Talbot, lately residing and carrying on business at High Street, Aberavon, Glam., was held at Swansea on January 12. The statement of affairs showed gross liabilities £363, of which £360 was expected to rank; assets £18, and a deficiency of £341 odd. Failure was attributed to the debtor failing to obtain a renewal of the lease of his premises in Aberavon; loss of Christmas trade in 1909 through alterations to premises by landlord; having to give up premises, and expenses incurred in getting other premises which were suitable. The matter remains in the hands of the Official Receiver.

The partnership between George Wallace Cooper, Harry Humphries, and Philip John Cooper, carrying on business as technical photographers, 71, Newman Street, Oxford Street, W., under the style of Cooper and Humphries, has been dissolved by mutual consent. All debts due to and owing by the late firm will be received and paid by G. W. Cooper and H. Humphries.

## NEW COMPANIES.

Miniatures, Ltd.—This company was registered with a capital of £500 in £1 shares. Objects: To carry on the business of photographers, miniature makers, artists, etc. Registered by N. Oppenheimer, 1, Finsbury Square, E.C. Private company.

# News and Notes.

"Nyte-Lyte" Weekly Postcard Competition.—The cash prize of 10s. 6d. for the best "Nyte-Lyte" postcard sent in during the week January 9-16 has been awarded by Messrs. Marion and Co., Soho Square, W., to W. E. Sherlock, 3, Old Market Place, Grimsby.

The Aerograph Co. write:—"Owing to somewhat extensive structural alterations of our premises, 43, Holborn Viaduct, some of our friends appear to have got the impression that we are removing. We should therefore esteem it a favour if you would allow us to say that such is not the case, and that, in fact, we have renewed the lease and are improving the show-room and offices."

Municipal Group Photographs.—Apropos of the suggestion in a recent leading article that photographers should keep before them the opportunities for preparing corporation and other groups during the present Coronation year, the following from the "Newcastle Chronicle" will show that municipal bodies themselves are likely to be in readiness for such proposals:—

"A meeting of the Finance Committee of the Newcastle Corporation was held yesterday, under the presidency of the Lord Mayor (Sir W. H. Stephenson). Councillor Rowe called the attention of the committee to the fact that there had not been prepared photographs of members of the City Council since the late Queen's Diamond Jubilee year. He therefore, moved that steps be taken to obtain photographs of the present members, so that they could be placed in the committee room, beside the last group, taken in 1897. The motion was adopted."

The Emil Busch Optical Company's New Premises.—The extensive new building, recently erected at 35, Charles Street, Hatton Garden, E.C., affords accommodation not only for the increased need of the firm at the present time in regard to holding and showing a larger stock of their well-known proprietary goods, but also provides easy facilities for future extension. The new premises consist of a ground floor, on which are the general offices, stock-room, and workshop, three upper floors devoted to show-rooms, general warehouses, etc., and a basement used for packing and despatching purposes, whilst at the top of the building is a garden roof, commanding a wide view of London, which gives ample opportunities for the testing of such instruments as telescopes and binoculars. There are many interesting exhibits in the show-room illustrating the capabilities of the various optical and photographic apparatus manufactured by the firm, which would well repay a visit from any desirous of purchasing goods of this description.

Newcastle Photographer's Specialty.—The following appears in the "Newcastle Daily Chronicle":—

"During recent years many wonderful specimens of the photographic art have been introduced by prominent photographic firms in the country, but the most recent production of James Bacon and Sons, the well-known high-class photographers in Northumberland

Street, Newcastle, is undoubtedly one of the finest ever placed upon the market. Their latest production is not the new photography of old, but really 'new photography,' and success has only been obtained after years of experiments and hard labour, and the spending of a large amount of money. Our representative was yesterday shown some beautiful specimens of James Bacon and Sons' new 'silver point' prints, as the new type of photograph has been termed. They are of the platinotype kind, but printed on a paper with a fine surface specially prepared by James Bacon and Sons. The background to the photograph is pure white, thus enabling the object to stand out as a thing of life. They are of beautiful tone, and the skin textures and the drapery are brought out so finely and clearly as to warrant the assertion that nothing of the kind has ever been produced before. In the old style of photographs, when a profile was taken, the face seemed to 'run into' the background, but this is not the case on a photograph of the 'silver point' type; it stands out in fine relief."

**The Sinclair Signpost.**—The first issue of a little monthly circular, published by Messrs. James A. Sinclair and Co., Ltd., 54, Haymarket, London, S.W., reaches our table, and we hasten to wish it a long and prosperous life, an aspiration which is unnecessary as long as it maintains the interest and character which mark this first (January) number. The success which has marked the business policy of Mr. Sinclair of supplying photographic requisites of proved reliability is one which we have had occasion to applaud many times in the past. The Sinclair "Signpost" further carries out the aims of its publishers by providing the photographic worker with useful hints and advice on current processes and equipment therefor. Naturally, the text deals with apparatus or materials in the sale of which Messrs. Sinclair are interested, but it is none the worse, but all the better, for this. Thus, in this issue we find an article on the new "N.S." non focal-plane reflex, on landscape photography in winter, in which the use of a Wratten light-filter in conjunction with a Sinclair lens-hood is recommended, on brilliant negatives in the camera, on maintaining and testing the temperature of the developer, together with brief notes and reviews of new apparatus, materials, and books. Long life, say we, to the Sinclair "Signpost," which we know will prove a real help to every serious photographer. The monthly number may be received regularly by any photographic worker sending his name and address to Messrs. Sinclair.

**The Scottish Federation Meeting.**—The annual general meeting of the Scottish Federation was held in Glasgow on Saturday, when Mr. Vaness C. Baird, vice-president, presided over a large attendance. The reports of the various sections were submitted and approved. An item of interest was the statement that "The Secretary's Letter," which had been issued as an independent publication for seven years, was now to form part of a Scottish photographic monthly to be issued in February by a firm of publishers. The Council had, however, made arrangements so that this would be sent to the societies in lieu of "The Secretary's Letter." The treasurer's report showed a loss on the year's working; but the Federation has a satisfactory balance at its credit.

An invitation to hold the 1912 Salon in Perth having been accepted, it was decided to leave the office of president and also two councillorships vacant—the Council to fill them up when arrangements in connection with the next Salon made it convenient. Office-bearers were then elected as follows:—Vice-presidents, W. H. Wilson (Glasgow Southern) and R. Marshall (Grangemouth); secretary, John B. Maclachlan (Blairgowrie and District); treasurer, Arch. Campbell (Dundee and East of Scotland); portfolio secretary, J. D. Ross (Brechin); lantern-slide secretary, R. Telfer (Wishaw); auditors, J. Murdoch, C.A., and R. C. Thomson; council, Henry Douglas (Perthshire), Vaness C. Baird (Dundee), R. Milne (Paisley), G. D. Macdougald (Dundee), G. Cleland (Leith), R. B. Penman (Midlothian), and R. Thomson (Midlothian).

During the past year the Glasgow Federated Societies have been meeting informally, and power was given to societies conveniently situated to form themselves into district councils for the promotion of the interests of the Federation and the harmonious working of the said societies.

It was remitted to the Council to arrange an excursion during the season.

The result of the lantern-slide competition was announced. Four hundred slides had been entered—18 society entries and 66 individual associates' entries outside the sets. The Coates Challenge Plaque was gained by Queen's Park (last year's holders) with 37 points; Paisley second with 34, and Aberdeen third with 32. For fourth place Glasgow Southern, Aberdeen Art, Grangemouth, and Dundee tied with 31 points. The first prize in the associates' competition (three slides) was won by B. B. Martin (Dundee), 10 points; 2, 3, and 4 equal—R. K. Holmes (associate), Johnston (Aberdeen), and John Kelso (Paisley). Already the slides had been booked by twenty societies.

**The Scottish Salon.**—The eighth Scottish National Salon has now closed, and its success is a decided commendation of the work of the Salon Committee, a tribute to the growing progress of and public interest in photography, a proof that the exhibition is based on right lines; and a confutation of the time-honoured belief that the Scot is peculiarly aggressive in his hunt for the elusive bawbee—for be it known that no prizes are offered, the exhibitors send in their exhibits on the prospect of receiving the honour of hanging.

It is now generally acknowledged that, as regards the quality of the work shown, the Salon is the best of this series—a series that has made photographers in all parts take seriously Scotland's claim for recognition in the realms of pictorial photography.

The conditions allowed no admission charge, but even when that is taken into account, the attendances are noteworthy, if not phenomenal. During the three weeks it was open, the attendance, checked by the gallery officials, was over 30,000.

The Art Union, engineered by Mr. Milne, of Paisley fame, sold £100 15s. worth of tickets. This was no doubt much contributed to by the offers of reward, made by enthusiastic associates of the Scottish Federation (the promoting body). One gentleman, who prefers to remain anonymous, offered a picture from a previous Salon for every one who sold four (5s.) books of tickets. The result of his offer has no doubt astonished himself, as he has forty pictures to supply to these earnest sellers. Messrs. Blair, Carlyle, Ferguson, Orr, and Whitehead offered ten pictures to the societies that sold the most tickets. These were gained by (in the order named) Glasgow Southern (£17 19s. 6d.), Paisley, Queen's Park, Cowlairs, Midlothian, Kinning-Park, Dundee, Monklands (Airdrie), Shotts, and Glasgow Eastern Co-operative; the total amount sold by these societies being £56 16s. 6d. Mr. J. M. Whitehead offered one of his pictures to the lady who sold most. This was gained by Miss P. H. Turner (Glasgow Southern) with 44; she was closely followed by five ladies with 40 each.

£85 10s. was allocated into 88 prizes, won as follows:—Prize value £5 5s., W. Dickie, Ayr; £3 3s. (2) Sir John Ure Primrose, Bart., LL.D., James Reid, Glasgow; £2 2s. (3), Mary Martin, Harthill; E. M. Morris, Glasgow; J. W. Nelson, Glasgow; 30s. (4), Robert G. Kennedy, Ibrox; James Peacock, Glasgow; W. Louis Primrose, Glasgow; James Taylor, Perth; £1 1s. (33), Right Hon. Charles Scott Dickson, K.C.; John Black, Glasgow; W. Bryce, Pollokshaws; Thomas Calder, Ibrox; Violet Cuthbertson, Cambuslang; Robert Dickie, Ayr; W. A. Dickson, Greenock; James Frame, Hamilton; Wm. Frew, Glasgow; Andrew Graham, Melrose; Frank Havord, Springburn; James Hogg, Renton; Ion C. B. Jamieson, Bo'ness; Agnes W. Kelso, Paisley; W. Kilgour, Glasgow; J. Lawson, Ibrox; D. Linngair, Selkirk; C. McDonald, Crossmyloof; Robert McPhun, Glasgow; H. C. Moodie, Alloa; M. Morrison, Glasgow; O. S. Orr, Edinburgh; T. A. Palfrey, Alva; George Ramsay, Dundee; M. Reid, Paisley; Wm. Ritchie, Glasgow; S. Robertson (two prizes), Glasgow; Mrs. Roseburgh, Galashiels; Mary J. G. Sheret, Aberdeen; J. Spence, Ibrox; Robert Ure, Pollokshields; John Urquhart, Paisley; 15s. (15), John Alexander, Bearsden; Wm. Barrowman, Muirkirk; R. B. Carruthers, Glasgow; D. Fraser, Crossmyloof; D. Forsyth, Elgin; John Graham, Shettleston; A. Kennedy, Glasgow; M. C. McAuslan, Helensburgh; Grace A. McKenzie, Govan; Richard McKenzie, Govan; Dr. Milne, Aberdeen; W. S. Morren, Cathcart; T. W. Smith, Huddersfield; Mary Waddell, Jordanhill; Nellie Wilson, Langside; 10s. 6d. (30), A. Brown, Cambuslang; John Carmichael, Glasgow; E. Chapman, Leeds; Evaline J. McFeat, Motherwell; D. Gow, Crossmyloof; D. Guthrie, Pollokshaws; A. E. Hasse, Menston; J. F. Kay, Elgin; Wm. Littlejohn, Crossmyloof; Mrs. Longmuir, Glasgow; R. R. M. Lumgair, Selkirk; Wm. D. Lyle, Paisley; J. McIntosh, Glasgow; Duncan McLintock, Paisley; John

McMillan, Cambuslang; Robert McPhee, Shettleston; Robert McPhun, Glasgow; Messrs. Mitchell, Alexandria; W. S. Morren, Cathcart; Thos. Reid, Potterhill; T. Richmond, Glasgow; James Ross, Paisley; J. Sayers, Dumbarton; J. G. S. Sproll, Glasgow; L. Stewart, Cardenden; Miss Stewart, Largs; Fred W. Hone, Ayr; L. Thomson, Langdale; Robert Wallace, Glasgow; D. Wilson, Govan.

An invitation was forward at the annual general meeting from the Perthshire Society of Natural Science (Photographic Section) to hold the 1912 Salon in Perth. Mr. Douglas, secretary of the section, explained what they had been doing in Perth, and the invitation was unanimously accepted and the inviters thanked. It is interesting in this connection to recall that it was at a meeting in Perth in January, 1903, that the Federation was formed, and there, a year later, the first Salon was held.

# Correspondence.

**** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

**** We do not undertake responsibility for the opinions expressed by our correspondents.*

## TANK DEVELOPMENT.

To the Editors.

Gentlemen,—As tank development is rapidly growing in favour amongst professional photographers it may be of interest to many who have recently started to know there are certain plates that will not develop by this method, though giving excellent results by the open dish treatment. I enclose you the result of an experiment on my part, after having spoilt two days' operating. I found these particular plates showed peculiar markings all over when developed by tank, and at first blamed myself for mixing developer wrongly or careless manipulation. But when, after careful preparation, I had a second lot go wrong, I had regretfully to go back to dish developing, when everything went quite right.

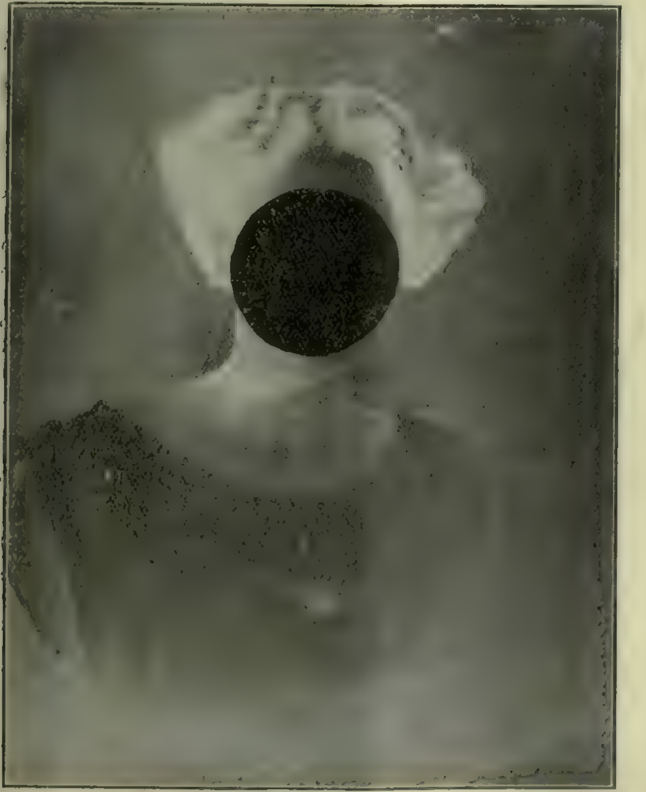


Fig. I.
Dish Development.

Finally, I developed a dozen trial exposures on three different make of plates, and as only the four of the make out of the twelve in tank again developed these marks I was convinced the fault was with the plates. No one, even the makers, can explain the cause of the markings, especially the peculiar line which shows

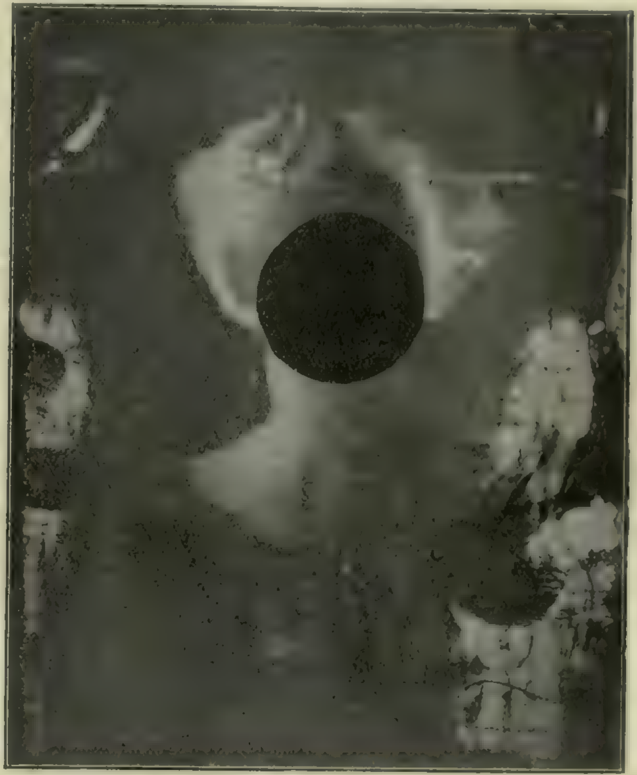


Fig. 2.
Tank Development. Plate and exposure similar to 1.

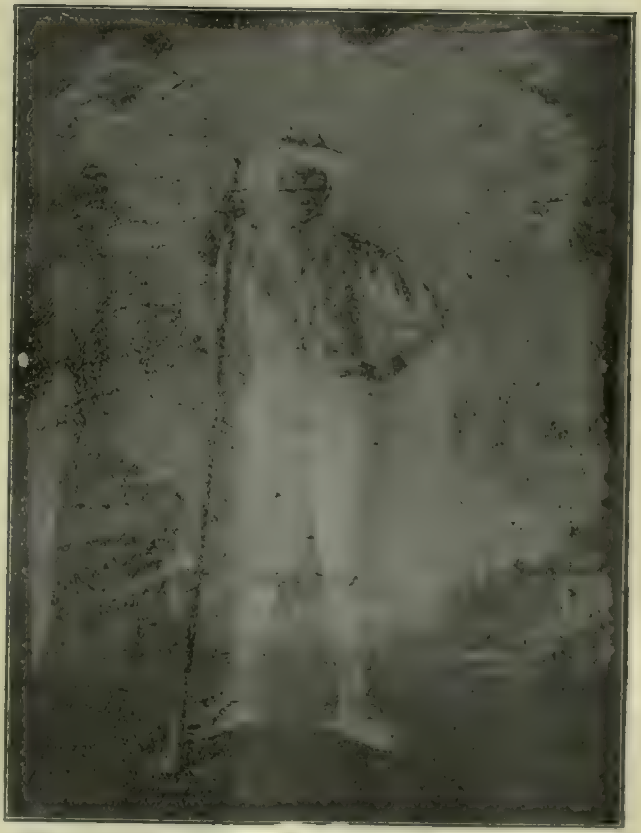


Fig. 3.
Tank Development.

in almost all and in the same position. I am finishing up the remainder of batch with excellent results by dish development, and using another make successfully with my tank. But to anyone who should fall across the same trouble it may save them time and trouble to know the fault lies in the plate, and not in the tank or developer. In return, I should certainly be interested to know the cause of a most interesting, though at the same time annoying, phenomenon.—Yours truly, GORDON CHASE.

1, Prince's Avenue, Muswell Hill, London, N.

[ We reproduce three of the negatives referred to by Mr. Chase in the above letter. We are at a loss to offer a satisfactory explanation of the exceptional behaviour of the one lot of plates in the tank. In conversation with Mr. Chase we learnt that previous batches of the same brand had worked satisfactorily in the tank. The eccentricity of those complained of may, perhaps, be due to defects in the substratum on the plate. We hazard the suggestion merely in the hope that some of our readers can furnish a better one.—EDS. "B.J."]

### A PRINTING FRAME PAD.

To the Editors.

Gentlemen,—I have found the use of "Christia lint" for the pads of printing frames, placing the waterproofed side next the paper, an effectual way of preventing injury to negative and print from a damp state of the atmosphere. I was led to adopt this from noticing that postcards never damaged the negative or got stained, even though the paper prints did, and concluded that the damp did not get through the card. I enclose sample that you may see how well adapted this lint is for the purpose.—Yours truly,

THOS. STOKOE.

Clare, Suffolk,
January 14, 1911.

### SUNDAY WORK IN PHOTOGRAPHIC STUDIOS.

To the Editors.

Gentlemen,—I have just read "Nimrod's" letter re Sunday work and holidays. The firm I work for, and have for over twelve years, are, like good firms, generous over the holidays. Regarding the question, it is only on emergency that anyone is asked to work Sundays, and then we are paid by the hour, with two hours added for travelling. Thus three hours' work is paid as five, but if over seven hours' work, then only for the time actually worked.

Re holidays, so many days are given, and the assistant can have them all at once or one or even half-day at a time as it suits. If more time is required by an assistant he can either miss his pay or work overtime without pay.

When on holidays, the week's pay is sent by registered post free of cost.

A good firm retains its workers, and these become experts, and thus are able to turn out more work in a given time than if frequent change is the rule. If possible, an afternoon is given to all most weeks, and as many as can be spared naturally select Saturday.

My pay is not what I have received in past years, but it is very fair considering the conditions of the trade. It is just over the income-tax allowance, so Mr. Lloyd George takes a portion of my earnings, and when one considers my length of service I do not consider it a penny in excess, especially as rents are so high in London.

In conclusion, if a man works on Sunday he should be paid for his work, or should have one whole day off in the week at least. But why not improve your position and obtain situations with better-class firms?

ONE WHO HAS SUFFERED BY SUNDAY WORK BUT NEVER AGAIN.

To the Editors.

Gentlemen,—Since 1907 all employees in France are protected by law in the matter of one day's rest per week, "Repos hebdomadaire." In various trades, such as cafés, restaurants, etc., this day can be taken in rotation. In the photographic establishments, the day of repose is fixed for Sunday for all employees except operators or aide operators, and these can take their repose in rotation on any other day. For instance, one man can be off on the Wednesday, another on the Friday, but in a case where an operator is working on Sunday, a book or chart must be kept with his name and day of "sortie" plainly written, as on the "Factory Act Schedules" in England. Should an inspector of labour call at a photographic establishment on Sunday and find retouchers, printers, or spotters working under any circumstances there is a "contravention," with a serious penalty for a second offence. And with the chart the operator's day can be verified also.

In regard to girls permission has to be obtained for the receptionist from the Ministre du Travail to work on Sunday, and with the demand, the day replacing Sunday is specified, and also repeated on the permission. The law is not taken full advantage of owing to the fact that Russians, Poles, and Germans form such a large proportion of the best photographic workers, particularly in Paris, but it shows that the French authorities have recognised that as far as operating is concerned, photographic establishments can remain open, and that photography, the racecourse, the theatre, the cinematograph, the café, football, bicycle, etc., shall furnish counter-attractions to the bar on the day of the "populo."—Yours truly, JOHN ARNALL.

Paris.

## Answers to Correspondents.

⁂ *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**PAINTING REGISTERED:**

E. Allen, 14, Wine Street, Bristol.—*Water-Colour Painting of Altar Tomb of Sir Edward and Lady Margaret Hungerford, Farleigh Castle, Somerset,* 1672.

C. TAYLOR.—Better send it to Stevens' Auction Rooms, King Street, Covent Garden, London, W.C.

E. B. R.—The only suggestion we can make is that you knife out the patches and then retouch. If you cannot do this yourself you could get the work done by an expert retoucher.

J. C. BARNARD.—We are sorry to find that, in consequence of our paragraph having stood in type for some time, its wording had become misleading. The issue was that for December.

"TRAVEL AND EXPLORATION."—Will you kindly advise me by whom "Travel and Exploration" is published?—S. J. CASTUR.

Witherby and Co., 326, High Holborn, London, W.C.

POSTCARDS.—Will you inform me through your paper the addresses of firms who are making bromide giant postcards?—G. C.

See our advertisement pages; or the firms named under "Bromide Printing" on page 1339 of the "Almanac."

POSTCARD PRINTING MACHINES.—Kindly advise me a machine costing about £2 to £4 for printing photo. local views, equal for turning out 500 to 1,500 a day, say. Give several names and addresses.—PHILO.

The best answer we can give you is to advise you to get our issue of February 11 last, where you will find particulars and prices of every printing machine on the market.

CELLULOID-FACED MINIATURES.—About a month ago I had some little coloured prints (which I think were on celluloid) sent me as a sample of cheap colour work. I have mislaid the address of the firm from whom they came, and now would like to give them a trial. Can you furnish me with the name of such a firm?—FREDK. MACFADYEN.

You probably refer to the advertisement of Messrs. Dorrett and Martin, 6, Belle Vue Road, Upper Tooting, S.W.

STUDIO BLINDS.—Many thanks for your valued opinion re studio roof. I am acting on your suggestion—viz., plain glass and shade for direct sun. The wires on which my studio blinds run seem to stretch and sag after a time, and light gets in between the blinds. Can you tell me where I can obtain springs to keep wires taut?—Blinds.

The best arrangement is to festoon the blinds on a pair of parallel wires, keeping each wire taut by means of a straining hook obtainable from any ironmonger.

**Sepia Toning.**—I am herewith enclosing you a sample of a very beautifully toned postcard of German production. I should like to know if you can tell me what kind of process this is, and can you tell me what toning mixture to use to produce approximately this result. I wish to use it for view postcards. At present we use either the ordinary gaslight and also bromide cards glossy.—Philo.

This seems to be ordinary hypo alum toning, and we can recommend nothing better for the purpose.

**Flashlight.**—We are asked to take a flashlight group of about 250 persons in a public hall. Can you give us any hints as to how much and what powder to use, and as to its disposition? We should prefer to use a Dallmeyer 10 x 8 rectilinear lens at, say, *f*/16. We might say that we prefer not to attempt anything if there should be any doubt as to its success. However, we shall be glad of any information you may be pleased to place at our disposal.—Cromer.

We are constantly answering queries almost identical with yours, and must refer you to the article in our issue of October 29, 1909, or to the abridgement of it in the "Almanac" for the present year, p. 525.

**Developer.**—In making up the following developer I inadvertently put in 8oz. instead of 8 grs. of bromide of potassium:—

| | |
|---|---|
| Hydroquinone | ½oz. |
| Metol | 1 drachm. |
| Sodii sulphis | 4 oz. |
| Sodii carbonate | 5 oz. |
| Potass. bromide | 8 grs. |
| Water to | 80 oz. |

Is it possible to precipitate this, or eliminate it in any other way? I shall be pleased if you could help me at all, if it would not be any trouble.—E. H. Binning.

There is no way. The only thing is to make up the developer afresh.

**Stripping.**—(1) For what purpose may negative films be stripped off glass supports? (2) Positive or transparency films. (3) May a stripped film be preserved without attachment to new support? (4) If so, by what method may it be prepared to keep flat and resist injury?—Chemical.

(1) Usually, to decrease weight, or obtain a reversed negative. (2) We know of no useful purpose which is served in the case of transparencies for either lantern projection or window decoration. (3) For practical purposes it cannot; the stripped film, unless strengthened by attachment to some support, rigid or flexible, will not withstand much handling. (4) Your best course will be to use a method described by Mr. Sterry in "Photography" for February 4, 1908, p. 100, and described in the "Almanac," 1909, p. 588.

**Copyright.**—In my query re copyrighted photograph perhaps I have not made myself quite clear. I rendered account of copyright fee to printers (A) of posters, and was by them instructed to render this to another party (B) for whom, presumably, the printing was being done. This party (B) returned account to printer, who has now advised me to apply to maker (C) of block (at present an unknown firm) for settlement of account. What I would like to know is: Are the printers, or the maker of the block, or the party for whom the work was done, liable? To which of the parties should I apply for payment of fee—10s. 6d.?—J. C., Jr.

We should advise you to sue the person responsible for ordering your photograph to be used. Presumably this was the party (B), but in any case the printer (A) and the block-maker (B) are equally, even if ignorant, guilty of infringement of your rights.

**Dishes, etc.**—I wish to paint the insides of some large wood trays or dishes with white bath enamel. (1) Do you think that this will have any injurious effect on an M.Q. bath, fixing bath, alum, bleaching, and sulphide baths, and also vice versa—i.e., will any of these baths quickly destroy the enamel? (2) Is there any method of counteracting the smell from the sulphide bath?—Rock-a-Nore.

(1) It is not a very lasting protection to the dishes. Several coats of best shellac varnish would be better. (2) The working bath does not cause the smell so much as the diluted mixture formed from drippings from the prints, and when the bath is poured down the sink. The remedy is to let all such weaker mixtures collect in a big jar containing potass permanganate, which at once destroys the sulphide. Some potass permanganate solution kept in the sink will suffice in many cases.

**Arc Light.**—(1) We use an open arc lamp with a diffusing screen of tracing cloth immediately in front. We do not get pleasing effects; the light is strong enough. Will you kindly advise us how to arrange. Length of studio, 25ft.; width, 15ft.; floor space of lamp, 4½ft. (2) Do you prefer flash or spirit vapour lamp for "at home" portraiture; also for groups in halls? Please state where to procure, makes you advise.—Light.

(1) As far as we can judge you appear to be using the light wrongly: working with the umbrella reflector made for the lamp, it should not be necessary to use a diffusing screen. We should advise you to pay a visit to the makers and obtain a day's practice in the use of the lamp. We know the makers would gladly help you in this way. (2) For regular work the flash method is undoubtedly the better. See the hints on page 525 of the 1911 "Almanac." On page 1342, under "Flash-lamps," you will see the names of firms.

**Carbon Printer.**—I note with pleasure in the "B.J." of last week the replies to queries re situations in Australia. You would grant me a great favour if you will inform me as to the prospects of a really good carbon printer outside the United Kingdom. (1) What would be the chances of employment in Australia or New Zealand? On the Continent (Europe) and in the United States I am informed carbon is very popular. Is that so? (2) Are the Australian papers you mention (or other Colonial or foreign papers, where advertisements for assistants are inserted) obtainable in London? If so, please state where, and price.—Durham.

(1) Our impression is that carbon work is less popular in Australasia than here. In Germany it is largely used, and, we believe, to a considerable extent in the U.S.A., but we should not consider the opportunities for a good printer to be better in these countries than here. (2) They are not on sale here. You will find the addresses, etc., in the "Almanac," pp. 629-632.

**Stains in Development.**—I should be extremely obliged if you can explain the cause of a reddish stain that appears after plates have been developed in a tank. Although I have had considerable experience in tank development, it is only lately that this has occurred. The stain appears in both fully-exposed and under-exposed. I am using the Kodak tank and development with Imperial S. sensitive plates, and although I have changed by using crystals instead of anhydrous, also by weakening and strengthening the developer, I am unable to solve the difficulty. I even made fresh developer time after time, fresh fixing, scrubbed the tank, all to no purpose. This has not occurred during the summer.—L. Allendale.

We cannot well suggest any explanation without seeing specimens of the stains and knowing the developer used. Presumably, however, they are due to the fact that the developer used is not well suited to the plates. Try the solution recommended by the plate makers, and probably the trouble will disappear.

**Lacquer and Varnish.**—1. We would be indebted to you for any information as to what kind of lacquer would be suitable to protect the brass work of a marine camera, and where this could be obtained? 2. We would also be pleased if you could advise us of suitable varnish for coating wood developing dishes (with glass bottoms). We had one varnished a while ago, but the varnish softened and destroyed any prints developed in that dish.—Elliott.

1. We assume you mean a camera to be used at sea, not a submarine camera. For a lacquer we cannot suggest anything better

than the usual shellac lacquer applied to the warm metal and set by heat. Cold lacquers will not stand much wear. We should, however, prefer not to lacquer the plain metal, but instead to give it a good black finish with copper nitrate solution and heat, and it can then either be polished up with oil or lacquered as preferred. 2. We should either wax the wood with paraffin wax well ironed in, or else coat it with a good bath enamel paint.

**Artificial Light Portraiture.**—About what price and where can I obtain spirit vapour lamps for home portraiture? Would this be practical for taking child subjects—i.e., in their own nursery, at play, etc.? If not, is there any lamp or apparatus on the market which would enable me to do this with good results, and what would be the shortest exposure I could give? What style of camera and what length focus lens should I require? Would a twin-lens hand camera be suitable?—J. M.

(1) You will find the names of makers of spirit mantle lamps on page 1345 of the "Almanac." Better write to these firms, but remember that the lamps are sold (and are most suitable for) projection and enlarging purposes. For portrait work, flashlight, with its larger area of light, is better, and will allow of short exposures. The choice of camera and lens depends on the room where the work would be done, but we should say that for half-plate work a lens of about 9in. focal length and aperture f/4.5 would be best on the whole. A reflex or twin-lens camera would be convenient in use.

**Canvassing Fraud.**—A very similar occurrence happened here as that recorded in your last issue under the heading of "Canvassing Frauds." The canvasser, a woman, who represents an art company giving an address in Leyton, called in this district from house to house with the same old tale of giving a free enlargement as an advertisement, saying that they have bought my business, of which they take possession in a fortnight's time. A neighbour called on me the other day, giving me all these details, and is willing to give evidence in court should I care to take proceedings. What I should like to know is: Have I sufficient ground of claiming damages from the above firm, or are they not responsible for their agents, who, as is usual with all these "fine art co.s," only receive commission, without salary. I should also like to add that canvassers of the same firm have been in this neighbourhood on and off for the last two or three years, and have certainly done considerable damage to my business. This fraud has already been exposed in a local paper on previous occasions.—North London.

We are afraid you have no legal remedy against the responsible people, who will repudiate the statements of their canvassers.

**Celluloid Miniatures.**—(1) I have been colouring P.O.P. miniatures, as well as larger sizes, and then to finish them I want to put the celluloid over them. Could you assist me in this respect? I have tried by putting the coloured print in a gelatine solution and then squeegeeing on to the celluloid, but does not answer the purpose satisfactorily. (2) Having heard of different professional photographers winning certificates makes me feel that I should like to try for the same, or something similar, to see how I should stand against others of the profession, or where I may lack in ability. Could you tell me how to go about it?—Celluloid, Wigan.

(1) The plan usually recommended is to dip the print in alcohol and hot-roll in contact with the celluloid. If you address Messrs. Fallowfield, they will give you particulars of the apparatus. (2) We know of no certificates except those granted by examining bodies such as the London Chamber of Commerce and the City and Guilds of London Institute. We may tell you that professional photographers, rightly or wrongly from their point of view, attach little value to these certificates, and we do not imagine your customers will do so either. The best recommendation you can offer is your own good work. (3) You can get this number from our publishers, post free, 2½d.

**Paramidophenol.**—I should be extremely obliged if you would kindly help me over the following difficulty. 1. I have been trying to make a one solution of paramidophenal developer according to the formula given in the "British Journal Almanac." First of all I dissolve the metabisulphite in the water, and add the paramidophenol. Then I add by degrees a strong solution of hydrate of soda, well stirring all the time, and procure the red colour and the sediment all right. But beyond this stage I cannot move it—that is, add and add as I will up to 40 times or more, the amount of soda solution, the colour and sediment remain—it does not become clear again, and when I tried to develop with it the result was very weak indeed. If you could tell me where I have gone wrong I should be obliged. I have tried both paramidophenol and paramidophenol hydrochloride, same result each time. 2. I should also like your opinion on which is the best all-round developer of the two—paramidophenol, or the simple amidol?—Nemo.

1. Your trouble may be due either to the use of cold water or to that of impure caustic solution. The latter should be fresh and free from carbonate. Make sure that this is the case, and then start making the paramidophenol solution with boiling water. As the result is very much the same as rodinal it is naturally a strong colour, but we would suggest that you might do well to use rodinal instead of troubling to make up the solution yourself.

**Erection of Studio.**—I should be greatly obliged if you could advise me under the following circumstances:—Having had considerable success as an amateur, I, about the middle of last year, acting on the suggestion of friends, began business as a professional photographer, utilising for the purpose some of the rooms of this house. I, however, found myself much hampered by having as a studio a room not very suitable for the purpose. Accordingly I made up my mind to have a portable studio in the garden behind the house, and obtained plan and specification of the same from a manufacturer. My landlord agreed cordially to my putting up the studio, but a builder in the neighbourhood, who owns houses higher up the road—perhaps 160 feet away—has warned me that if I put it up he will compel my landlord to have it taken down again, on the ground that a trade is being carried on on the premises, causing depreciation on the value of his property. The studio would not be anything in the nature of an eyesore, and would not be visible from the road. No signboard, show case, or even brass plate is shown in front of the house, or will be shown in the future. It has been suggested to me that photography is not legally speaking a trade, but a profession, and that consequently I should not be violating the proviso which appears in my agreement to the usual effect that the house shall be used only as a private dwelling house. Perhaps you will kindly tell me how I stand legally, and whether I need pay any heed to the threat mentioned.—A. H.

It is impossible to advise you as to your safest course without being in possession of the fullest facts relating to the lease, local building regulations, etc. No one but your own landlord, or the ground landlord, can prevent you from carrying on a business, and the latter only if there is a clause in the lease stating that a private dwelling house only shall be erected upon the land. Your immediate neighbours might have a remedy against you if your studio in any way interfered with their light or air, or is carried on in such a way as to be a nuisance to them. We certainly advise you to consult a solicitor before erecting the studio, and also to obtain a copy of the local building regulations from your district council offices. The builder in question might be guilty of some slight infringement of these as a means of getting your studio removed.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2647. Vol. LVIII. FRIDAY, JANUARY 27, 1911. Price Twopence.

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## SUMMARY.

The Professional Photographers' Congress will be held at the Royal Horticultural Hall, from May 15 to 19, and will be on similar lines to last year. Details will be found on page 74.

Mr. H. Hinge describes a novel way of arranging and hanging backgrounds in an illustrated article, which contains some very practical suggestions. (P. 65.)

Two useful hints in respect to the use of the arc lamp for printing and portraiture appear in a note on p. 58.

Mr. S. Elwin Neame lectured on professional picture making before the Bristol Photographic Club on January 14, and was assisted by Miss Ivy Close, who gave a series of artistic poses. (P. 68.)

We deal, in a short article, with some of the advantages of combination printing. (P. 59.)

Markings on plates caused during development form the subject of several letters in the "Correspondence" column. (P. 74.)

An important paper on the action of chromium salts upon gelatine was read by Mr. Charles W. Gamble, of Manchester, before the Congress of Applied Chemistry. This paper we reprint. (P. 59.)

A paper on the preservation of iron salts, containing some useful hints on the keeping of ferric oxalate is reprinted from "American Photography." (P. 61.)

A new form of the Dixio stereoscope, in which a reflecting prism takes the place of the usual mirror, is described by Mr. A. Lockett. (P. 63.)

In "Photo-Mechanical Notes" some improvements in the Mertens Intaglio printing machine are described, while the cause of lack of register with tricolour filters is also dealt with. (P. 68.)

Mr. F. F. Renwick writes a letter in regard to the subject of the physical process of development. See "Correspondence" column. (P. 75.)

We give some hints with regard to the home manufacture of ground glass by a very quick method, that is suited for lantern and stereoscopic slides, as well as for focussing screens. (P. 58.)

A folding reflex camera is among the items in "Patent News" this week. (P. 70.)

## EX CATHEDRA.

**Commercial Photography.** We are glad to chronicle a considerable amount of activity among those photographers who make a specialty of taking furniture, millinery, and the thousand and one articles which we find in catalogues and advertisements. This work, however, is being confined to a somewhat limited number of firms, who have studied the special requirements of the subjects. The ordinary photographer has been singularly neglectful of the facilities which are offered him by plate-makers and opticians, and often dismisses with an expression of scorn any suggestion that he could improve his work by the use of light-filters and correctly colour-sensitive plates, or that a picture of a piano made with a telephoto will be more acceptable to the manufacturer than one made with a wide-angle lens, which possibly would be more convenient for him to use. We remember hearing a very experienced photographer say that he could obtain perfect orthochromatic effects from coloured originals by using a very slow ordinary plate and giving a long exposure. He may never realise his error, doubtless wonders why some of his old customers have deserted him, and probably attributes the fact to the rage for cheapness. To succeed in commercial photography every improvement in plates, apparatus, and methods must be adopted. Panchromatic plates, telephoto lenses, prompt delivery of work, and care of originals all play their part in bringing success to the worker. The mention of the telephoto lens may excite some curiosity as to its value in photographing easily accessible articles such as dressing-cases, cigar-boxes, and even boats, but it is a fact that the commercial value of the telephoto lens lies chiefly in this direction. A firm of photo-engravers who made blocks of thousands of small articles each year saved several pounds per week by being able to use non-distorted direct photographs instead of having to get them corrected and sometimes entirely re-drawn by highly paid artists. The advantage of the telephoto lens lies in the greater distance at which the camera can be placed when photographing, and the improved perspective rendering which thereby results. The value of the Panchromatic, or even the ordinary Isochromatic, plate is not fully appreciated, even by many progressive photographers. Let them procure Dr. Mees's book on the "Photography of Coloured Objects"; the pictures of an old mahogany dark-slide will appeal to them and teach them. Knowledge is power, says the copybook; the modern version reads: Knowledge is money.

* * *

**A Printing Hint.** It is very usual for photographers using the enclosed arc lamp in the studio to have a printing stand (usually termed a cabinet, why we have never been able to find out) in which the frames are placed around the naked light, a little tissue paper being sometimes placed over the exceptionally thin ones. Unless the negatives are more vigorous than they are usually made for daylight printing, the results are apt to be flat, especially when platinotype or carbon is the medium employed. It is also difficult to avoid showing any work which has been put upon the back of the negative. Visiting a studio the other day we found the owner engaged in printing entirely by reflected light, a Jandus lamp being the illuminant. On asking if the process was not rather a slow one we were told that the prints came off in about the same time as in good summer daylight, and that the quality left nothing to be desired. We may add that the negatives were free from pyro stain, which would naturally make the printing relatively much slower with the enclosed arc than with daylight. In using the lamp for portraiture a semi-cylindrical metal reflector cut off all direct light from the sitter, casting it upon a large curved reflector, which was treated exactly as if it were a window, movable light and dark screens being used to obtain the desired effects.

* * *

**Gelatine Film and the Oil Process.** During a recent demonstration of the oil process at the City of London and Cripplegate Society it was mentioned by one or two workers present that an oil print usually "worked" better if the bichromate salt was washed out after exposure under the negative and the print dried, to be soaked afterwards for a few hours when pigmenting was to be done. Speculation as to the reason of this was heard, and one suggestion was that even a couple of hours' washing might not remove all the bichromate salt in the exposed portions, and that the subsequent exposure to light caused a still further hardening. We believe this suggestion was offered tentatively, and there is no doubt room for experiment. Some of the best known workers in the bromoil process advocate the same method there, that of drying the print after preparation, and re-soaking in tepid water, and with most papers we have found, on experiment, that there is greater certainty when this plan is adopted. Here the explanation cannot be that of further hardening, for in bromoil the hardening is due entirely to the action of the metallic silver on the chromium salt, and the metallic silver is removed before the print is dried. We think that it is more probable that the effect is physical, for the gelatine of a negative which has been dried is tougher and less likely to blister or frill under subsequent treatment than one which has not been dried. It is possible that the hardened or shadow portions of the film of an oil or bromoil print show a greater increase of hardness after drying than the unhardened or high light portions, but there is undoubtedly room for investigation on this point.

* * *

**Making Ground-glass Screens.** Ground-glass is a material very often required by photographers, and also one it is sometimes difficult to get of a really good quality, further than which its price is generally a very long way in advance of its real value. This latter fact will soon be discovered if one wants an extra large sheet, say for a 15 by 12 focussing screen. It is, however, the easiest thing in the world to make ground-glass of the very finest quality, and the operation is exceedingly rapid. Formerly this was not the case when emery powder was the only abrading material available. For quick cutting emery made too coarse a grain, and fine flour emery or knife polish acted too slowly. The case is, however, very different with carborundum powder, the finest and smoothest quality of which can be relied on to turn out a first-class focussing screen in a very short time. Beyond the carborundum powder the only thing wanted is a rubber, which consists of a piece of glass fixed with seccotine to a block of wood, which serves as a handle. In use the glass to be ground is wetted, a little powder is thrown upon it, and then the rubber is brought into play. Of course, the surface of the rubber becomes ground as well as that of the plate, and when it is in this condition it works at its best. The time required depends on the size of the rubber. Using one about two inches by one a 5 by 4 screen can be completely and perfectly ground in five minutes or less. For large sheets a bigger rubber is required, and one of the best is a cutting shape fitted with a handle. One that is chipped and useless for trimming purposes will act excellently. A most useful application of the rubber is for grinding the backs of lantern or stereo slides. The former are sometimes, and the latter nearly always, all the better for being on ground-glass, yet transparency plates on ground glass are not always available. A second cover glass is the usual expedient, but this adds unnecessarily to the weight and thickness of the slide. In view of the possibility of wet and dirt getting on the film side of the plate during the grinding process, it is very advisable to formalin, dry, and varnish the slide before grinding. Put the slide in a printing-frame, glass slide out, and grind with a small rubber. Take care that the slide is well backed up, and that the springs are strong enough to hold it up against the rubber. It can easily be packed up with a few spare or spoilt plates, or with cardboard, and then there will be no fear of the plate giving from the rubber, and so letting wet in under the frame rebate. When ground the glass is cleaned while still in the frame, and on removal the film side should be found to be perfectly clean.

* * *

**An Ever-Ready Camera** The English photographer has much to thank his transatlantic brothers for in the way of labour-saving devices, but there are still a few hints which he is slow to take. One is to provide a small light camera, say in half-plate size, for outdoor jobs, and to have it ready for use, with slides filled, at a moment's notice. When the average English photographer receives an order for an "At Home" portrait he usually puts his studio camera and stand on the top of a four-wheeled cab and wants half a room cleared to make space for them. Contrast this with the American system of using a 7 x 5 camera, often a Kodak, with film, concentrating all his energies upon posing and light, and relying upon enlargements from suitable portions of the negative to fill his commission. In the case of any sudden call to an accident or any unexpected happening the amateur often scores because his apparatus is better suited to the occasion.

* * *

**Choice of Plates in Copying.** It happens not infrequently that the professional worker has old, faded, or discoloured originals to copy, and in his anxiety to secure the best result from any print of an exceptional character is too ready to try any suggestion offered instead of thinking over the conditions for himself and making a selection accordingly. For example, colour-sensitive plates are often prescribed for copying a faded albumen print. Now if the print has yellowed all over and the image remains fairly strong, the ortho plate is the correct one to use, for a non-ortho, being insensitive to yellow, will render the yellowed paper by almost as dark a tone as the actual image, and so produce a flat result. But it frequently is the case that the paper has not yellowed to any great extent, but the image has changed from a purple or brown colour to a yellowish brown or yellow hue. Now a yellowish image on a whitish ground can be better photographed by a non-ortho plate than by one which is coloursensitive, and in such a case the most satisfactory result will be obtained by the use of a slow ordinary plate, possibly, indeed, a "process" plate The difference between slow and rapid plates is not sufficiently recognised by copyists, the effect on the contrast of the negative being considerable. A much more satisfactory negative will be obtained, for instance, from a harsh glossy P.O.P., if it is made on a very rapid plate, a slow plate having a tendency to increase the harshness which already is an unpleasant feature. If the P.O.P., in addition to being harsh, is toned to a reddish brown, then an orthochromatic plate will enable one to expose the shadows without getting gross over-exposure of the high-lights, and in such cases a fairly deep orange light filter will still further improve matters.

## COMBINATION PICTURES.

It is very rarely that every sitter in a group is satisfied with his own portrait. When more than one exposure is made some will choose prints from one negative and some from another. A recently revived method of grouping a number of poses upon one sheet of paper, examples of which may be seen outside some of our theatres, suggests a satisfactory and artistic way of producing "group pictures," whether they be of a family, a football or cricket team, or any other body of persons desiring a collective photograph. The pictures in question were carbon prints by the double transfer process, a dozen or so different poses of the same person, cleverly vignetted, being placed upon one sheet of the final support. While, probably, few persons except members of the theatrical profession would require such a plurality of poses of themselves, there are many other cases in which a portrait photographer could suggest to his patrons the desirability of making such pictures, and point out how each sitter would be able to select a pose entirely satisfactory to himself, how sittings could be arranged at times convenient to each individual, and how portraits of deceased or distant members of the family or club could be copied to scale and included in the composition. Besides this, the photographer secures the great advantage of separate negatives of each member of the group, and from these he should secure orders which would at least be equal in amount to that of the original composition. It may be urged that the method involves considerable expense as compared with the ordinary group. This is quite true, but at the same time it will fetch a much better price, as it is *hors de concours* as far as the cheap photographer is concerned, and there are always clients who want the best.

So far we have dealt with the private sitter who wants a high-class picture in limited numbers. With football and cricket clubs, athletic teams, a quicker and cheaper way must be found, and very satisfactory results may be obtained by taking the members separately. In some cases two may be grouped together, printing in glossy or semimatt bromide, and carefully cutting out the figures and pasting them upon a light-grey or greenish mount. A little brush work to indicate cast shadows and possibly an aerograph vignette will remove the "cut out" impression and the print is then ready for copying. If the mount is sufficiently soft the prints can be so imbedded by thorough rolling that the cut edges are not apparent.

A more ambitious method, which, however, can only be recommended to those fairly proficient in drawing and the laws of perspective, is to take the separate figures in different sizes so that they may be grouped as if standing at varying distances from the camera, a suitable landscape being indicated with the brush, rather than drawn, to unite the whole into one picture. As an example a group of full-length figures of the Tottenham Hotspur team grouped around their own goal would be far more acceptable, both to followers of the team and to the illustrated press, than the usual two rows of melancholy figures with folded arms. It also affords a means of allowing each player to show some individuality in his pose, and even to suggest his particular place in the team. Owing to the exigencies of lenses and circumstances in the field, it is hardly possible to do this in what may be called the straightforward way, but with a little preliminary sketching out a result full of life and interest can always be assured. It may be remembered by many of our old readers that twenty-five or thirty years ago Messrs. Notman and Co., of Montreal, specialised in this class of work, their skating groups taken at the ice carnivals being generally admired by photographers and laymen alike.

# THE ACTION OF CHROMIUM SALTS UPON GELATINE.

(A paper read before the Congress of Applied Chemistry last week in London.)

This subject first received serious attention at the hands of Eder, who, in 1878, published the results of a comprehensive research[1], which dealt not only with the chemical changes which occur when chromated mixtures are exposed to light, but also with the properties of such and their influence on the character of the results from a purely photographic aspect. The main conclusions deduced so far as concerns the nature of the chemical changes was that light exercises a reducing action upon the alkali bichromate in the presence of gelatine, producing chromium chromate, and finally chromium oxide, which reacts upon the bichromate, producing chromium chromate, and that eventually this was by further light action converted into chromium sesquioxide. The organic substance was, according to Eder, in part oxidised during the changes, and an insoluble body is formed by the union of the chromium chromate with the unaltered gelatine. The portion of the gelatine which acted as a reducing agent to the chromic acid was not found in the insoluble part. Eder's researches did not supply any exact information as to the nature of the compound of the gelatine with the chromium oxide—the insoluble substance. Although subsequent investigations have caused there to be some qualifications in the conclusions of Eder, they remain essentially unaltered.

It is well known that many bodies have the property of either rendering gelatine wholly insoluble in water or of merely raising the melting point of a "gel" of given concentration of gelatine. Such substances as produce complete insolubility are chromic acid, ferric chloride, formaldehyde, tannin, etc., while sodium, ammonium, or potassium alum raise the melting point of a gel, and produces the so-called "partial" insolubility. But chrome alum acts in either way according to the amount added. Small quantities produce partial insolubility, which insolubility is increased by an increase in the amount of the salt up to a certain point, when further additions produce a reverse action[2].

---

[1] Eder, J. M. Ueber die Reactionen des Chromsäuren und der Chromate auf Gelatine u.s.w. Wiener Photographische Gesellschaft, 1878. Photographische Correspondenz. Wien. An account of the communication, which is very lengthy, appears in the "Photographic News," 1878, 1879, p. 172, *et seq.*

Namias[3] has shown that a solution of any chromic salt which has an acid reaction has only a slight insolubilising effect upon gelatine. Even a concentrated solution of ordinary pure chrome alum exercises only a slight influence upon sheets of gelatine immersed in the liquid. But by treating the solution with ammonia, a basic salt of chromium is produced, and this exercises the maximum insolubilising effect. Certain other chromic salts, such as the chloride acetate and tartrate, act in a similar manner, but the effect is not so pronounced. Namias points out that the insolubility produced by chromium salts has usually been considered to be due to a compound of the gelatine with chromic oxide, and he considers that the striking effect produced by chromic sulphate, as described, is due to the tendency of that body to be hydrolised in solution into chromic oxide and sulphuric acid, but that little or no hydrolysis takes place with the other salts mentioned. The basic salt has an increased efficiency, because the absorption of chromic oxide from it by the gelatine does not produce so much free acid. That the gelatine does abstract chromic oxide is shown by the fact that the solution gradually becomes acid. It is suggested that, inasmuch as the gelatine has a greenish tinge even after prolonged washing, the insoluble substance is a mixture of gelatine and a basic chromic sulphate rather than with pure chromic oxide.

Further light upon the work of Namias has been given by the investigations of MM. Lumière and Seyewetz[4], who agree as to the formation of the basic salt by the treatment of chrome alum with an alkali. They show that basic chromic sulphate $Cr_2(SO_4)_2$, prepared after the manner of Recoura, is much more effective than the normal salt. This particular action of the basic salt is not, however, shown by a solution of chromium sesquioxide in alkali, and this difference is attributed to the presence of the alkali which they assume decomposes the compound formed between the chromic oxide and the gelatine. It has further been shown that when working with chrome alum, the insolubility produced by its addition to gelatine depends upon the concentration and the time which elapses after addition. The effect is thus progressive. The minimum quantity of chrome alum required to render gelatine resistant to the action of boiling water is 2 grams to 100 grams of gelatine, whatever the concentration of the gelatine solution. The maximum quantity of chrome alum that can be fixed by the same weight of gelatine is 21 grams, whatever the concentration. It was found by the previously mentioned authors that the insolubilising action of the sulphate, sulphite, nitrate, chloride, fluoride, acetate, formate, citrate, tartrate, and lactate of chromium is less, the greater the amount of alkali required to produce a permanent precipitate of chromium hydroxide in solutions containing equal weights of chromium, but otherwise is independent of the nature of the salt.

The gelatine which has been rendered insoluble by chrome alum appears on treatment with water to have an alkaline reaction, and before drying shows as an elastic transparent mass of a reddish violet colour with a greenish dichroism, or green, according to whether it has been rendered insoluble with the normal or the basic salt. By washing the gelatine in weakly alkaline water the mass loses its transparency and becomes translucent, and with a stronger alkaline solution quite opaque, because of the precipitation of the oxide of chromium. If the insoluble gelatine is dried it becomes brilliant and of a deep green colour, is hard and brittle, and easily reduced to powder. As to the actual state in which the chromium exists in the insoluble gelatine, the authors asked themselves *(a)* whether the chromium salt is fixed on the gelatine giving an additional product as in the case of a double salt, or *(b)* whether the gelatine playing the part of a weak acid decomposes the chromium salt giving a basic salt which combines or forms a compound of addition with the gelatine, or *(c)* whether the gelatine playing the part of a strong acid combines wholly with the $Cr_2O_3$ setting free all the acid combined with this substance. Experiment showed that in the case of chrome alum and chromium chloride the gelatine combined directly with the salt, for when gelatine was immersed in the solution, even for so long a period as to withdraw nearly the whole of the chromium salt, the solution showed on analysis precisely the same relation between the chromium and the acid as in the original salt. [Namias *(see ante)* states that a solution of chromic sulphate became acid by immersing gelatine in it.] But by washing the mass with hot water the acid of the salt is gradually removed, and to prevent the acid solution so produced from acting upon the gelatine it is necessary to use weakly alkaline water to wash out the last traces of chrome alum before treating with boiling water. If the insoluble gelatine be treated with dilute sulphuric acid (1 : 1,000), the mass swells, and on boiling for a few seconds the $Cr_2O_3$ dissolves, forming a green solution, the gelatine dissolving at the same time. If sufficient gelatine be present, a jelly is formed on cooling. This tends to show that the gelatine as such is not altered by its association with the chromium compound. If instead of sulphuric acid an alkali be used, the gelatine after swelling disintegrates and the $Cr_2O_3$ separates. MM. Lumière and Seyewetz have shown that a given weight of gelatine fixes a practically constant quantity of chromium sesquioxide whatever be the nature of the chromium salt employed, and that this quantity varies between 3.3 and 3.5 grams per 100 grams of gelatine.

In 1905 MM. Lumière and Seyewetz presented to the Chemical Society of Paris[5] an account of the results of an investigation on the action of light on bichromated gelatine. They represent the initial change thus:—

$$K_2Cr_2O_7 = Cr_2O_3 + K_2O + 3O$$

and accept the evidence of Eder's experiments that the gelatine is not oxidised by the oxygen shown as liberated. They found that chromic oxide is produced together with free potash, which forms with the excess of bichromate a neutral chromate. The quantity of this neutral chromate increases with the exposure, and that as the exposure is prolonged the reduction of the bichromate becomes slower. They also confirmed the formation of chromate of chromium as stated by Eder, but were not able to prove by analysis that its composition agreed with that of the chromate $Cr_2O_3CrO_3$, the compound always being deficient in chromic acid. They found that the quantity of chromium fixed by the gelatine insolubilised by light from a mixture of gelatine with bichromate is not constant as in the case of the direct insolubilisation with chromic salts (*see ante*). The amount varies with the concentration of the bichromate and the amount of light energy received. The amount of chromium sesquioxide retained was found to vary between 0.39 and 10.0 grams per 100 grams of gelatine, but these quantities do not take account of the chromium chromate which may have become eliminated in the hot water washings.

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[2] MM. Lumière et Seyewetz. Sur la réaction acide des aluns et l'influence de cette acidité sur l'insolubilisation de la gélatine dans le cas de l'alun de chrome. "Bulletin de la Société Chimique de Paris," 3 série, t. 27, p. 1,073 (1902).

[3] Namias, R. Azione sulla Gelatina dei composti varidi cromo e sua importanza practica in fotografica. "Bull. Soc. Fot. Ital." 14 (1902), 268, and "Photographische Correspondenz" [illegible], 116.

[4] MM. Lumière et Seyewetz. Sur la composition de la gélatine insolubilisée par les sels de sesquioxyde de chrome et la théorie de l'action de la lumière sur la gélatine additionnée des chromates métalliques. "Bulletin de la Société Chimique de Paris," t. 29, p. [illegible] ([illegible]).

[5] MM. Lumière et Seyewetz. Sur la composition de la gélatine impregnée de bichromate de potassium insolubilisée par la lumière et sur la théorie de cette insolubilisation. "Bulletin de la Société Chimique de Paris," iii, 34, 1032-1040 (1905).

necessary to get rid of the excess of unadulterated potassium bichromate. On the whole the authors conclude that in the insolubilisation produced by light at least three times as much chromium sesquioxide is retained as in the case of the gelatine rendered directly insoluble by chromic salts. Further, the gelatine differs notably in composition from the directly insolubilised. The chromic oxide which it contains appears to be in two parts, the one fixed and corresponding to about 3.5 grams per 100 of gelatine which may be regarded as compatible to the chromic oxide held by the directly insolubilised gelatine, and the other variable with the duration of the exposure and arising from the reduction of the bichromate in light by the organic matter. It is further noted that the quantity of chromic oxide held by the insolubilised gelatine increases with the duration of the exposure, but it is not directly proportionate, and the increase becomes smaller as the amount of neutral chromate which is formed increases. The decomposition of the excess bichromate by the chromic oxide with the formation of chromium chromate appears to be very partial.

In a further communication[6] the variations produced in the composition of bichromated gelatine when the potassium bichromate is replaced by other metallic bichromates and chromic acid. Taking the substances chromic acid and ammonium bichromate, it may be remarked that these bodies do not give rise to stable neutral chromates of much less sensitiveness to light than the initial bichromates, and it therefore was possible that prolonged light action might yield insoluble gelatines containing more chromic oxide than given by potassium or sodium bichromates. This anticipation was realised, and it was found that in the presence of gelatine, chromic acid, and particularly ammonium bichromate, are much more easily reduced than potassium bichromate. In the case of the ammonium salt there was retained by the gelatine an amount of $Cr_2O_3$, varying between 13.05 and 18.4 per cent., and with chromic acid 11.25 and 15.2 per cent. The quantities of $Cr_2O_3$ retained by gelatine in the case of other metallic bichromates was similar to the above, but in all instances the formation of chromium chromate was slight; at the same time it is very interesting to note that many of the insolubilised gelatines retained considerable quantities of the oxides of the particular metallic bichromate used. In the case of copper the quantity of CuO to $Cr_2O_3$ was 7.17 to 8.86 grams per 100 grams of gelatine, while with iron the insolubilised gelatine contained ferric oxide in considerable excess, the amounts being 12.4 grams of ferric oxide to 0.93 grams of chromic oxide per 100 grams of gelatine.

A further contribution[7] to the study of the subject was made by the same authors, when the changes which take place spontaneously in the dark in bichromated gelatine were described.

The gelatine containing potassium bichromate was kept for varying terms (*a*) at ordinary temperatures and (*b*) at 120°C., and periodic examination was made until the gelatine was found to be quite insoluble in water at 80°C. After repeated washings the gelatine kept at ordinary temperature which had become insoluble was colourless, but that kept at 120°C. presented the same appearance as bichromated gelatine rendered insoluble by light action. In the case of the gelatine kept at normal temperature complete insolubility was produced in 4½ months, while at 120°C. the same effect was obtained in six days, but there is this important difference, that while in the former case the gelatine does not completely resist the action of boiling water, in the latter instances it does. Examination of the insoluble gelatines showed that the sample obtained at normal temperature contained no chromic acid, and that the amount of chromic oxide varied between 0.67 per cent. for one month to 1.15 per cent. for 4½ months. In the case of the sample kept at 120°C. there was found to be an appreciable quantity at the end of one day. This body calculated to $CrO_3$ was 0.54 per cent., and the quantity increased by keeping for six days to 2.54 per cent. When the gelatine was quite insoluble the chromic oxide varied between 8.68 per cent. for the first day to 20.59 per cent. on the sixth day.

In the gelatines thus examined there was no doubt a certain proportion of chromic oxide, which had no influence in the production of insolubility, and thereby results from the reduction of the bichromate of organic matter. It is further of interest to note that the gelatine rendered insoluble spontaneously contains much less chromic oxide than that rendered insoluble by light action.

CHARLES W. GAMBLE.

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[6] MM. Lumière et Seyewetz. Sur la composition de la gélatine insolubilisée par la lumière en présence de l'acide chromique et des principaux bichromates métalliques. "Bulletin de la Société Française de Photographie," X. 21, 461.

[7] MM. Lumière et Seyewetz. Sur la composition de la gélatine bichromates insolubilisée spontanément dans l'obscurité. "Bulletin de la Société Française de Photographie" (2), 21, 541 (1905).

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# ON THE PRESERVATION OF IRON SALTS.

(A paper in "American Photography.")

A PROLIFIC source of failure in working the kallitype process is deteriorated ferric oxalate, and I venture nothing in asserting that nine-tenths of the worker's inability to obtain satisfactory results is due to this cause and none other. Nor can it be otherwise considering the facts, the regrettable feature connected therewith being the almost total inability of the aspiring experimenter to grasp the truth, with consequent failure more or less absolute, not to mention financial loss from spoiled paper and wasted metals.

The basis of kallitype—like unto platinotype—is ferric oxalate. Paper coated with a solution of this salt and exposed to the light of day under a negative, results in a more or less visible image, which may be brought to full vigour by immersion in a solution containing either silver or platinum in combination with certain essential chemicals. Paper so coated and exposed to light under a negative undergoes a chemical change. The iron salt is thus altered from the ferric to the ferrous state, and in this condition has the capacity to precipitate a shower of exceedingly minute metallic particles when brought into contact with silver, gold, or platinum in solution. It is not the only iron salt that will do this, but it is the one experience has demonstrated to be the best. The resultant picture viewed under a magnifier discovers a piling up of fine metallic particles, each distinct from its fellow, the whole imparting the agreeable effect so much admired by people of taste, and which is not to be found in photographic prints outside of platinotype and kallitype.

### Result of Deterioration.

Ferric oxalate is reducible to a ferrous condition through the action of heat, light, and moisture. Unless put up in air-tight receptacles there is rapid deterioration. To guard against light the maker's custom is to put up in amber-brown bottles encased in paper. With the manufacturer's unbroken seal upon the cork it is presumed to be moisture-proof.

In view of these facts it is plain that if through one cause or another the *ferric* oxalate has already reached the *ferrous* state when we purchase it, there must be failure to achieve results. And I risk nothing in asserting that it is thus often spoiled and worthless when handed over the counter to the unsophisticated and unsuspecting customer. I can perhaps best explain matters by recounting my own experience in buying the chemical from time to time. Some ten years ago I began to experiment with the iron printing processes in general, and kallitype in particular, inspired by curiosity to discover the measure of success that might be mine in the sensitising of some of my own printing media. Furthermore, aside from wanting to print on fine and rare paper stock that would lie flat upon the mount by a pat of paste at the corners, I was possessed of the desire to dabble with chemicals and see what would happen.

About that time was published No. 10 of the "Photo Miniature" series, "The Blue-print and Variations," and a perusal thereof started a number of trains of thought, some of which are still running. Kallitype especially had its appeal from its cheapness and likeness to platinotype. I therefore invested in the necessary chemicals. Of Theodore Metcalf Company, an old and reliable Boston wholesale and retail chemist establishment, I procured a couple of ounces of the ferric oxalate, and it must have been all that it should, else I could not have had the surprisingly satisfactory results I did have, upon a first attempt. But—unfortunately there usually is a but—when I renewed my supply I fell down badly and counted naught but failure after failure. Do what I would, though I ran the gamut of change in experimentation, I could not come anywhere near repeating my initial performance, and, in fact, could not possibly do so, *because the chemical was inert.*

In the light of present-day knowledge this is plain enough, but in those days I had never an inkling of the truth. I, in fact, attributed want of success to some dereliction on my own part, and in disgust—after repeated failures—abandoned all effort as useless—but only for a time. This has doubtless been the experience of a great many workers in platinotype and kallitype who do not prepare their own iron salt. When the ferric oxalate is fresh success crowns their efforts, when it is not then failure more or less absolute is their portion, and it is wholly a matter of chance which condition obtains. Certain it is the dealer does not, and the purchaser cannot know whether the salt is in prime condition until the wrapper has been removed. Even then appearances are so deceptive, for absolute certainty a chemical test is required. After a rest of a year I returned once more to the attack.

### Various Experiences.

Again I laid in a stock of a couple of ounces ferric oxalate, and on taking off the wrappers quickly discerned a great difference in contents, both as regards colour and condition. In one were glistening *greenish-brown* scales, in the other a powdery mass *pale green* in colour. The first was ferric oxalate in good order, the other the same salt gone bad. The first represented the salt in condition to finish a print under a negative, the second the same salt after exposure had been made. Two years after, on buying four ounces, I found them all spoiled. On returning them to the seller he found the entire stock upon his shelves, save a single ounce, in like condition, he doubtless selling it to customers every day. In another two years I had sent me four ounce bottles of hopelessly deteriorated salt, without paper wrappers, and in absolutely clear white glass vials. Thus exposed upon the firm's shelves for months, and maybe years, to be occasionally sold to such unfortunates as required it, the salt was as worthless for photographic sensitising purposes as so much dirt from the highway. To the initiated a glance was sufficient to demonstrate that the chemical was not as represented. but what of the unsuspecting, unknowing person?

He would have gone his way and counted failure as so many others have doubtless done. Would have perhaps spoiled a lot of good linen paper and wasted precious time in attempting the impossible.

Ferric oxalate, even as it leaves the maker (it is asserted), is not of constant quality. The usual advice to the worker is to make certain of its stable qualities by preparing it himself. The large consumer may thereby undoubtedly benefit, but for the user of an occasional ounce it will hardly pay. The best that can be done in such a case is to take unusual precautions to get the best possible the market affords. Furthermore, the iron salts are subject to deterioration when being used by the experimenter. In damp weather ammonia iron citrate will become a liquid mass should the bottle be loosely stoppered. A bottle of ferric oxalate in perfect condition may very quickly spoil, once a portion is used, unless extra precautions be used in keeping moisture from the remainder. For instance, a worker using a part of an ounce bottle gets perfect results, but on repeating the operation a month later he fails, and is consequently perplexed.

*In summer or fall, when the atmosphere is humid, in using ferric oxalate the bottle should as quickly as possible be recorked.*

On a sweltering humid summer day, while in a leading chemist's establishment, I watched a salesman weigh out a couple of ounces of green citrate of iron and ammonia. He took it from a pound bottle, left it on the scales for at least ten minutes while he attended to other matters. The moral of this is to always insist upon getting the iron salts—and more especially the ferric oxalate—in the original unbroken package of the manufacturer, which in the present case is either Merck or Mallinckrodt. The makers enjoin our doing so, and we may well give heed to injunction.

My present plan is to send to Merck and Company, University Place, New York, for such ferric oxalate as I require, but after what has been said regarding the instability of the salt, even as it comes from the maker, I do not undertake to declare that it perfectly fills the bill. But what else can one do, unless one prepares it oneself?

### Testing Doubtful Solutions.

Captain Abney, in "Platinotype," writes:—"To test any doubtful solution, add the ferricyanide of potassium (red prussiate), when if any ferrous salt be present it will strike a blue precipitate. If the ferrous salts be only slightly present the red prussiate will restore it again." The best plan is to pour a few drops of solution upon a piece of glass, then add a drop of the red prussiate, when, if ferrous oxalate be present, the solution will turn blue, while if in perfect condition, result will be green. The difference is beautifully exemplified when one has a thoroughly spoiled lot, and another in perfect order. The first will give a colour like a blue-print, while the last-mentioned will be green.

No doubt good kallitype prints may be had, notwithstanding a trace of the objectionable ferrous salt be present, prints too that serve the purpose of some pictorialists better than would the absolutely perfect. Such efforts have been seen in exhibitions—the slight fog and more or less debasement of image appealing to lovers of the unusual. Personally, I keep my ounce bottle of ferric oxalate, from which I am on occasion supplying my needs, in an airtight, screw-top preserving jar of small dimensions. Surplus stock is kept in another jar of larger size, but in that the extra precaution is taken to seal the corks with hot paraffin, thus most effectually guarding against moisture. Would that the manufacturer saw his way clear to adopt some such plan as paraffin sealing. The good housewife follows it in putting up fruit preserves in tumblers, she leaving a small space at top, which she fills with melted paraffin, thus most effectually keeping out the air.

If the maker of iron salts would but press the thin shave cork at present employed down into the neck of the bottle, so as to leave a sinkage of a quarter of an inch, and then pour some melted paraffin into the opening, the outside air could not possibly find entrance, the contents keeping indefinitely.

As things are at present, the flimsy shaved cork in the ferric oxalate bottle is frequently so loose it may with slight pressure be pushed entirely down into the neck. This being a fact, there need be no surprise that the contents so readily spoil. It would be the greater wonder if they did not.

Under the circumstances, therefore, it behoves the intending experimenter to buy but an ounce or two of the salt at a time, though by the paraffin airtight jar method I have kept four ounces in perfect condition for upwards of two years—the last few grains proving to be as strong as the first.

James Thompson.

# A NEW PRISMATIC DIXIO STEREOSCOPE.

The stereoscopic worker will be interested to hear that Professor Pigeon has designed a new model of the upright Dixio stereoscope, in which a small reflecting prism enclosed in a hood is substituted for the usual mirror. The latter, while giving thoroughly satisfactory results, was felt to have one or two trifling drawbacks. If an ordinary thin glass mirror, silvered at the back, is employed, there is inevitably some slight occurrence of multiple reflection. This is practically negligible in amount, but, according to strict theory, it is a defect, and may cause the definition of the reflected image to be less perfect in certain parts. If the optically ideal, but more costly, surface-silvered mirror is used, there is no trouble of this kind, but another purely mechanical difficulty arises from the fact that the delicate coating of silver is soon liable to injury from scratches or friction, besides tarnishing in a short time from exposure to the air and from contact with warm, moist, or greasy fingers.

The adoption of a reflecting prism instead of a mirror at once removes all these objections. The reflected image is bright, clear, and optically perfect; the glass prism may readily be cleaned, cannot tarnish, and is little liable to injury; while the hood in which it is mounted serves the useful purpose of preventing the left eye from seeing anything but the reflection of the left-hand picture of the stereogram, besides screening the upper surface of the prism from extraneous light.

The illustrations show the compact and convenient construction of the apparatus. As will be seen by Fig. 1, it consists of an upright wooden panel, about 10 in. high and 5 in. wide. At the bottom is a narrow traverse or crosspiece, to support the panel in a vertical position. This fits into a notch in the bottom of the panel, and is itself notched for half its width, thus forming a rigid and strong joint. Fig. 2 shows the details of the notched joint, A being the end of the panel turned bottom upward, and B a portion of the crosspiece. The arrangement is simple and efficient, besides being absolutely free from vibration or unsteadiness. When not in use, the crosspiece is removable. It has two small holes bored in it, so that it may be placed over a pair of short, projecting brass pegs, as seen in Fig. 3, which represents the stereoscope closed.

The hood which carries the prism is also of wood, and of the form indicated by Fig. 4. The shape of the prism itself is shown by Figs. 5 to 8, inclusive, Fig. 5 being a perspective view, Fig. 6 a front elevation, Fig. 7 a side elevation, and Fig. 8 a plan. The longer or diagonal side is placed next the panel.

The action of the prism will be understood from Fig. 9, which shows how a ray of light from a point A on the left-hand picture of the stereogram is refracted at the surface B of the prism, reflected at C, and again refracted at D, emerging finally in such a direction that the eye refers the apparent position of the point to E on the opposite side of the panel, and at the same distance from the latter as A. In use, the panel is placed on the dividing line between the two pictures of the stereogram, or, if these are separate, one is placed at each side of the panel. The left eye is then applied to the prism, and sees the left-hand, or reversed, picture by reflection, apparently in the same position as that occupied by the right-hand, or unreversed, picture, which is viewed direct by the right eye. As each eye sees only its respective picture, and both are superposed, the two pictures coalesce, giving perfect stereoscopic relief.

This model of the Dixio stereoscope is intended for viewing stereograms up to half-plate size, either upright or horizontal. The size of the prism is so chosen that when it is at the correct distance for the inspection of a half-plate print (as fixed by the height of the panel), and the eye is placed close to it, the four sides of its diagonal reflecting surface limit the boundaries of the view like a frame. This renders it impossible to examine prints larger than half-plate at what would theoretically be too short a viewing distance. Stereograms above this

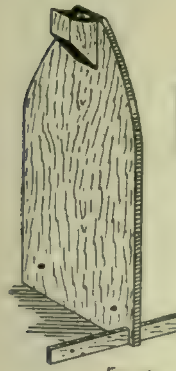


Fig. 1

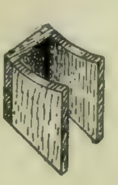


Fig. 4

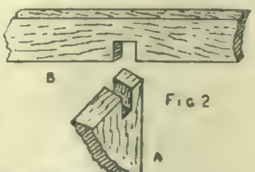


Fig. 2

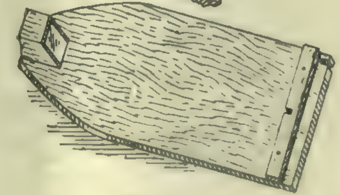


Fig. 3

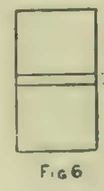


Fig. 6

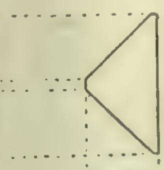


Fig. 7

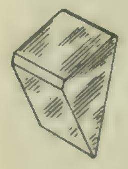


Fig. 5

Fig. 8

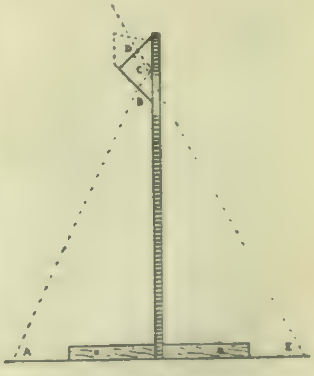


Fig. 9

size, however, can be inspected by the simple expedient of raising the panel in the hand until the whole of the left-hand picture comes within the field of view permitted by the reflecting surface of the prism. It is thus evident that the prism acts, in a sense, as an automatic viewing distance regulator.

Besides the inspection of mounted Dixio stereograms and book illustrations, this stereoscope is very suitable for viewing projected stereoscopic pictures on the lantern-screen, by holding the panel in the hand, and pointing it towards the central line between the two halves of the stereogram.

Beyond the substitution of the prism for the mirror, the principle of this stereoscope is exactly similar to that of the other patterns, and the same curious and interesting pseudoscopic effects are observed when the panel is placed so as to have the prism at the right hand instead of the left.

A. LOCKETT.

# "IN MY TIME."

I KNOW you young fellows that turn out portraits nowadays do some fine stuff, but I should like to see what sort of a mess you would make if you had to contend with the difficulties we had to face in my time. You think graceful posing and good tonality, with all that that implies, is a modern characteristic; that we knew no better than to use gaudy backgrounds and incongruous accessories, such as stone balustrades draped with real ivy growing out of a carpet. Don't you believe it. The good photographers in those days turned out pictures; their grounds could give points in softness and suitability to certain horrors listed by dealers to-day; their accessories were used as real aids to the composition, and their technique—well, if you have an opportunity to see some specimens by one of the giants of the seventies you will feel small. The rank and file then—well, they were no worse than the present rank and file, in spite of 350 H. and D. and P.O.P. by the ream.

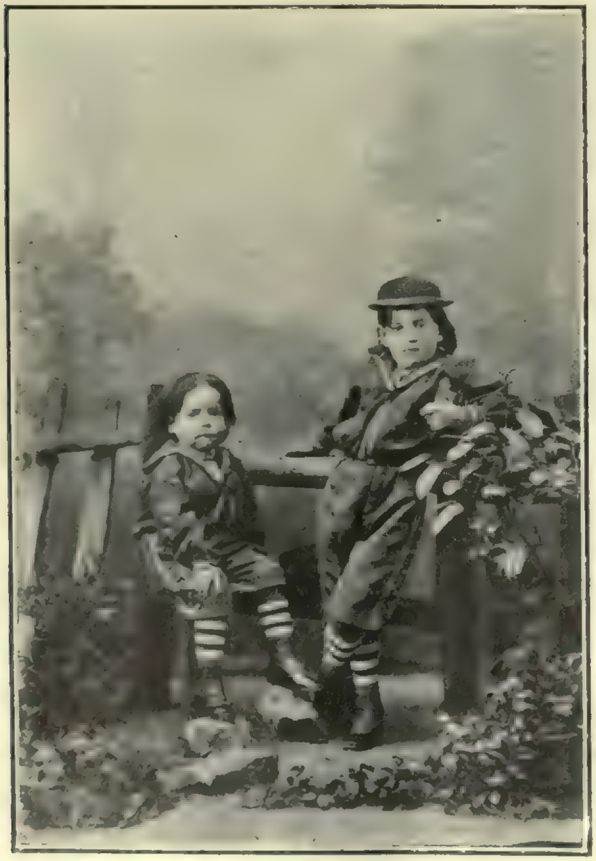


Fig. 1.

"Draped with real ivy growing out of a carpet."

We couldn't learn the business at a Polytechnic or night technical class; it was a case of pick up what you could and look for the "B.J." I got my first lessons in exchange for a guinea from a travelling man who wheeled about half a ton of apparatus round. My first camera weighed about ten times as much as the modern whole-plate. That, with the stand and a Dallmeyer carte lens, dipping-bath, drying-closet, and the rest of the business, cost me a pretty penny. None of your 70s. half-plate complete outfits then. When we wanted a new camera, more often than not the local joiner made it. I've been using one such into this century—no bellows, one box sliding into another.

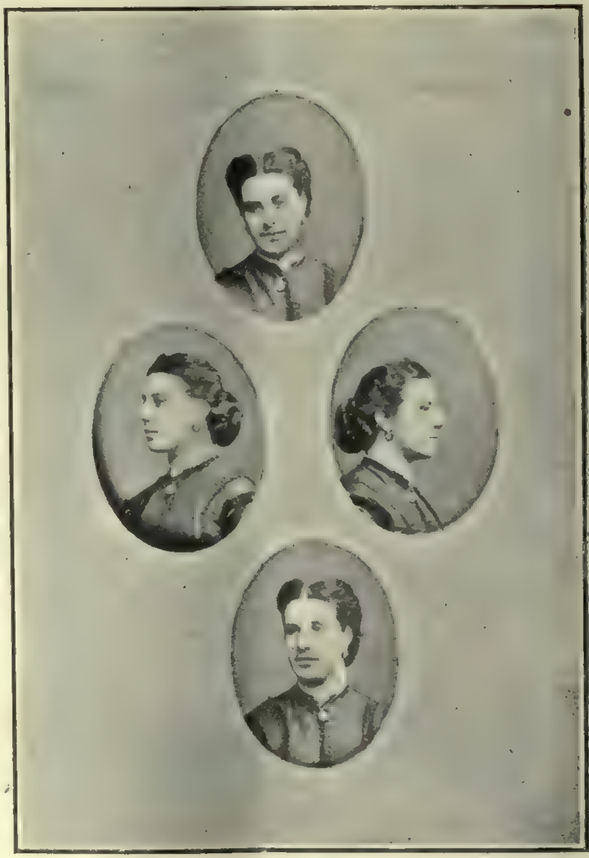


Fig. 2.

An obsolete type of embossed portrait.

After leaving wood-engraving for photography, I started in quite a small country town, the usual back garden being my first studio. Those were the times we would take the inhabitants street by street, starting at one end and working round. Practically everyone wanted their portrait. A guinea a dozen for cartes we got easily. It was something like work though, we would be half the night coating plates. No re-orders; the glass was cleaned and used afresh as soon as the prints were off. The village pump was the only place for washing, and there was none of your "two hours in running water or for half an hour in several charges." We believed in a good solid twelve hours. Too little washing was put down as the cause of all fading, so we went out several times up to midnight and first thing in the morning to turn them over. All that in addition to albumenising and sensitising the paper. How many of you could do that? It was good stuff, toned with our own make of gold-chloride. We got a good price—same as the tip-toppers do now—but we gave them more for their money. We were great on realism. I used to make up foregrounds with ferns in a tin tray that were re-potted every few days to make way for a fresh lot from my greenhouse. At one time I had a big tank made and filled with water, on which a real boat floated. The tank was let into the floor, and had a loose top. It leaked once, spoiling all the ceilings on the floor below. Cut down a bit, it is still in use as a toning-sink. Double printing was all the rage at one time. We would have 100 to 200 negatives on, all to have natural backgrounds printed in. The old embossed cameos were fine. I expect them in again soon, but not the old carte with four little heads masked out, and each separately embossed upon it; that would be too much like work for you. Those four heads took some getting with a thirty-second exposure.

You think sixpence a dozen for bromide stamps the limit, and price-cutting something new. In the eighties the place I was in was overrun with cut-throats, who had to be moved. I moved them. We got a hoarding about one hundred feet long in the centre of the town, and covered it with posters announcing cartes-de-visite at 4s. 6d. a dozen. Compare that with your bromides. We made our own plates, sensitising as required, one man dipping all the time, had to give at least ten seconds in the best circumstances, and it meant another plate if they moved. Then there was the paper to sensitise, dry, print by daylight, tone, etc., stick on the mount, and hot-roll. One C. de V. equals about eight to twelve stamps in area. The rush was terrific; we had the place filled with a crowd waiting on the staircase. When the opposition thinned out we were not sorry to get back to the old professional rates.

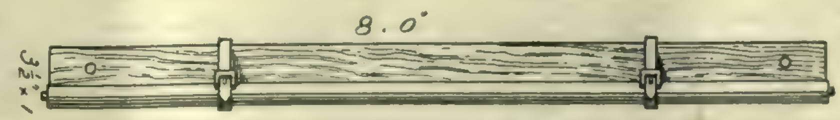
Enlargements used to go then. I've made dozens with the solar enlarger on home-prepared material (size seven feet by four feet), single-handed. No dish was used; the stuff was coated on canvas stretchers, and the developer flowed straight on. Painted over in oils by good men—and there were some good artists working for us then—we got 100 to 250 guineas apiece for them. That was in the days of the North Counties trade boom. Apart from such large work, my record morning was a 350 guinea order from one family, chiefly panels (11in. x 8in.). Looking through an old order-book—a distressing occupation nowadays—fifty-guinea commissions were almost daily events. Our expenses were big, of course. The premises had to be imposing to get the right class. We had the whole of five floors fully occupied; toning, sensitising, coating, and drying rooms in basement; reception, first floor; exhibition and artists' room, second; dressing-rooms and artists', third; studio and printing, on roof; besides enlarging, finishing, packing, in an annexe. I never did very much with carbon; we thought the albumens enamelled with collodion would never be superseded; but I did once make six ground-glass window-screens, size 60in. by 48in., with six 12 x 10 transparencies on each, evenly spaced and perfectly rectangular. Size we hankered after always; 12 x 10 was a common size, even for field work. You can imagine the baggage required during the wet-plate era. My cabinet-maker made me a 24 x 18; the stand could not be altered in height, and for tilting we pushed books under. I have the receipt for £70 paid for the lens now. The whole thing was a terror to handle. What with the slowness of the plate and the stopping down required by the lens, a good result was an achievement to be proud of. I did a dozen, had them framed in pairs, and sent them to an exhibition. The committee, confound them! thought I had entered them in the direct class in error, and labelled them enlargements. I never sent to another show. "OLD PRO."

# A NOVEL WAY OF ARRANGING BACKGROUNDS.

THE hanging and changing of backgrounds, unless the studio is a large one and possesses an expensive background stand, is a very troublesome matter. Stretching frames hold the backgrounds flat and free from creases, but cannot easily be changed, and require a good deal of room, in so much that very often necessary changes are not made owing to the fact that sitters and accessories have to be moved in order that one 8 x 8 background may be replaced by another. Having the backgrounds on rollers has also serious disadvantages. If there are five or six in use those behind are not evenly lighted, especially at the top, the rolled-up backgrounds in front cutting off the light, whilst the method of bringing each to the front when wanted for use is equally troublesome—the cords, whether affixed to pulleys on the top, or to the bottom roller, easily get mixed and are almost sure to go wrong at a critical moment.

After trying these and other methods, the writer thought out a plan which removes all the above-mentioned difficulties, permits the use of as many backgrounds as are wanted, provides a place to store them out of sight, keeps them free from creases, and allows any one to be used at any time. The changing or putting away of a background only occupies about one minute, and the whole arrangement takes up the space of but one hanging ground. There are no cords or pulleys, no stretching frames, and nothing at all to go wrong; no climbing on step-ladders, stools, or chairs. When once fixed the changing of a background is such a simple affair that any person can do it at a minute's notice. I have the arrangement working in my own studio, and shall be pleased to show it to any one interested. A photographer used to handling tools can easily make it himself, or can get it done by the local joiner or cabinet-maker at a very moderate cost. The accompanying sketches and explanations will, I think, make everything clear.

First, all backgrounds should be mounted on the top edge to a piece of wood 8ft. long, 3½in. wide, and 1in. thick, the bottom edge being fastened to a roller 1¼in. or 1½in. in diameter and 8ft. in length Now roll the background carefully up on the roller until it reaches the top piece of wood, when, if the adjustments have been carefully made (which is very important), it will be found that the bottom roller is parallel with the top piece. It is now made secure in this position by two straps (Fig. 1), which should be about 20in. from each end of the roller, and are best secured to the top by screwing on to the back, so that they cannot be displaced or lost. All backgrounds intended for use should be treated in this way. Each of the top pieces to which the upper portions of the backgrounds are attached should have a ⅝in. hole bored 3in. from each end and 1½in. from the top edge (Fig. 1).



Background rolled up & strapped.

Fig. 1.

Now for the stand or holder. It is assumed that the wall or partition at the end of the studio is the place where the backgrounds will hang, and if this is of wood the work of fixing will be comparatively easy, though if it is of brick no special difficulties will present themselves. If, however, it is desired to hang the backgrounds in a position where there is no wall, a cheap, light, yet firm, partition must be fixed across, as it is a necessity that there should be some means of support. Two pieces of wood are now required, 8ft. 6in. or 9ft. in length, or even longer if the height of the studio will allow it, the nearer they can be fixed to the top of the wall the greater will be the rigidity of the stand. These pieces form the uprights of the holder, and should be not less than 1½in. thick and 6in. wide, and grooved on the flat side, about 1in. from the front edge, throughout their entire length (Fig. 2). A frame must now be made of wood about 3in. wide and ⅞in. thick, measuring over all 4ft. wide, and 8ft. 2in. across, with tongued ends (worked from the solid) to fit and move easily in the grooves of the uprights (Fig. 3). The long uprights should be fixed on their edge to the wall or partition in the studio, with screws if the support is of wood, or, if it is of brick, irons must be driven into the joints and the uprights secured to them with screws or suitable fastenings. In determining the position of these uprights it is a good plan to use a plumb line, as it is essential that they should be perfectly vertical and parallel to each other. They must be fixed to allow of the frame, 8ft. 2in. wide, going between them and fitting nicely in the grooves prepared for it, so that the frame may slide easily up and down, and be neither too tight nor too slack.

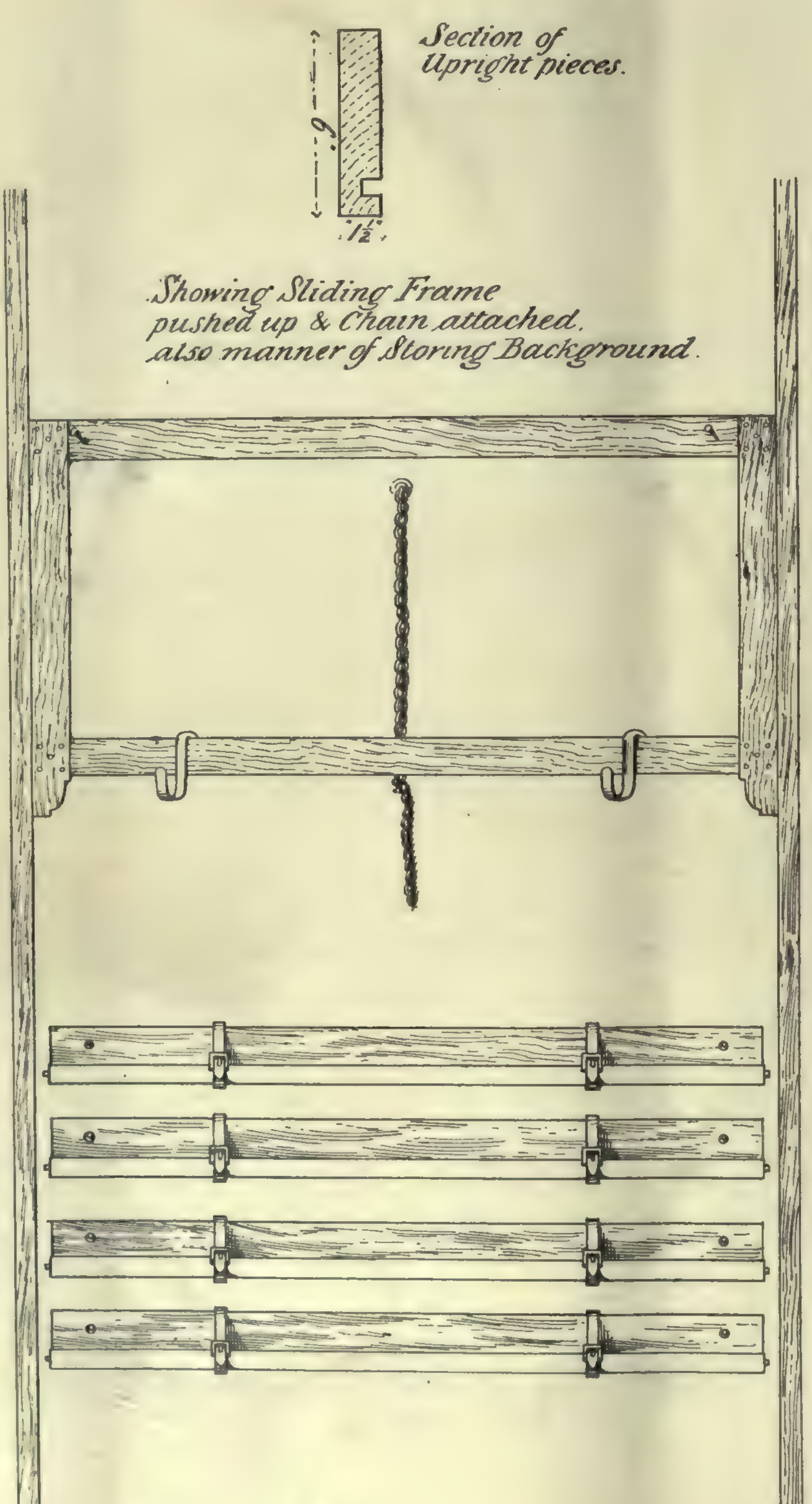

Section of
Upright pieces.
6"
1½"
Showing Sliding Frame
pushed up & Chain attached.
also manner of Storing Background.

Fig. 2.

It is well that the frame should not rest on the floor, and for this purpose two small feet, each from 6 to 8 inches deep, should be attached to the lower edge.

In the centre of the framework (but not on it), a strong chain, 5ft. long should be attached to the wall at a height of about 7ft. from the ground, and a strong iron pin, pointing downwards, should be inserted in the centre of the lower bar of the sliding frame. If we now take hold of the framework underneath the bottom bar it will slide upwards, and by putting one of the links of the chain over the pin in the lower bar it can be secured at any desired height, and various distances marked on the slide to facilitate the adjustment of the particular background in use.

The ease and rapidity with which backgrounds may be placed in position on the stand is facilitated by the insertion—on the lower bar—of two iron "rests" or brackets. These should be made of iron ¾in. wide and ¼in. thick, exactly of the size and shape shown in Fig. 4. They may be obtained from any ironworker for a few pence. Two strong round-headed screws are screwed into the top edges of the sliding frame, in such a position that the background, with its flat piece of wood on the top edge easily fits over the screws, these latter being sufficiently long to allow of their being firmly fixed in the wood, yet with sufficient projection to hold the background firmly in position. The sliding frame is now at the bottom resting on its small feet, with the two iron "rests" in position about 18in. from each end on the lower bar. We now take the ground we wish to use, place it in position over the screws (which is very easy, as it is a convenient height from the floor), unfasten the straps and carefully unroll until it reaches the iron brackets, which will hold it quite firmly whilst the frame is raised to the desired height and made secure with the chain, after which the background is lifted out of the brackets and allowed to unroll to the floor. The brackets are left in position behind the ground, and in no way interfere with its hanging.

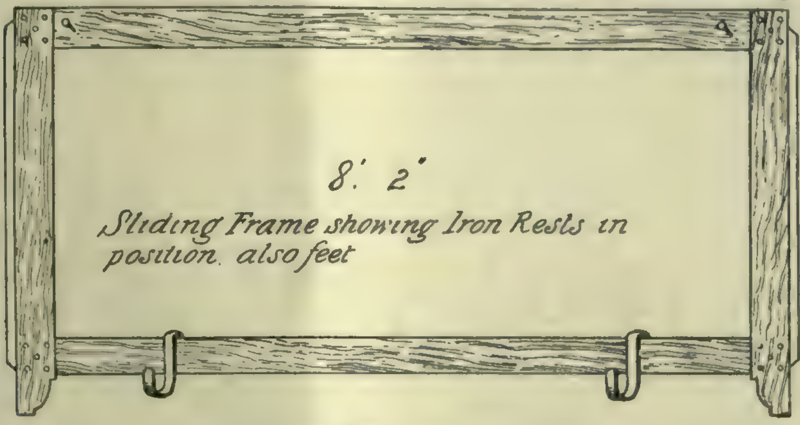


Fig. 3.

To change a background it is only necessary to roll it up as high as these two brackets, place it in them, undo the chain, and allow the frame to descend steadily to the floor (by keeping the hands under the lower bar), finish rolling up the ground, fasten it with the straps, and then lift it off the screws and put in the place reserved for storage, afterwards proceeding in the same manner with its substitute.

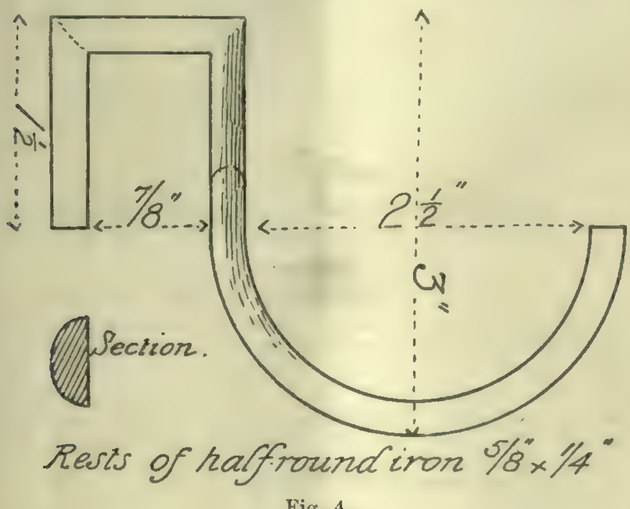


Fig. 4.

The space behind the sliding frame makes a capital place in which to store a large number of backgrounds, it being only necessary to fix screws or studs to the wall in the same manner in which they are fixed to the top edge of the sliding frame, or course, taking care that the screws are all put the same distance apart and the holes exactly to match, so that they are interchangeable.

H. Hinge.

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North Middlesex Photographic Society.—At the annual general meeting of the society, Mr. Louis Dick was elected president in place of Mr. H. W. Fincham, retired, while Mr. Chas. A. Morgan, 23, Nelson Road, Stroud Green, continues in office as secretary.

"Nyte-lyte" Weekly Postcard Competition.—The cash prize of 10s. 6d. for the best "Nyte-lyte" postcard sent in during the week January 16 to 23 has been awarded by Messrs. Marion and Co., Soho Square, W., to Norman Whitley, Castle Carey, Bath.

## BRILLIANT NEGATIVES AND REFLECTION IN THE CAMERA.

(From "The Sinclair Signpost.")

With modern lenses brilliant negatives are less general than was the case with the old rapid rectilinear, whose largest aperture was $f/8$, and which possessed a circle of illumination very little larger than its circle of definition—which definition at the margins was after all of a very second-rate description, in comparison with the excellence of that now generally insisted upon.

The old lenses had comparatively long tube mounts, and the clear aperture of the glasses was less than that of the modern anastigmats. The cause of this falling off in the brilliancy of negatives is not far to seek, though till recently it has not claimed much attention.

Full exposure may give a negative in which the deepest shadows are not represented by quite clear glass, but which will produce a print that cannot be surpassed; but this veiling, due to full or slight over-exposure, is not the special subject of this article. It is the veiling of the negative due to stray light in the camera to which we allude; stray light which enters through the lens itself, and not through defects in fitting or leaks in the bellows.

Every camera should be properly covered inside with something, a paint or a fabric that will not reflect light, or that will reflect as little light as possible; for we know of no material from which light is not to some extent reflected. Even a lining of black velvet or cloth reflects light, especially when the angle of incidence is small, so we may say at once that should any light enter a camera and not directly strike the plate, some of it will still be reflected and will probably reach the sensitive surface of the plate, certainly it will if the angle at which it strikes the black surfaces be suitable. Now, in a large aperture, short-tubed lens with little or no hood in front, the circle of illumination is large—much larger than the diagonal measurement of the plate it is calculated to cover, so that in many anastigmats the amount of light entering the camera is quite 50 per cent. more than that which falls on the plate. The surplus 50 per cent. falls on the sides and boundaries of the camera, and by diffused reflection a proportion of it reaches the plate and produces the veil to which we have referred.

In many cases the reflection is not evenly diffused, and this is manifested in the negative by perhaps one side being more dense than the other, or by the top being different from the bottom, and sometimes by uneven markings in the sky or streaks of fog more or less parallel to the edges of the plate. The old long tube lenses did not require a hood to the same extent as do the anastigmats, nevertheless it is a curious fact that modern lenses seldom have hoods, while the old lenses were usually supplied with them—the very oldest lenses having especially long ones, yet needing them still less. Although an ordinary hood would undoubtedly improve the anastigmat, there is still the fact to be considered that while the plate is rectangular, the ordinary hood is round, and as a consequence the circle of illumination, although reduced in diameter, will be circular, and a considerable amount of useless and harmful light will still enter the camera. This, of course, took place also in the case of the old lenses supplied with hoods, but in those lenses the circle of illumination was so close to the corners of a plate that the fact was often apparent in the darkened corners of a plate if the negative had received the minimum correct exposure. With the modern lenses this diminution of light at the corners of the plate is rarely to be found.

Now, what is the cure for this state of things? We *must* use the lenses because of their undoubted advantages, and it is impossible to produce an absolutely non-reflecting surface inside the camera, so the only rational proceeding is to prevent this harmful light from entering the lens. To do this a hood must be used, which must be rectangular in shape, and the relative proportions of its height and width must correspond with those of the plate. To be theoretically correct, it should be the same size as the plate, and its opening placed as far in front of the centre of the lens as the plate is placed behind that centre. This would be manifestly unwieldy and inconvenient.

Fortunately the same result may be obtained by making the hood smaller than the plate, but keeping the same proportions. Such a hood must be adjustable, so that it can be expeditiously set to such a length as will cut off all detrimental rays without encroaching upon the illumination of the plate. Of course, it is important that the hood is of such a form that any light that may strike inside it, is reflected away from the lens, and undoubtedly a bellows construction is the most efficient for this purpose. The "Sinclair" Adjustable Lens Hood has been designed to answer every requirement of the scientific worker. Varying sizes of plates and different focus lenses can be adequately dealt with and its adjustments allow of its being used to cut off harmful rays without in any way detracting from the illumination of the plate. It is easily fitted, instantaneously adjusted, and folds up so small that its addition to the photographer's kit is scarcely appreciable, while its many advantages render it indispensable to those who wish to produce brilliant negatives.

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## MR. ELWIN NEAME ON PROFESSIONAL PHOTOGRAPHY.

At the Fine Arts Academy, Queen's Road, on Saturday evening, January 14, Mr. S. Elwin Neame gave a lecture on "Professional Picture-Making," which was illustrated by a number of beautiful lantern-slides. Additional interest was lent to the lecture by the fact that Miss Ivy Close, the winner of the competition for the most beautiful woman in the world, was to give a series of artistic poses, and there was a crowded attendance, over which Mr. Fisher, of the Kensington School of Art, Berkeley Square, presided.

The Chairman first gave one or two particulars about the Bristol Photographic Club, which, he said, was founded for the benefit of those who sought instruction in artistic photography. He introduced Mr. Neame as an old student of the club. He was a Bristolian first, an artist second, and a photographer third; and he thought that before the end of the evening they would come to the conclusion that he was a lecturer as well.

Mr. Elwin Neame at the outset disclaimed any pretensions to being a lecturer, and said that he knew that the majority of them had come to see Miss Close. Were he lecturing to the members of the Bristol Photographic Society only, he felt that he would be able to keep them happy for hours telling them about developers and other things connected with photography; but as he believed that many of his audience were not photographers, he felt that a discourse on the modern business side of photography would be of greater interest. Professional photography, he said, had greatly changed. He then went on to draw a humorous contrast between a visit to the old-fashioned professional photographer and the modern business professional man. The former was generally a man with long, greasy hair, velvet coat, hungry face, and stained fingers, and perhaps they could remember the arguments in the reception-room, the extra charges made for second and third positions, and the three shillings extra if they had a head and shoulders picture instead of a full-length, and half-a-crown extra if they had brown mounts. (Laughter.) Then the pokey dressing-room, the studio, the palms, and the ruined-castle background, the impossible chairs, and the garden seat that became a boat when turned upside down. (Laughter.) Then the unretouched proofs that were sent, and the charge for a re-sitting, the delay, and, above all, the poor method of business. Compare that with the modern business method. Appointments were made over the 'phone, five or six positions were taken of each sitter, and they were allowed as many changes of dress as they liked. Head and shoulders pictures, three-quarter length groups, or anything they liked were all one price. Five or six fully retouched proofs were sent, and if they did not like them, a re-sitting free of charge and more proofs submitted. Then, again, by means of powerful electric-light installations, photographs were taken in any weather, and finished copies sent within a few days; and the operator and staff looked and dressed like sane business people. Even more wonderful was modern professional photography when it came to publication work. Should a magazine require a coloured cover, within twenty minutes there was a selection of coloured pictures at their office ready for them. Should they require some pretty studies for inside their paper, within thirty or forty minutes they could have from 150 to 200 to choose from; or, should there be nothing in stock to please them, pictures were specially taken, and could be supplied within 48 hours if necessary. He then showed some of the work he had prepared for magazine-covers. These consisted principally of beautiful heads with varying expressions. He had had orders for photographs of living people to look exactly like bas-reliefs. They were produced by making a thin plaster slab, cutting out the portion behind the sitter, so that half the head and body were sunk into the plaster, and white grease paint was used upon the face and hair, and the pictures were taken by artificial light. Then he had had commissions for pictures copying the old masters, and also for a series of pictures representing different kinds of tears—anger, grief, anguish, etc. The principal difficulty encountered was to make a sufficient variety in the pictures, and to obtain the correct expressions upon the faces of the sitters. He afterwards spoke of the difference in procedure between the amateur and the professional, and gave some particulars of the way in which the latter had to work, especially if he worked for the press. A branch of photography which was rapidly growing was the production of catalogue illustrations, while photography had also made rapid strides in the production of advertising designs and show-cards, and he mentioned the profits that could be made from that class of work. In conclusion, he said that he was anxious to disabuse the mind of the man in the street of the impression that the professional picture-maker was simply a man who took photographs. Modern photography, although giving every attention to small orders, had to deal in big figures as well, and it was quite possible for a professional photographer to earn as much as £60 to £100 a day, always providing, of course, he had the work to do. Every studio catering for the publishing trade had a stock of negatives for calendars, Christmas cards, etc., the pictures being usually produced when the trade was slack, and stored until required.

After the lecture, Miss Ivy Close (Mrs. S. Elwin Neame) gave a series of poses which had been designed and arranged by Mr. Neame. She posed in an oval frame, giving a three-quarter picture. The subjects were:—(1) Typical English Beauty, 1910; (2) ditto, 1840; (3) The Seasons—(a) Spring, (b) Summer, (c) Autumn, (d) Winter; (4) "Grief," after Greuze; and (5) the picture with which she won the competition. The poses were beautifully artistic and interesting, and Miss Ivy Close was afterwards presented with a choice bouquet by Mrs. Fisher, on behalf of the members of the Bristol Photographic Club.

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# Photo-Mechanical Notes.

### The Mertens Intaglio Printing Machine.

A further patent (No. 668, 1910) has been taken out by Eduard Mertens, 63, Goethe Strasse, Freiburg. The specification describes more particularly the colour "knife" which is caused to move laterally a distance of half the width of the printing surface or more in contradistinction to the usual practice in which the knife is moved to the extent of a few centimetres at the most to each side parallel to the roller axis during the printing. Thus, for instance, if the printing surface of a recessed printing roll has a breadth of 60 centimetres, then according to this invention the colour knife will not be moved a distance of from 30 to 60 centimetres or even more to each side. Further, instead of guiding the knife beyond the printing frame in a straight line, it can be moved upwards in a curve,

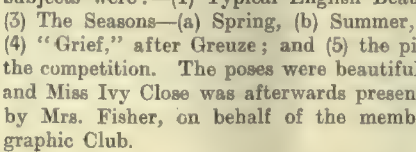

Fig. 1.

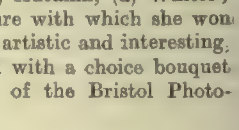

Fig. 2.

especially when the construction of the machine does not permit of so far a displacement of the knife in a straight line; moreover instead of causing the knife to move parallel to the roll axis, it may also, as already well known in connection with calico printing, be caused to slide over the roll in a spiral direction. By means of this wide scraping motion, the advantage is attained that each part of the colour knife is worn away uniformly or almost uniformly by the various engravings or etchings of the roll. When the knife is in the form of a band the displacement need not be to and fro, but can also take place in one direction and the belt be allowed to glide endlessly over the roller guided by the scraped holder and sliding over it as an endless belt passes along during the printing. In this case also the motion of the scraper may be a to and fro motion. During the displacement, the knife can come in contact with a cleaning and sharpening device. If the motion of the knife takes place not in one direction only, but forwards and backwards, then the belt does not need to be endless.

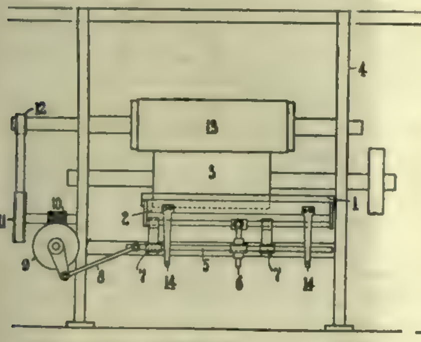

Fig. 3.

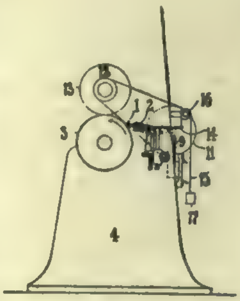

Fig. 4.

The colour knife 1 (Figs. 1 and 2) is held in a clip 2 and bears on the printing roller 3 which is mounted in the machine frame 4. The clip 2 is connected by means of the rod 6 to the shaft 5, which is moved to and fro in guides 7 by means of the connecting rod 8 attached to the crank on the shaft of the wheel 9, revolved by means of the worm 10 and wheel 9 which is driven by a belt 11 from the shaft 12 of the cylinder 13. The clip 2 carries arms 14, to which are attached bands 15 passing over pulleys 16 and carrying weights 17 for the purpose of pressing the colour knife against the printing roller 3.

In the modification illustrated in Figs. 3 and 4 the colour knife is in the form of a band 18, which is attached at its ends to rollers 19 and 20 and arranged to be rolled from off one roller on to the other, so that the greatest part of the knife gradually slides over the entire printing roller. The movement of the rollers 19 and 20 is controlled by a chain 21 driven by the oscillating mechanism 22, 23, 24, 27a, and 25. The band 18 travels past the grinding and cleaning rollers 26, which rollers are devised for grinding and cleaning the colour-knife-band, and are driven in any convenient manner from the machine shaft.

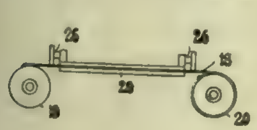

Fig. 5.

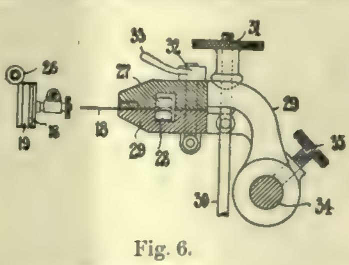

Fig. 6.

The pair of rollers 27 and 28, as shown in Fig. 7, are attached to the rear part of the blade of the knife-band and are secured together by a pin passing through the said band so that they are firmly fastened to the band and move together with the colour-knife 18, and glide along the walls of the opening of the holder. These rollers are designed to prevent the colour-knife from being pulled out of the holder 29. The jaws of the holder 29 may be drawn together by means of the bolt 32 and nut 33. 30 is a screw-threaded rod passing through the holder 29 and surmounted by a nut 31 which can be tightened down so as to press the knife 18 firmly against the roller when the holder 29 is fixed in position on the shaft 34 by means of the set screw 35.

## Lack of Register in Tri-Colour Filters.

It is well known to all tri-colour workers that there is considerable difficulty in getting first-rate register with tri-colour filters; indeed, until Messrs. Wratten and Wainwright prepared filters in optical flats, surfaced by Messrs. Adam Hilger, the most critical register could not be obtained in any commercial filters.

A new instrument, designed by Messrs. Wratten and Wainwright for testing filters, has shown some of the reasons for this difficulty. On examining a large number of filters in this instrument, it was found that the main error in filters made from ordinary (parallel surface) glass was astigmatism, that is, curvature in one direction only. On closer inquiry it was found that this curvature was produced by errors in the glass of very small area, such as striae, etc., which produced a bending of the whole surface when cemented.

This astigmatism results in an image which has a different size in the two linear dimensions, and produces lack of register along two edges.

In order that a set of filters shall give absolute definition and register, the following conditions must be fulfilled:—

(1) Each filter separately must give first-rate definition.

(2) The planes for the best definition for the different filters must coincide.

(3) The filters must be of the same thickness.

For a set of Wratten filters, cemented in flats, these conditions are limited as follows:—

(1) Each filter separately must give sharp definition for lines in the image only 1/1,000th inch apart, with an aperture of at least half the diameter of the filters.

(2) The planes of definitions for the filters ("focal lengths") must coincide within 1/1,000th of the focal length of the lens.

(3) The filters must be of the same thickness, within 1/50th of an inch.

Under these conditions a set of filters will give register within 1/400th inch on a ten-inch picture, *provided that the camera is not moved at all after focussing.*

Any attempt at focussing the separate colours must fail, and is not only unnecessary, but absurd when flats are used. The condition which is most difficult of attainment is (2), and it is in this direction that filters in inferior glass fail most. A set of filters otherwise perfect, which have various focal lengths, will give varying degrees of register, according to exactly where the focal plane is fixed, and consequently some sets of negatives will be found to register while others may be badly out.—From Hunter's "Pocket-Book and Diary," 1911.

## PHOTO-MECHANICAL PATENTS.

The following patent has been applied for:—

ETCHING MACHINES. No. 858. Etching machines. Eugen Albert.

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SOUTH LONDON PHOTOGRAPHIC SOCIETY.—The twenty-second annual exhibition of the above society will be held in the South London Art Gallery, Peckham Road, from March 11 to April 8, inclusive. Messrs. Furley Lewis and J. C. S. Mummery will judge the exhibits, and in the open classes, of which there are two—one for pictorial photographs and one for lantern slides—two silver and six bronze medals will be placed at their disposal for award. In the members' classes, in addition to the society's silver and bronze medals, a gold medal, or piece of plate, is offered by Mr. G. A. Maull for the best picture exhibited in these classes, the winning print to become his property. Mr. G. Brown offers a bronze medal for the best picture in the excursion class by a member who has not previously taken any photographic award, whilst Messrs. H. E. Gorfin and Gideon Clark offer a silver and bronze medal, respectively, for the best portrait or figure study of a member, taken on any of the excursions. Entries close February 18, on or before which date entry forms, correctly filled up, and accompanied by the necessary fees, must reach the hon. sec., Mr. H. Wright, 180, Friern Road, East Dulwich, London, S.E., from whom also forms may be obtained. The exhibition authorities invite loan exhibits, both pictorial and scientific, for which no fees are payable.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between January 9 and 14:—

CAMERA.—No. 522. Roll-film camera. Oliver Samuel Dawson and Clare Livingstone Finlay.

CINEMATOGRAPHS.—No. 839. Method and apparatus for obtaining stereoscopic effect in cinematograph pictures. Antonio Calichiopulo.

CINEMATOGRAPHS.—No. 840. Method and apparatus for obtaining stereoscopic effect in cinematograph pictures. Antonio Calichiopulo.

CINEMATOGRAPHY.—No. 1,029. Cinematography. Horatio Heinze.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

FOLDING REFLEX CAMERA.—No. 15,733, 1910 (June 30, 1910). The invention relates to a folding reflex camera in which the struts for the lens-panel, mirror, and focussing screen are rotatably mounted on the camera casing. In some folding reflex cameras which are brought into the operative position by means of a handle, the fixing of the mirror in this position is effected by means of a latch or pawl under which engages an arm connected to the spring-controlled pivot pin of the mirror. In this construction, however, the position of parts obtained is liable to be incorrect, as a slight change in the position of the latch mounted near the pivot point of the mirror, has a very great effect. On the other hand, it is well known to guide the mirror frame by means of pins in the slots of a movable part, in order to bring the mirror into the operative position. To employ this method, however, it is necessary to have a separate handle.

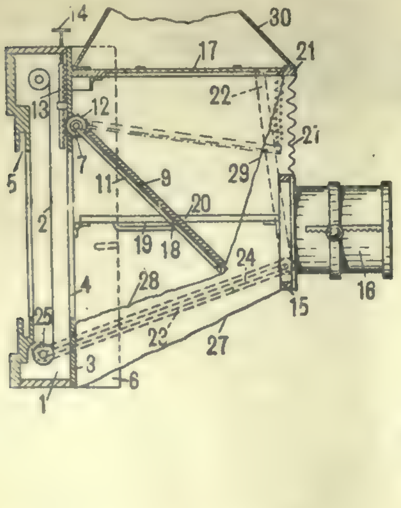

Fig. 1.

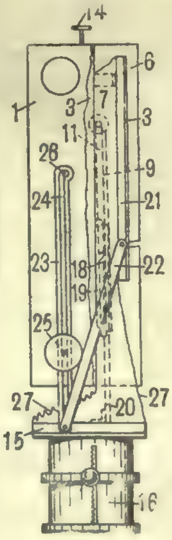

Fig. 2.

In order to enable the camera to be brought into the operative position, and the correct operative position of the mirror to be ensured in any conditions, by means of one handle, the guide slot for the pins of the mirror frame is mounted, according to this invention on the strut for the lens panel.

The reflex camera consists of a casing provided with a shutter 2 and in the front wall 3, with an opening 4 of the size of the picture to be taken, whilst the rear wall is provided in the usual manner with grooves 5 for the dark slide. In the two lateral walls 6 which are extended forward, is rotatably mounted a spindle 7. To this spindle is rigidly secured by means of bosses 8 a mirror 9, whilst a frame 11 is loosely mounted on the spindle by means of bosses 10. To the spindle 7 is further keyed a toothed wheel 12 engaging with a tooth rack 13. The latter is continued to a point above the casing 1 and provided with a pressure button 14 by means of which the tooth rack 13 can be depressed, and thus the toothed wheel 12, the spindle 7 and the mirror 9 rotated. In this way the mirror is brought into the position shown by chain dotted lines in Fig. 1, the rays of light then passing through the opening 4 to the sensitive plate contained in the dark slide.

The mirror 9 must be inclined at an angle of 45 deg. relatively to the axis of the objective, in order to deflect to the focussing plate 17 the rays coming from the lens 16. In order to keep the parts in that exact position, the mirror rests in the frame 11 provided at both sides with a pin 18, the pins being guided in the slots 19 of the lateral struts 20. The struts 20 are on the one hand rigidly secured to the lens panel 15, and on the other hand mounted in a rotatable manner on the front wall 3 of the casing by means of hinges. The length of the slots 19, the position of the spindle 7 and of the pins 18, are calculated in such a manner that the mirror is at an angle of 45 deg. when the struts 20 are at a right angle to the front wall of the casing.

The focussing plate is mounted in a frame 21 rotatably mounted about a projection of the front wall. Between the frame and the lens panel, is rotatably arranged at both sides a connecting rod 22, and between the lens panel and the bottom edge of the casing 1, also a similar rod 23, the two rods fitting on the same pivot pin on the lens panel. The rod 23 is provided with a slot 24 by means of which it can slide, during the folding upwards and closing of the camera, along the bottom spindle 25 of the screen shutter, and the slot is provided at the end with a swelling 26 (Fig. 2) in order to secure the rod 23 to the spindle 25.

The casing, lens panel and focussing screen are connected together in a suitable manner by means of bellows 27, whilst a second bellows 28 is arranged between the frame 11 of the mirror and the front wall of the casing, in order to prevent the light from falling on the sensitive plate when the shutter is accidentally opened, as long as the mirror is still resting on its frame. Between the focussing plate and the frame 11 there is arranged a further bellows 29 intended to prevent the light from falling through the focussing plate on the plate when the mirror is in the chain dotted position.

The bellows 29 is provided opposite the lens with an opening through which the rays of light from the lens can fall on the mirror. Finally there is provided above the focussing plate a folding hood 30 which keeps lateral light from the opaque plate.

The reflex camera is opened from its closed position shown in Fig. 2, by rotating the lens panel 15 about the struts 20. The frame 11 and the mirror 9 resting on the same, are then brought by the pins 18 guided in the slots 19 of the struts 20, into a position inclined at an angle of 45 deg. relatively to the horizontal. The frame 11 being loosely mounted on the spindle 7 does not move when the mirror itself is raised by the rack 13. Owing to the rods 22, the focussing plate will also be brought at the same time into the proper position. The swelling 26 in the slot of the support 23 engages behind the spindle 25 of the shutter, whereby the raised camera obtains a certain rigidity.

In that position the rays falling through the lens will be deflected upwards by the mirror and produce on the focussing plate a sharp image.

If thereupon the tooth rack 13 is depressed by pressing on the button 14, the mirror will be raised into the position shown dotted in Fig. 1, but as the frame 11 to which the bellows 29 are attached does not follow the movement of the mirror the rays of light can act through the opening in the bellows 29 on the sensitive plate in the dark slide.

In order to fold down the camera, the swelling in the slot of the support 23 is removed from the spindle 25 of the shutter, whereupon, by turning the lens into the position shown in Fig. 2, the various parts will be again brought into their original position. Pieter Johannes Mikmak, 64, Van Eeghenstraat, Amsterdam.

CINEMATOGRAPH PRINTING MACHINE.—No. 29,549, 1909. In feeding the films used in cinematograph it is common to employ a sprocket wheel to feed the film or films forward in a loop so as to allow the intermittent feed pins a free pull down. Such construction is common in machines for exposing, printing, etc. As the holes in the films are usually larger than the pins which give the pull there is a certain play possible for the film in the gate, and it is difficult to get an even register for every movement effected by the pins. In the perforating machine there may be a slight overthrow; while, in the printing machines, the films used are usually a slightly different gauge, due to the one being developed and having shrunk slightly and to the other being raw or undeveloped material.

According to the invention it is proposed to employ a friction drive or draw for the films, and this end may be secured by mounting the gear loosely on the feed or draw shafts and pressing it firmly by adjustable spring action against a disc or other friction device secured to the shaft, so as to ensure a resistance to the feed of the film and cause the pins to bear against the forward or backward part of the perforations as the case may be, as with this construction the draw pins pull against the friction driven sprocket, which only being held by friction gives sufficiently to let the films be drawn tight between the two wheels and thus prevents any lateral play of the films. William Cecil Jeapes, 117, Charing Cross Road, London.

Cinematograph Mechanism.—No. 18,555, 1910 (Dec. 10, 1909).

The invention relates to a cinematographic apparatus having a device for setting or adjusting the film in the exposure window or aperture and a device positively connected to it for correspondingly adjusting the shutter.

The novel feature consists in the whole mechanism used both for advancing the picture band and for rotating the closing shutter being supported on a double-armed beam which can be adjusted by means of an adjustment device and oscillate about the spindle of the crank- or driving wheel, in such manner that on the one arm is mounted the toothed wheel driving the advance roller by means of a Maltese cross and engaging with the crank- or driving wheel, whilst opposite, on the other arm, is arranged the shutter which is driven by a pinion also engaging with the driving wheel.

Thus the film can be very quickly and accurately moved up and down in the exposure window or aperture by the adjustment of the double-arm beam, whilst the shutter in front of the object glass is adjusted to the same extent in a simple manner, so that the advance of the film and the closing of the shutter always coincide in the point of time, in spite of any movement of the picture film in the exposure window, so that very steady and sharp projections are obtained. Seischab and Co., 24, Heideloffstrasse, Nuremberg, Germany.

## New Trade Names.

Una.—No. 328,878. Photographic cameras and goods of a like kind to photographic cameras included in Class 8. James A. Sinclair and Co., Ltd., 54, Haymarket, London, S.W., optical, photographic, and scientific instrument makers. November 29, 1910.

Le Ciné d'Art (Design).—No. 328,941. Cinematograph films bearing taken photographs. Alphonse Bernays, 34, Avenue de l'Opéra, Paris, France, engineer. November 30, 1910.

Prominal.—No. 329,049. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Actien-Gesellschaft für Anilin Fabrikation, an der Treptower Brücke, Berlin, Germany, manufacturers. December 5, 1910.

Antirobin.—No. 328,708. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. The Fabra Co., Ltd., 46, Vicar Lane, Bradford, Yorks, merchants. November 22, 1910.

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An Appeal.—The following appears in the "Bournemouth Visitors' Directory," over the signatures of W. G. Iremonger, Curate of St. Peter's Church, and Alfred Wolfe, Richmond Hill Printing Works:—"The storm of December 12 of last year wrecked and washed away the whole of the property used by a photographer, W. E. Baker, of Branksome Chine. This includes lock-up sheds, stages, etc., whole-plate camera, with stock of postcards, negatives, tools, etc., the total value being about £25. The shed had been moved to its usual winter position, and had been secured, so that no blame for negligence attaches to the owner. We appeal to the public to assist in re-establishing this man in his trade, on which he and his family depend for a livelihood. All moneys received will be promptly acknowledged by one of the undersigned, and the amount received will be actually spent in purchasing such outfit as is possible to replace the loss."

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Frost Pictures.

When we have found upon our window-panes (writes Mr. Victor E. Morris in the "Amateur Photographer and Photographic News" for January 24) some ice formations which we wish to photograph, we proceed to erect our camera in the room, exactly opposite and close up to the window. It is not always necessary nor desirable to photograph the whole of a pane; often quite a small part is much more interesting. For the lower panes of a window the camera can be erected upon the tripod in the usual manner. Focussing is done in the usual way. No great difficulty will be found in this, but the novice at this kind of work will perhaps be surprised at the apparent lack of contrast when viewing the picture upon his screen. The delicate tracery of the frost design is there, but it does not stand out crisply and clearly. Something is wanted to give the picture more contrast; in fact, a dark background is required to "throw up" and give prominence to the frost pattern. This is provided by a board covered with black cloth or paper, or painted a dead black.

This board is placed outside and parallel with the window, but two or three feet away from the glass. This black board must be considerably larger than the portion of the window which is being photographed. In the case of windows upon the ground floor, it is usually possible to get a friend (or someone in the house) to hold this board outside the window during the exposure. It is not kind, or even necessary, to get our helper to stand out in the cold air holding the board up all the while focussing is being done. When the picture is correctly placed upon the screen and sharply focussed, our friend may be asked to go outside and hold up the board. The focussing-screen is then rapidly examined to see that the board is being held in the right position. If not, our friend is asked to hold the board a little more to the right or left, or a little nearer to or farther away from the window, as the case requires. When the effect of contrast, etc., seems the best, the holder of the board is requested not to move it again for a few seconds. Then the lens is stopped down to about *f*/22, the dark-slide quickly inserted, and the exposure made.

### Photography on the West Coast of Africa.

In a letter to "Photography and Focus" for January 24, Mr. Joseph Ralph gives the following hints with regard to photography on the Gold Coast:—"I had no difficulty whatever in keeping my films in good condition. I used spools of twelve exposures, each spool sealed in a tube, and these in turn kept in a steel uniform case. I either developed on the same day as a spool was put into the kodak, or else placed the exposed spool, after exposure, in a Maw's drying bottle, under which condition I believe films would remain perfectly preserved for any reasonable time. At any rate, I brought some exposed spools back to England with me, and found on development no abnormal signs. And if I were to offer any advice to a West African traveller I would say, 'Take spools of film in tubes, a Maw's drying bottle, and a steel uniform case.'

"The trouble is not that there is any real difficulty in keeping the films in condition, but to get water cold enough to do the developing on the spot. 70 deg. Fahr. at five o'clock in the morning was the temperature of the only water available. This means a 'doubling up' of strength in the developer, followed by a judicious dose of formalin, in order to get the film to 'live' over the washing. But if one is near a settled camp where there is cold storage, and can thus get a little ice to tide over the developing part of the programme, then one can, with care and precaution, bring home as many bushel-baskets full of negatives as one's purse-strings feel like indulging in.

"With plates one can do anything in the way of developing with the aid of alum, but if a person intends to work much in such a place as the outside districts of the West Coast, then the lighter he can 'fly' in the matter of 'freight' the more often will he seem like feeling grateful when the shades of night begin to fall over the trail."

# New Books.

"Zimmermann's New Method of Gum-bichromate Printing." No. 113 of the "Photo-Miniature," published by Dawbarn and Ward, Ltd., London.

This, the October, 1910, number of the "Photo-Miniature," is devoted to the Zimmermann gum process, the most characteristic feature of which is the method of developing. In this method the catastrophes that may result from the personal control of the unskilled worker are avoided by a simple automatic method of development, which consists merely of placing the wet exposed print in contact with wet blotting-paper. The two are left in contact until the work of development is complete, when a negative image is found on the blotting-paper, and the complementary positive on the print. The printing requires to be carried farther than is usual for ordinary methods of working, and the book gives all necessary information with regard to this and other points. It also deals with other methods of working in a very practical and thorough fashion, and forms a useful little guide for all workers anxious to take up gum printing.

## CATALOGUES AND TRADE NOTICES.

**Emil Busch Optical Co.**—The firm has issued a new list of enlarging and projection lenses. The list also gives particulars of the "Glaukar" anastigmats, the larger sizes of which are adapted to all ordinary work, though the series has been specially designed for cinematograph purposes. Condensers are also included, of the single, double, or triple type, and of all sizes up to 12 inches.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, January 27.

Watford Photographic Society. Autotype Carbon Demonstration.

Beeston Photo and Art Club. "Tramps Abroad with a Kodak." W. F. Slater.

### Sunday, January 29.

United Stereoscopic Society. "5 Legs and a Camera in East Sussex." H. A. Miles.

### Monday, January 30.

Southampton Camera Club. "One Hundred English Wild Flowers." H. Essenhigh Corke.

Scarborough and District Photographic Society. "Bromoil." A. E. King.

Leek Photographic Society. Annual General Meeting.

Bournemouth and District Camera Club. Annual Meeting and Conversazione.

Stafford Photographic Society. "Enlarging." W. Leonard Hey.

Kennaway Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Tuesday, January 31.

Royal Photographic Society. "Through Algeria to the Sahara." T. G. Newmarsh.

Sheffield Photographic Society. Autotype Carbon Demonstration.

St. Helens Camera Club. "The Carbon Process." R. J. M. Wilson.

Leeds Photographic Society. "Birds Nesting on Duch Meers and Polders." Riley Fortune.

Hackney Photographic Society. "Picture Making by the Oil Process." B. C. Wickison.

Halifax Camera Club. Yorkshire Photographic Union's Print Folio.

Rodley, Farsley, Calverley, and Bramley Photographic Society. Conversazione at Farsley Liberal Club.

Sutton Congregational Guild. "Tramps Abroad with a Kodak." W. F. Slater.

### Wednesday, February 1.

South Suburban Photographic Society. "Architectural Photography." J. W. Hodges.

Borough Polytechnic Photographic Society. "Ireland." C. H. Oakden.

Partick Camera Club. Monthly Lantern Slide Competition.

West Surrey Photographic Society. "A Universal Developer." V. T. Serin.

Croydon Camera Club. "Platinotype Printing." W. H. Smith.

Sale Photographic Society. Print Competition.

Edinburgh Photographic Society. "How Greek Ladies Dressed." G. Baldwin Brown, M.A.

Coventry Photographic Club. "Oil and Bromoil." C. H. Hewitt.

G.E.R. Mechanics' Institution, Stratford, Photographic Section. "Cloud Negatives and Printing." H. W. Bennett.

Balham Camera Club. Lantern Night.

Wimbledon Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Thursday, February 2.

Liverpool Amateur Photographic Association. "Some Thoughts on our English Cathedrals." William A. Clark.

Oldham Photographic Society. "Photography and Focus" Prize Slides.

Batley and District Photographic Society. Amateur Prize Slides.

Midlothian Photographic Association. "Egypt." W. F. Jackson.

Rodley, Farsley, Calverley, and Bramley Photographic Society. Members' Night.

The Sutton Photographic Club. "Safe Lights for the Dark Room Lamp, and How to Make Them." W. H. Phelp.

Southend-on-Sea Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, January 24, Dr. C. E. Kenneth Mees being in the chair.

A paper on the photography of spectra, with notes on the new Fery Spectrograph, was given by Mr. F. Stanley, of the firm of Messrs. Hilger, Ltd. Mr. Stanley began by explaining the general construction of prismatic spectrographs and spectroscopes, and described very particularly the special features of the constant deviations and Littrow types of instruments, thus leading up to the new Fery Spectrograph, which is arranged somewhat in the manner of the Littrow, but is fitted with a quartz prism, made with curved faces and silvered on the back. The instrument shown is the only one at present in this country, and it is, as regards all its details, a fine specimen of mechanical skill, while the results which were shown upon the screen very well illustrated its capabilities. A quartz train spectrograph, and also one with a constant deviation prism were shown, as well as the Fery instrument, so that the audience had the opportunity of closely examining three exceptionally fine pieces of apparatus. The numerous slides shown included some excellent examples of spectra with very high dispersion, which well illustrated the possibilities of modern spectroscopy, while numerous practical points and details with regard to the construction and use of the instruments were very lucidly explained by the lecturer. After a short discussion, in which Dr. Marshall Watts and Messrs. C. P. Butler and Oliver Dawson took part, as well as the chairman, the meeting terminated with a very cordial vote of thanks to the lecturer.

## THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A meeting of the general committee was held at the Royal Photographic Society, 35, Russell Square, on Friday, the 13th inst. Present, Messrs. S. H. Fry, W. Gill, A. Mackie, Alfred Ellis, R. W. Robinson, H. Spink, Lang Sims, W. E. Gray, W. Illingworth, and C. F. Dickinson. Mr. W. Gill, president, in the chair.

A letter was read from Messrs. Elliott and Fry thanking the committee for their expression of sympathy in the death of Mr. Ernest C. Elliott. The hon. secretary read a report of the steps the Artistic Copyright Society had taken with regard to the new Copyright Bill, which will probably be introduced by the Government in the course of the next Parliamentary session, one of the recommendations of the Artistic Copyright Society to the Board of Trade being that with regard to photographs the term of endurance of copyright should be a definite number of years, instead of a term dependent upon the life of the author, as proposed in the present draft of the Bill. Mr. Ellis said he had read the Bill and on the whole thought it favourable to photographers. The hon. secretary explained the principal alterations the Bill would make if passed, and also the reasons for supporting the amendments suggested by the A.C.S.

Mr. W. E. Gray, F.R.P.S., was appointed to represent the Association on the Artistic Copyright Society, in place of the late Mr. E. Elliott.

A communication was read from the Edinburgh Branch fixing the amount to be charged for the print and the reproduction fee to local and other papers. The hon. secretary was instructed to write asking for further particulars. The committee approved of a suggestion that a standard size should be fixed for ordinary cabinet mounts, for which cases or portfolios could be provided by stationers and others, the idea being to carry out the principle of the old-fashioned album.

A long discussion took place upon the principle to be adopted in insuring the negatives of a business arising out of an enquiry from a member.

The committee then considered various matters concerning the forthcoming Congress on an informal report of the sub-committee.

**Croydon Camera Club.**—There was a time when the annual meetings of this club formed a natural outlet for a year's bottled-up grievances, imaginary and real, and provided an equally convenient opportunity for exchanging differences of opinion more forcible than polite. Times have changed, and the proceedings last week, marking another annual meeting, were of the most humdrum nature, all the officers and council being re-elected unanimously, to a running accompaniment of complimentary speeches. Mr. H. T. Dodsworth, the president, has won golden opinions all round. The club is lucky enough to retain the services of Mr. W. H. Claypoole as honorary secretary, assisted by Mr. J. F. Bourne, whilst Mr. E. T. Alexander ably fills the post of treasurer. Considering that the rent alone of the club premises exceeds the cash received from subscriptions, it has needed some ingenuity during the last few years to save and invest about £80 out of a *primâ facie* deficit, which, of course, does not actually exist. The club, in the capacity of a bloated and parasitical landlord, sub-lets part of the premises not required for the furtherance of art or science; sketching clubs and the like occupy the rooms on certain afternoons, there is a moderate profit on the sale of ginger-beer and other refreshments of a similar nature, and so on, all helping on the right side of the balance-sheet; but perhaps the most valuable asset of all is the spirit of good fellowship which prevails, with an entire absence of backstair grumbling and intrigue.

The past year chronicles a good fixture list, mainly contributed to by members, and a step in the direction of "early closing," for which Mr. Dodsworth is alone responsible. As the hour approaches ten, the first signs of restlessness invariably appear on the presidential countenance. At a quarter past distinct anxiety is observable. By the time the clock indicates the half-hour, anxiety has changed to ill-concealed despair, with a certain look of vigilance. At this critical juncture, let any speaker for the time being pause for a moment for suitable words to crush an opponent and all is lost; the president is on his feet in an instant congratulating the astonished debater on having so ably terminated an excellent discussion, following an unusually interesting lecture. A vote of thanks is proposed and carried with acclamation, and exit the president down two flights of stairs, at a rate which only extreme youth can justify.

Catford Photographic Society.—The proceedings on January 16 were as novel as they were instructive, and took the form of a general criticism amongst the members of their own work. Mr. Malcolm Arbuthnot entered three or four of his own productions, and took part in the discussion. The general body of members were thus able to "get their own back," as it were, while the authors were able to give their excuse for submitting the print. Mr. Arbuthnot not only explained what in his opinion was wrong, but he also suggested means for improving worthy examples. Reference was made to the absurdity of recommending the introduction of clouds directly a blank or cloudless sky appeared on the scene, together with a statement that in most cases of this kind the work was that of a beginner, generally one who was as yet unable to record more earthly things, and who had already learnt considerable in being able to produce a clean bright print, nicely mounted. It was further remarked that amateur critics (not necessarily amateur photographers) were prone to recommend improvements not worth carrying out, as is evidenced by the fact that, as a rule, every individual entry (minus those, if any, passed as perfect in every way) is recommended for improvement, yet we all know there are large numbers of prints not worth the plate spent upon them, entered for criticism, and even at exhibitions.

Folkestone and District Camera Club.—The members of this club enjoyed an excellent lecture on "Night Photography," by Mr. H. Wild, of Tunbridge Wells. There was an audience of sixty present. Mr. Wild showed some excellent slides, and stated that winter evenings were the best times for this branch of photography, and the evening was ideal when there had been rain during the day, and the atmosphere was moist and the pavements wet. When practicable it was best to hide the lights of the subject behind available objects. The lecturer emphasised the need of backed plates, and stated that the Barnet Super Speed plates were excellent, and very rapid plates to use. Mr. Wild uses the 2b and 2c Dallmeyer Portrait lenses, working at *f*/2.2. He also stated that cheap lenses could be made into large aperture lenses by using magnifiers. The new joint hon. secs. (Messrs. H. Smith and F. W. Burton, of 20 and 25, Radnor Park Crescent respectively) will be pleased to give intending members all information in reference to the club.

Liverpool Amateur Photographic Association.—At the annual meeting of this society, presided over by Mr. J. Dudley Johnston, the secretary (Mr. Charles F. Inston, F.R.P.S.) submitted the annual report, and the following officers were re-elected for the ensuing year:—President, Mr. J. Dudley Johnston; vice-presidents, Colonel Charles Brownridge, V.D., Mr. E. Rimbault Dibdin, Dr. John W. Ellis, F.E.S., Mr. C. Thurston Holland, M.R.C.S., F.R.P.S.; Mr. Charles F. Stuart, and Mr. Philip A. Cox; treasurer, Mr. Edwin Kite; librarian, Mr. W. A. Taylor; lanternist, Mr. John Smith; secretary, Mr. Charles F. Inston.

# Commercial & Legal Intelligence.

Legal Notices.—A dividend of 20s. in the £ and 4 per cent. interest has been declared in the bankrupt estate of Frank Knight, artist and photographer, 19, Castle Street, Luton, lately residing at 2, George Street, Upper Houghton Regis, near Dunstable.

A winding-up order has been made in the case of The New Film Hiring Company, Ltd., 97, St. Martin's Lane, W.C.

The Oil Process in the County Court.—The case of Charles Sawyer, trading as the Autotype Company, of New Oxford Street, v. Tilney, came before Judge Bacon at the Bloomsbury County Court on January 18. The plaintiff conducted his case in person, while the defendant was represented by Mr. Reginald Vaughan, solicitor, of Gray's Inn.

Mr. Sawyer said: This action is for the recovery of £3 16s. 10d. for goods supplied to Mr. Tilney in September, 1909. Mr. Tilney called on me in New Oxford Street on August 20 and 30 in 1909, and gave certain orders for work to be done, and to be sent to him. His instructions were that the charges would be met by Mr. W. Barnett, a photographer carrying on business at Knightsbridge. Mr. Tilney is an artist who specialises in certain finishing of portraits under a special process, of which he is a very able exponent. The pictures in question were sent to Mr. Tilney on September 4, 1909, and the invoice was sent on to Mr. Barnett about that date. Early in January, 1910, my traveller had occasion to see Mr. Barnett, who mentioned that he would like to see me in regard to certain matters in the accounts. I telephoned to Mr. Barnett, and I have a letter in which he states——

Mr. Vaughan said he should object to any letter being read unless Mr. Barnett was going to be called as a witness.

Plaintiff said he was under a disadvantage in this respect, as Mr. Barnett had gone to America.

His Honour: What do you suggest?

Plaintiff: Unless I am allowed to put the letters in evidence, I should like to suggest the matter be adjourned.

His Honour: If they have got you in a difficulty of course they won't pay. When did you first subpœna Mr. Barnett?

Plaintiff said that when he took out the summons in this action he wrote to Mr. Barnett. He did not know the latter was going to America when he took the summons. On November 18 last, plaintiff wrote to Mr. Barnett, stating that he would have to subpœna him as a witness.

Mr. Vaughan said his client desired to meet the case on its merits, and he (the solicitor) did not wish to stand in the way of the witness in question being called, but he did not want any letters between plaintiff and Mr. Barnett put in evidence unless the latter was there to be examined on them.

His Honour: Then you agree that Mr. Barnett ought to be here?

Mr. Vaughan: If plaintiff wishes to put him into the witness box.

The plaintiff: I have a letter from Mr. Barnett in which he entirely repudiates the agency.

His Honour: Let the case be adjourned!

Mr. Vaughan said he understood plaintiff might have to ask for his claim to be amended, and if he desired to do so, he (Mr. Vaughan) would ask him to amend it now. Plaintiff had claimed for goods sold and delivered, and not for breach of warranty in regard to the authority of defendant as agent. He (Mr. Vaughan) wished plaintiff to say what he was going to do, because if he proceeded with the claim for goods sold and delivered, his own evidence would be against himself.

His Honour: But there is the actual taking of the photographs.

Plaintiff said the orders were given by Mr. Tilney, apparently on behalf of Mr. Barnett, and the work was sent to Mr. Tilney.

His Honour said there seemed to be no doubt as to the nature of the claim, and the further hearing was adjourned until March 15.

# News and Notes.

"Ensign" Roll Film Competition.—Mr. A. J. Craven, 6, Clive Street, Calcutta, is the winner of the "Ensign" roll film competition for January. Houghtons Ltd. offer a three-guinea camera every month for the best negative on "Ensign" film. The entries close on the 3rd of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

The Late Mr. Phillip Everitt.—We much regret to hear that, after a long illness, Mr. Phillip Everitt died on Friday, January 13, at the age of sixty-one. Mr. Everitt was at one time secretary to the London and Provincial Photographic Association, and he also became the first secretary of the Traill-Taylor Memorial Fund, which was founded in memory of Mr. Traill-Taylor, once Editor of the "B.J." Mr. Everitt acted as secretary of the fund until he was incapacitated by a sudden and complete breakdown of health. He took a keen interest in photography, and was at one time a very prominent and well-known figure in the photographic world.

Tenders for Photographic Materials.—By a notice dated January 16, the Leeds Corporation invites tenders for photographic and various other materials required in the Electric Lighting Department. Schedules, conditions of contract, and forms of tender may be had on application to Mr. H. Dickinson, Manager of the Electric Lighting Department, 1, Whitehall Road, Leeds, stating the section for which the applicant desires to tender. Tenders, in sealed envelopes, endorsed "Electric Lighting—Tender for Stores," must be delivered to me at the Town Hall, Leeds, on or before Tuesday, February 21, 1911, at 10 a.m. The Corporation do not bind themselves to accept the lowest or any of the tenders sent in.

Press Photography.—A writer in the "Sphere" expresses doubts whether the camera is not doing harm to journalism rather than assisting it, and in support of this contention gives the two following instances :—"A poor woman falls on her knees before the King of Spain at a review and implores the pardon of her son. A year or so ago we should have read of it and have been rightly interested. To-day there is a picture, too. The act was proper enough if it were genuine, and the page of history is often lighted by such incidents and the resultant clemency. But when the scene is served up in the papers in a photograph one becomes merely impatient. Preconcerted action is suggested, and to let in a whiff of suspicion is to ruin all.

"I think that wise editors will soon have to begin to consider the photograph more carefully. The Sidney Street photographs give us another example. To my way of thinking the editors who used many of them with their letterpress were making a great mistake. On one side we had columns and columns of descriptive writing under scare headings—war correspondence of the most hectic character. That was all right; that was good journalism. But when there were also photographs showing how the Scots Guards were lying down to take aim, with a curious crowd looking on, then bad journalism set in, because the calm detachment of the camera robbed the narrative of all its terror and thrill."

No doubt these two instances, which will be familiar to all our readers, have conveyed much the same impressions to others; but they are very isolated examples, too much so to prove the writer's contention.

Professional Photographers' Congress.—The second congress of the Professional Photographers' Association is now actively engaging the energies of the committee of that body. It will be held, as last year, in connection with the Photographic Arts and Crafts Exhibition, at the Royal Horticultural Hall, Vincent Square, Westminster, S.W., from May 15 to 19. The arrangements will be on similar lines to those of its predecessors. On Monday evening there will be a reception by the President, who will deliver an address. Lectures and demonstrations will be given on Tuesday, Wednesday, and Friday evenings. Thursday will be devoted to the dinner, and the very successful precedent of last year will be followed of inviting members of the photographic trade to be present. Invitations have been received from several trade houses who carry on interesting manufacturing operations to visit their works, and Tuesday, Wednesday, and Friday afternoons will be devoted to this purpose. Admission to the Congress and participation in its advantages will be strictly confined to members of the P.P.A., and, as the committee have made a regulation that no Congress membership tickets will be issued to members joining after May 6, those professional photographers who are not already members of the Association, and who wish to take part in the Congress, should make early application for membership. As part of the Arts and Crafts Exhibition, an exhibition of professional photography will be held. This will be open to all visitors to the Hall, but will be organised and managed by the committee of the P.P.A. The hon. secretary of the Professional Photographers' Association is Mr. Alexander Mackie, 89, Albany Street, N.W.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## TANK DEVELOPMENT.

To the Editors.

Gentlemen,—Some time ago I have had similar markings on plates developed by the tank method as those experienced by Mr. Chase. I got, however, over the difficulty by soaking the plates for some minutes in plain water before developing.

I believe if Mr. Chase will try my dodge he will find his negatives all right and clean. It would be interesting to hear the result.—Yours truly,
H. Hoeck.

65, Loraine Mansions, Holloway, N.
January 21, 1911.

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To the Editors.

Gentlemen,—I have read with considerable interest the letter in the current number of the "B.J." of Mr. Gordon Chase re tank development.

A short time ago I developed some exposed plates in a copper tank, and all of them were marked by irregular patches of great density, and were therefore useless. I completed the development for the remainder of the exposed plates by dish development, with satisfactory results. My developer was a pyro soda one, the pyro being preserved with potassium metabisulphite, and I laid the blame on the possible chemical action of the latter salt with the copper of the tank.

It would be interesting to know of what material Mr. Chase's tank was made, what make of plates he used, and what were the constituents of his developer.—Yours faithfully,
R. Warden Harvey.

67, Knighton Drive, Leicester.

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## DEVELOPMENT MARKINGS ON PLATES.

To the Editors.

Gentlemen,—Was much interested in the letter from Mr. Gordon Chase in your last issue, as on two occasions I have been troubled with apparently similar markings. They were plates of two different brands, both well-known English makers, and in each case plates from two boxes of the same batch were affected.

They were all developed in open dishes, and so was able to notice the way in which the markings appeared. Before development I was unable to see any trace of markings, but as soon as the image appeared the markings appeared also, and, looking along the plates, it could be seen that the markings were in relief. This could also be felt on passing the fingers across the plate.

I found that when they were only slight, the markings could be got rid of by prolonging the development, and that when the plates were previously soaked in water for several minutes no markings appeared.

I did not try the experiment of cutting one of the plates in half, but from the four boxes I have mentioned all the plates which were soaked before development came quite all right, while all the others showed markings.

The cause seems to be that some portions of the plate do not absorb the developer so quickly as others, but whether this is due to various grades of gelatine in the emulsion not being perfectly mixed, or to the presence of small traces of oil or spirit, or any other reason, am unable to say. It is interesting to note that both brands of plates on which I have come across these markings were Rapid Orthochromatic. I am enclosing one of the worst of the spoilt plates.—Yours truly, Frank C. Starnes.

57, Park Road, Dartford, Kent,
January 23, 1911.

[The markings in the case of the plate sent by Mr. Starnes take the form of a reticulation in black lines over the whole plate, and these are crossed by other lines suggestive of brush marks. A finger-mark is also apparent. As these marks appeared in a dish, and not in a tank, the cause is probably different from that of the marks on Mr. Chase's plates.—Eds. "B.J.]

## THE PHYSICAL PROCESS OF DEVELOPMENT.

To the Editors.

Gentlemen,—On December 9, 1910, you published a letter from me containing a suggested explanation of the phenomena of photographic development.

I notice that in the January number of "Knowledge" (vide "B.J." for January 20, 1911, p. 48) Dr. Mees, in referring to this letter, ascribes to me the advancement of an "*explosion theory of the latent image*," and makes some comment upon it.

I wish to point out that the suggestion I put forward was primarily concerned with the mechanism of photographic development, and that the latent image was not specially under consideration.

Undoubtedly, if, as Dr. Scheffer's results suggest, the silver bromide grains do actually explode on exposure to light, then *the products of the explosion are the latent image*. I do not, however, wish it to be thought that I suppose these products to be nothing more than unchanged fragments of the original grains.

I certainly do not think the energy of the explosion comes from the light which sets it going, any more than the energy of a gunshot comes from the trigger of a gun. Consequently, I regard it as certain that the fragments of the exploded grains, having lost this energy, are of a different chemical or physical character from the original grains, and probably possess such chemical or electrical properties as would enable them to act as the nuclei necessary before deposition of metallic silver can occur.

It seems to me that, inasmuch as the question of the nature of the products of the explosion remains untouched, criticism of my suggestion on the lines foreshadowed by Dr. Mees will fail to test its truth.—Yours faithfully, F. F. Renwick.

Ilford, E.
January 23, 1911.

# Answers to Correspondents.

R. Lyttle, 44, Dublin Road, Belfast. *Two Photographs of General Booth, Salvation Army. Photograph of Sir Wm. Whitla, Lady Whitla and General Booth at Lennoxvale House, Belfast, Jan. 14, 1911.*

T. Bundock, Market Place, Spilsby, Lincs. *Photograph of Capt. A. Weigall. Two Photographs of Alderman Linfield, of Worthing.*

Eager.—See answer to "Senlini."

Musicus.—Of the three, we should select No. 3.

Senlini.—Write to Mr. Lyddon, at the Polytechnic, Regent Street, W.

Miles and Co.—Your question is one we frequently receive, but we regret we cannot answer it. The best powders we know are the commercial ones, such as you name.

Old Reader.—Your queries are not signed. We advise you to use Watkins' Autochrome meter, and not to expect too much from colour plates in weather such as we get in winter. Your thin, dirty, flat pictures may perhaps be quite true to nature.

Finishing Bromides in Colour.—How can we get to know the medium Nos. 1 and 2, used by A. J. Lyddon, in his paper before the R.P.S., as per your issue of the "B.J.P."?—J. R. Brunton.

Write to Mr. Lyddon, at the Polytechnic, Regent Street, W.

W. H. Barefoot.—While there are many books on the use of the paper you mention, there are none that we know of on its manufacture. You will find the general principles described in such general text-books as Abney's "Instruction in Photography," but details are trade secrets and jealously guarded.

Colouring Photographs.—I should be much obliged if you would kindly, in your next issue, where I could get the outfit mentioned by Mr. A. J. Lyddon in his paper on painting on photographs in oil colour, which he read before the R.P.S.—Medium.

Write to Mr. A. J. Lyddon, The Polytechnic, Regent Street, W.

Electric Shutter Release.—Would you kindly give a description of an electric release for a shutter?—Fred. Knott.

Such releases usually have to be specially made for use with particular shutters. We would suggest that you apply to Messrs. J. A. Sinclair and Co., 54, Haymarket, who can advise you on the matter.

Hypo Eliminator.—Can the hypo eliminator (permanganate) as recommended for negatives on page 739 in this year's "Almanac" be used for gaslight postcards? The cards are views, and not portraits, and large quantities have to be made, and it would save a great deal of time.—Hypo Eliminator.

It certainly can be used, but you must be careful not to use too much permanganate, otherwise the prints will be stained.

R. J. S.—We have tried the printing paper you send, and certainly it does not yield very strong prints, but possibly it is merely slow, and will work better in finer weather. It does not seem to have deteriorated in the usual way, being quite clean, and we imagine the trouble is that it has lost some of its sensitiveness. Possibly it has not been kept in a dry place.

Copyright.—I have recently taken a portrait of a gentleman. On production of the proof, which was satisfactory, I asked his permission to register the copyright of it in my name. This he consented to by giving me written permission. Who holds the copyright, he or me, and can he, after this, give permission to any person to reproduce the same?—H. N.

The copyright is your property if you have the written assignment. The photograph can be reproduced only by your permission.

Green Fog.—I should be glad if you will tell me, through the "Answers to Correspondents," if you know of any way of preventing green fog on negatives developed with pyro ammonia.—Pyrax.

You are probably using plates that do not work well with ammonia. Try another brand. The effect is not at all usual with pyro ammonia, unless the formula is a very poor one. We can recommend the one in the "Almanac," page 734.

X-Ray Work.—As our local hospital has been fitted with X-ray apparatus, and I have been asked if I can supply plates and develop same, I would feel obliged if you could answer the following:—1. Has any particular brand of plates to be used? 2. Are they developed same as ordinary plates?—Geo. F. Roger.

Apply to Messrs. Ilford, Ltd., or Messrs. Wratten for instructions for the use of the plates specially made for X-ray work by these firms.

Colour Plates.—One of our customers has been enquiring about some new colour plate after the style of the Autochrome, but made on the line principle. Can you give me the makers or the wholesale house so that we can obtain further particulars and supply?—Spencer H. Plattin.

There is no screen-plate in actual lines. We can only refer you to the "Dufay" (the Autotype Co.), the "Thames" (the Thames Plate Co.), or the Omnicolore (Jougla and Co.). For addresses see the Almanac.

Square Lighting.—In your issue for January 13, of "British Journal," an article by Geo. F. Green, headed "The Eyeball," mention is made of Mr. Raymer's "square light" methods. Could you kindly furnish me with further particulars re this method, or where I may obtain same?—Operator.

We cannot give you the exact reference, but articles by Mr. Raymer on lighting and posing have appeared in our pages August 10, 1906, March 15 and 22 and August 16, 1907, and on

May 8, 1908. The first three seem to bear more or less on the subject of Mr. Green's article.

Cinematograph Books.—I shall be greatly obliged if you could give the address of anyone that has published a book on cinematographic films, I mean the simplest way of producing same, and the cost of materials, apparatus, etc. I am a photographer, but have never done any cinematographic work.—Berlin.

A great many books have been published on this subject, and we should advise you to apply to a German publisher for a list of them. One German book we can mention is "Leitfaden der Momentphotographie," by F. Schmidt; an English one that is a good introductory treatise is "Living Pictures," by H. V. Hopwood.

Glycin.—I shall be much obliged if you kindly let me know, through your "Correspondents'" column (1) by how much potassium metabisulphite I can replace the sodium sulphite in the following formula:—

| | |
|---|---|
| Glycin | 120 grs. |
| $Na_2$ $So_3$ anhydrous | 360 grs. |
| $Na_2$ $Co_3$ anhydrous | 360 grs. |
| Water, to | 150 ozs. |

(2) Will the formula, as it will stand with potassium metabisulphite, be a good one for tank (time) development? If not, can you give a better one?—S. N. Banerjee.

(1 and 2) We have not tried metabisulphite with glycin, and possibly you will find that the addition of that salt will slow the developer. We doubt if you can improve on the formula as it stands.

Various.—1. Name and address of postcard publishers who buy negatives (animal studies)? 2. Where should I send some views for railway carriages, similar to those seen in the G.E.R. carriages? 3. I have several negatives that have developed some stains on the film side. The stain is of a bright silvery-looking nature, and here and there. What will remove it?—Pennie.

1. The Rotary Company, 24, Ropemaker Street, E.C.; Raphael Tuck and Co., Moorfields, E.C.; Davidson Bros., Ltd., Basterfield Street, E.C.; and other well-known postcard publishers. Also watch the "Miscellaneous" advertisements in our columns. 2. You had better apply direct to the railway companies, all of whom have their own photographic department or special agents. 3. These are silver stains caused by printing in damp weather. Try remedy given on page 742 of 1911 "Almanac." If this fails, we fear we cannot help you further.

Hypo Eliminating.—Could you give me, through your "Answers to Correspondents" column of the "B.J.," a receipt for killing and clearing the hypo from bromide prints, which would make the print only require a few minutes' rinsing, instead of an hour's washing?—Chas. H. Maud.

We recommend the hour's washing in preference to any other procedure, but you may try the following:—Make up some solution of potassium permanganate, strength immaterial, and then add a few drops of this solution to the washing water. Use just enough to make the water a very light pink colour. Keep on flooding the print with this coloured water until the pink colour is retained. In the first few baths the colour will instantaneously disappear, and when it ceases to do so the print is free from hypo. Then rinse in clean water, and dry. This is the safest method we know, and it is a quick one, but we much prefer ordinary methods with plain water.

The Case of a Postcard.—I recently supplied a firm of postcard publishers with a set of my views in this district which they obtained from me, purchasing the copyright outright. The cards were first issued as glossy and matt bromides, and obtained a large sale in this neighbourhood, and as they were acknowledged to me, this did me a certain amount of good, apart from the payment I received. But now the people have issued the views in the cheapest style in colours, giving a very crude effect, and showing up my work, so I think, in a very unfavourable light. I do not know whether I have any remedy in this case, but I should be glad if you could give me your advice in next week's issue of the "Journal."—B. F. E.

You have a remedy under clause 7 of the Copyright Act, subsection 4, the terms of which you will see on page 59 of the current "Almanac." A very similar case was heard in the High Courts only a few weeks ago, and we dealt with the matter fully in our issue of November 11, page 850. Mr. Justice Channell, in delivering judgment, expressed a view that in the majority of cases the introduction of colouring would be an "alteration" in a work of art.

Various.—1. With an enlarging lantern having condensers of 5 in. in diameter ($4\frac{1}{2}$ in. approx. focus), what would be the *shortest* focus lens that would work satisfactorily for enlarging from $2\frac{1}{2}$ x $2\frac{1}{2}$ and $3\frac{1}{4}$ x $4\frac{1}{4}$ to postcard and 5 x 7, and also for reducing? 2. In enlarging from small negatives (say, $2\frac{1}{4}$ x $2\frac{1}{4}$), would condensers such as are used in stereopticons, $4\frac{1}{2}$ in., project more light through the negative than moderate-sized ones (say, $6\frac{1}{2}$ in. diameter)? 3. Would the "Isostigmar" lens, Series II., *f*/5.8, be quite suitable for an enlarging lantern lens? 4. How much faster is an *f*/4.5 lens than an *f*/5.8, and would the former be more suitable for securing even illumination than an *f*/5.8? 5. In a developer composed of A—sodium sulphite, caustic potash; B—Oxalate of potash, bromide of potash; C—hydroquinone, what function has the oxalate? 6. In preparing an acid fixing bath for paper, could sulphur*ous* acid be used in place of and with as good results as metabisulphite of potash; and, if so, what would be a satisfactory solution? 7. Some time ago the "B.J." had a trade notice relative to a reversing mirror which was made of metal. A search has not located this review, and I would therefore ask if it is a satisfactory article, and who makes it? 8. Would ammonia gas affect the silvering on a reversing mirror?—Ontario Subscriber.

1. About 5 in. to 6 in. focal length might serve, but your requirements are rather incompatible, as the best lens for enlarging will not necessarily be the best for reducing. For the former we should prefer a 6 in. to 8 in. lens, but unless the lantern has long extension it may not be possible to reduce with the same lens. One of shorter focus may be essential. If you wish to use one lens alone, we advise you to get the longest focus lens that will permit you to reduce on the required scale. 2. Yes, because the light will be nearer the condenser. 3. Quite suitable. 4. Compare the squares of the numbers, and you get the relative exposures; you will see the ratio is 33 to 20. There should be no difference as regards illumination if the light is all right, but the bigger aperture is less likely to give trouble. 5. We do not know, but imagine that the only function it would exercise would be that of spoiling the developer. We have no acquaintance with such a formula. 6. It can be used, but it is inconvenient, and has no advantage. When used, sulphite is generally added as well, which means that the result is practically the same as that of adding metabisulphite. 7. We think you must refer to a German mirror. You had better write to Messrs. Griffin, of Kingsway, London, for particulars. Metal mirrors have many advantages, but are naturally very costly. 8. It will probably tarnish it. You must not risk anything with such mirrors.

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THE BRITISH

# JOURNAL OF PHOTOGRAPHY.

No. 2648. VOL. LVIII. FRIDAY, FEBRUARY 3, 1911. PRICE TWOPENCE.

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## SUMMARY.

The most valuable paper read some time ago by Mr. W. H. Smith before the R.P.S. on methods of platinotype printing is published this week on pages 79 to 82.

Some useful lessons for the photographer are contained in a paper on advertising delivered recently by Mr. W. J. Casey before the Ealing Chamber of Commerce. (P. 85.)

In a leading article on page 78 we refer to the very efficient practical use which can be made of the fixed-focus principle in camera construction.

A section for "general photography," the awards in which will be granted on the basis of technical excellence, is to form part of the forthcoming R.P.S. exhibition. (P. 77.)

Sunday work in photographic studios, an alleged grievance of a member (retired) of the Council of the R.P.S., etc., figure under "Correspondence." (P. 90.)

The Leeds Corporation have recently imposed a new scale of charges for water used by amateur and professional photographers, the rates charged being palpably out of proportion to the service required. (P. 77.)

Some hints to the professional retoucher of negatives are given in a recent article in the "Photo Era." (P. 83.)

Practical methods of night photography occupied the Croydon Camera Club last week. (P. 88.)

Some hints on colouring bromide prints in oil are given in a note on page 78.

### "COLOUR PHOTOGRAPHY" SUPPLEMENT.

At the first of a series of technical meetings, arranged by the Society of Colour Photographers, Mr. E. T. Butler gave a lecture and demonstration on his methods of three-colour work. (P. 14.)

Formulæ for filters and other hints on Autochrome work are given by a German worker. (P. 13.)

Recent experience by the French workers on the preparation of the duplicates of Autochromes is the subject of a recent paper. (P. 11.)

Commercial possibilities in colour photography are suggested in a note on page 10.

A French worker, M. V. Crémier, has published some practical hints on sunset photography by the Autochrome process. (P. 9.)

The oil process has been suggested for three-colour printing. (P. 12.)

## EX CATHEDRA.

**The R.P.S. Exhibition.** It will be seen from the announcement which we publish on another page that the Council of the R.P.S. have decided on some very important modifications in the programme of the forthcoming exhibition. In the first place a new section is established for general photographs which are to be selected for their technical excellence only, and in the second place medals are again offered in all sections except the pictorial and trade ones. Both of these alterations will, we believe, be met with general approval. For some years past there has been practically no room in the exhibition for purely technical photographs unless they could also be labelled as either pictorial or scientific, excepting, of course, in the trade section, where wall space had to be paid for. Thus it came about that photography pure and simple found a very cold welcome in an exhibition that was ostensibly devoted to it. We consider the Council are to be congratulated on this new class, and we cannot conceive that any one will be able to devise any reasonable objection to it. As to the restoration of the medals there is no doubt whatever that the abolition of these awards in the non-pictorial sections some few years ago damaged the exhibition very considerably. They were valued very highly, for no suspicion of pot-hunting could possibly be connected with them, and their restoration will be welcomed by many workers. If anything, they should be more highly valued in the future than they were in the past, for under the new articles of association of the R.P.S. the judges are selected by the Council, which means that carefully chosen specialists in all branches of work will now have the onerous task of judging. Under the old articles judges had to be nominated and elected by the members of the society generally, and therefore it often happened that the chances of the ballot produced a committee containing no specialist on one or more important branches of work. The scientific section suffered on this account, for it is obvious that workers in some very special branch, say, photo-micrography, would hesitate to submit their work to a committee which included no photomicrographer. This serious defect warranted, we think, the temporary abolition of the medals, for it tended to diminish their value; now, however, the defect being remedied, the re-establishment of the medals strikes us as being an eminently desirable thing, and calculated to raise the prestige of the society.

* * *

**Amateurs and the Water Rate.** The photographers of Leeds are making a bitter outcry with regard to the increased water charges made by the Leeds Corporation. It appears that under these charges amateurs will have to pay an additional charge of 10s. 6d. yearly, while professionals will have to pay 30s. Apparently the Corporation have very extraordinary and exaggerated notions with regard to the amount of water used by amateur photographers, for the charge of 10s. 6d., if we calculate on the basis of 9d. per thousand gallons, represents a quantity of 14,000 gallons, which is largely in excess of all probabilities. It is not difficult to check the quantities of water used for washing purposes, for while the smallest flow of water from a single tap that is adequate for washing one or two prints or plates is about 3¾ gallons per hour, the maximum flow that it is practically convenient to use at all is about thirty gallons per hour. This latter quantity represents extravagance, and no ordinary photographer is at all likely to let his tap run at more than fifteen gallons per hour, which quantity we may take as the basis for a maximum estimate. Assume that the amateur is engaged in washing operations for two hours per week for fifty weeks in the year. The total consumption is then 1,500 gallons, which is worth only 1s. 1½d. at the current rate of 9d. The allowance made here is ample for the average amateur, and extravagant for the very common type of amateur who only exposes plates on his summer holiday, and makes a few prints and slides during the winter. The full charge of 10s. 6d. will, however, represent the cost of a tap running for over 2½ hours on every day of the week for fifty weeks. It may be argued that the amateur is prone to waste water by letting the tap run all night, but if the charge is based on this assumption it must presume that he does so for something like 100 nights in the year, which is a thing that no amateur is likely to do. Taking the case of the professional, we will assume that a busy man will have a tap running for about eight hours on each of 300 days. This will amount to 36,000 gallons, worth 27s. We are allowing here for a fully occupied day of eight hours, and the man in a small way of business will not be so busy; but still he will probably get somewhere near his 30s. worth of water. On the other hand, the large professional establishment with several dark-rooms and work-rooms, with perhaps three or four taps running in each sink—we have seen three used to each large print-washing dish—will use a great deal more water; so that professionals as a class are treated on an altogether different footing to the amateur—in fact, more generously. We take it that these fees are extra charges above and beyond the charge of 9d. per 1,000 gallons for the water actually used. In this case an amateur using only 1,500 gallons for photographic purposes has to pay 11s. 7½d. for the privilege of doing so, which is at the rate of 7s. 9d. per thousand gallons, whereas a professional using 36,000 gallons has to pay £2 17s., which is only at the rate of 1s. 7d. per thousand gallons. The more water one uses, the less is the rate per thousand gallons, but how this circumstance is likely to check extravagant consumption or waste we are quite unable to see. It is equally impossible for us to suggest any method by which the Corporation can determine whether any individual is an amateur photographer or not, while if they wish to determine the exact line that separates the very advanced amateur from the professional we can only wish them joy of the task.

* * *

**Bromides in Oil.** So far the Bromoil process has made but little headway among professional photographers, but those who have practised it will testify to the fact that oil pigments are not necessarily so messy in use as they are popularly supposed to be. This being so, it is surprising that they are not more used in finishing ordinary enlargements instead of crayon or water-colour. The materials required are few and simple, comprising two or three good quality hog-hair tools, flat and round, about Nos. 5 to 8, a badger softener, and a few sables for small details; a tube of lamp-black, one of megilp, and a bottle of turpentine. Zinc white may be used if desired for touches on the high-lights, but should not be used to form greys with the black. The method of working is totally different from that of painting in oils in monochrome where opaque colour is used, since in the finishing process the success depends upon keeping the colour as transparent as possible, and applying it in such a way as to show no brush marks. This is done by mixing the black with megilp until it works, freely using strawboard or brown paper as a palette. Turpentine is used, as necessary, to thin the colour for delicate shades. No preparation of the print is necessary, the gelatine surface being quite impermeable to the oil. The colour is applied with the hog-hair brushes first upon the larger surfaces, using as little as possible and working lightly, more in the way that crayon is applied with a stump than in the manner in which painters usually work. The colour can be evened up and brush marks removed by stippling with a clean brush just moist with turpentine, while very soft edges, vignettes, etc., can be finished with a badger softener if it be desired to remove every trace of texture. Fine details of hair, dress, etc., are done in the same way as in water-colour finishing, using the small sable brushes, and when the black is practically dry, zinc white reduced with megilp may be used to strengthen the high-lights. It is easy to lighten any portion which may appear too dark by stippling with a dry brush, or the colour may be removed altogether with a piece of soft linen or wash-leather. There should be practically no gloss upon the work when finished, but this can easily be obtained if necessary by using more megilp with the colour for the deeper shadows. This particular method was published by L. G. Bigelow in 1894, and we have tried it with a considerable amount of success. It will be noticed that it differs considerably from Mr. Lyddon's process recently demonstrated before the R.P.S.

## FIXED FOCUS CAMERAS.

A CAMERA which is devoid of any focussing adjustment may be regarded with a somewhat contemptuous feeling by the skilful photographer, but the fact remains that such cameras, besides being "boons and blessings" to unscientific amateurs, are often of great utility for special purposes. It was remarkable to see what a large proportion of successful shots were made with the original Kodak, with its fixed focus, fixed aperture and unvarying exposure. As a rule, these suited about fifty per cent. of the subjects aimed at, thus giving a much greater proportion of pictures than would be obtained with the elaborate instruments of the present day, which possess such facilities for adjustment that it is possible to ensure a failure with every exposure. Little, however, need be said about fixed focus cameras of the "snapshot" class, the greatest interest being found in instruments constructed for special purposes.

One important application of the fixed focus principle will be found in the construction of an ever-ready camera by means of which the manufacturer or dealer can in a few seconds obtain a record to scale of any small object which attracts his attention. For instance, a jeweller knowing nothing of photography wished to preserve an illustrated record of goods made by him, and in cases where the design appealed to him, of articles which passed through his workshops for alteration and repair. He applied to a camera manufacturer and was furnished with an apparatus which was simplicity itself. A quarter-plate camera, consisting of a rigid box of mahogany about ten inches long, was fitted with a 5¼-inch R.R. lens permanently stopped down to *f*/32. This box was screwed down upon a dead-black baseboard, at the end of which, at about ten inches from the lens, was a small board covered with dark grey velvet, having a small hook screwed into it, on which a watch, locket, or brooch could be suspended; below this was a little removable shelf on which articles such as rings could be placed. All the jeweller had to do was to hang up his locket, place a slide in the camera, and expose for twenty to sixty seconds, the slide being sent to a photographer to have the plate developed and the slide refilled. A somewhat similar arrangement has been made for making negatives for lantern slides from newspaper cuttings where it was desired to throw certain information on the screen without loss of time. In this case the focus was permanently set to give the desired size, the image secured on a dry collodion plate and the negative itself placed in the lantern.

An important application of the fixed focus principle is, of course, in photographic surveying, where the lens is carefully set at its infinity focus and never disturbed. It was a little amusing, however, to hear a civil engineer say that he used his 13 x 18 cm. surveying camera for nearly all his work, even portraiture, because of its readiness for immediate work. Half his negatives he said would never have been taken if he had had to put his head under a focussing cloth, but with a short focus lens and an aperture of *f*/45 he was ready for anything but snapshots.

Fixed focus enlargers and reducers for lantern slides are too well known and appreciated to need description here, but we must mention as the highest type of fixed focus camera the splendid instruments with which star maps are made, while, coming a little lower than the heavens, the aviator finds no camera suit him better than a simple rigid box.

# MODIFICATIONS IN PLATINOTYPE.

[The paper and demonstration given by Mr. W. H. Smith, of the Platinotype Company, before the Royal Photographic Society on December 6 last were briefly reported in our issue of the 9th of that month; but now that the full text has been published in the current number of the "Photographic Journal," we reprint it in full, commending it to the close attention of all platinotype workers as authoritative information from one who, as technical manager for the Platinotype Company for over thirty years, is undoubtedly in a unique position to give advice as to practical methods. Mr. Smith in his paper addressed himself to workers requiring some variation from the standard methods officially recommended by the Company, though he was careful to make clear that many of the methods, and particularly those involving the use of a developer containing mercury, were not put forward by the Company when prints of the highest permanence were required. The paper, however, contains so much that is of direct practical interest and value that it deserves a permanent place in the technical literature of the platinotype process.—Eds. "B.J."]

Mr. W. H. Smith, before reading his paper, explained that platinotype paper was coated with an iron salt and exposed to light. The salt used was ferric oxalate, and the action of light under the negative was to reduce part of the salt to the ferrous state. Ferrous salt was a powerful reducing agent, and therefore, if the paper were floated on a solution of some easily reducible salt, an image from that salt would be obtained on the paper. In order to get the reduction necessary to make the platinum print, the paper was coated with iron and platinum, exposed under the negative in the usual way and developed in a solution of oxalate of potash. A weak solution of hydrochloric acid removed any iron that there might be on the paper.

## Modifications Produced by Variations in Strength and Temperature of Developer.

Normal treatment, as recommended by the Platinotype Company in their instructions, is undoubtedly the best for general use, but sometimes it is useful to know how to vary the results to a slight degree without the necessity of making special solutions. The normal developer is made up as follows:—½ lb. of developing salts is dissolved in 48 oz. of water and kept as a stock solution. For use with the ordinary qualities of black paper, one part of the stock solution is mixed with an equal quantity of distilled water, and this developer is used at a temperature of 60 deg. Fahr.; a few degrees more or less makes no appreciable difference, but it is not advisable to use it at less than 60 deg. Fahr.

The effect of slightly varying the temperature is not very marked, but a developer heated to 150 deg. or 160 deg. makes an enormous difference; with such a developer from 20 per cent. to 25 per cent. less exposure is required in printing, and it gives warmer toned blacks with maximum detail in the high-lights.

A very cold developer should never be used, as it tends to make a granular deposit. The stock solution may be used cold without dilution in cases where maximum detail and cold tones are required, but it tends to give very intense shadows. A very dilute developer and normal printing gives granular and starved-looking prints lacking in detail, but it may be used with advantage in cases of extreme over-exposure, although in no sense can it produce prints equal to those obtained by normal treatment. The effect produced by the use of a normal developer diluted with ten times its bulk of distilled water, on paper exposed from two to three times the normal, is to give prints of a rich, warm black tone, with very little detail in the high-lights, and granular half-tones. Notwithstanding these defects, it may be found very useful for the treatment of certain subjects, and pleasing results may be obtained.

Over-exposure and short development in a normal developer is often practised, but the results are never satisfactory; this treatment almost always gives mealy prints: some papers will develop more rapidly than others, and will stand short development, but the only safe method is to leave prints in the developer for a few seconds longer than the actual time required. With developers at 60 deg. Fahr. not less than 30 seconds should be allowed for the development of each print; with hot developers four or five seconds is sufficient. Best results are always obtained by correct exposure and full development. If the exposure is right it is impossible to over-develop.

## Varying the Scale of Platinotype for Use with Hard or Soft Negatives.

Hard negatives are much more difficult to deal with than soft ones; unless sufficient light can penetrate the high-lights to affect the sensitive surface of the paper, it is, of course, impossible to produce an image. Prolonged exposure may give detail in the high-lights, but at the expense of the shadows, which would be over-exposed.

The maximum detail is obtained by the use of a hot developer. Old paper will give more half-tone than quite fresh paper. Black Japine will give more detail than the ordinary qualities of "Black papers"; this again can be increased by the use of a hot developer containing a trace of mercuric chloride, but the tone produced is a warm black. Printing under yellowish-green glass reduces contrast, but exposure is very much increased. It is also possible to reduce contrasts by the use of a slow developer (equal parts of strong developer and glycerine) applied with a brush. In this case printing should be sufficient to get detail in the high-lights; then, as development proceeds, the darker parts can be checked by removing the developer by means of a piece of soft rag. This method is interesting, but not easy.

Soft negatives are much simpler to deal with: it is quite easy to get good black prints from flat negatives by adding a small quantity of potassium bichromate to the normal cold developer.

Hot developers are not so much affected by the use of bichromate. To get increased contrasts on sepia papers the addition of a little mercuric chloride to a hot developer may be used. The quantity of bichromate, etc., to be added depends on amount of contrast desired, and can only be ascertained by trial; one grain per ounce of developer produces a very marked effect.

### Warm Tones on Paper which with Normal Treatment gives Cold Black Tones.

For a very slight warmth of tone one of the best and easiest methods is to heat the normal developer to 160 deg. Fahr., but printing should be about 20 per cent. less than for a cold developer. It is advisable to use a thermometer if several prints are to be uniform in depth and tone. If undeveloped prints are steamed, by holding them over a vessel of boiling water, they will, after development in the normal cold developer, have a slightly warm tone. This method gives excellent results, but it is not convenient for large prints. To get warmer tones than can be obtained by the above treatment, it is necessary to modify the developer, and probably the simplest way is to add a small quantity of mercuric chloride to the developer, and to use it at 140 deg. to 160 deg. Fahr., two or three grains in 20 oz. of developer being sufficient to give a distinctly warm colour. A greater quantity of mercury will give warmer tones, but if carried to excess the colour produced is most disagreeable, and not permanent. Developers containing mercury generally give double tones; this may be avoided to some extent by using a mixture of developing solution, glycerine, and mercuric chloride, and by applying it to undeveloped prints by means of a brush, or by immersion; a brush usually gives the best results. The following formula will give warm brown tones:—

| | |
|---|---|
| Developer (stock solution) | 10 parts. |
| Glycerine | 10 parts. |
| 5 per cent. solution of mercuric chloride | 2 parts. |

Platinotype paper is very easily affected by the merest trace of mercury, so much so that if an undeveloped print is placed for a few hours in a closed vessel containing a few crystals of mercuric chloride it will, on development with a normal developer, give a warm-toned print; for this reason, great care is required to avoid any contamination with mercury when clean cold black tones are required. Dishes and measures which have contained mercurial solutions should not be used for any other purpose, as it is extremely difficult to get rid of every trace of mercury.

### Black Japine.

Black Japine is a quality of platinotype paper recently introduced to meet the demand for a hard-surfaced smooth paper. It does not give such artistic results as the softer papers, but it has many qualities which make it invaluable for many purposes. The hard surface renders it extremely valuable for making prints which have to be exposed to rough usage, and the smooth surface is an advantage where fine detail is required.

Printing and other operations are the same as for the ordinary qualities of platinotype made for black tones, but a stronger developer is advised, and normally it is used cold. By the use of a hot developer, a very agreeable warm black tone is produced, and there is a saving of 30 per cent. to 50 per cent. in time of printing.

A small quantity of mercuric chloride mixed with the developer increases the warmth of tone; one part of the mercury salt dissolved in 10,000 parts of developer is sufficient to give a decided warm colour to the prints. This paper is so susceptible to the action of mercury that the effect of one part in one million parts of developer can be detected; for this reason it is absolutely essential that dishes and measures which have contained mercury should be thoroughly cleaned if they have to be used for other purposes. When clean cold black tones are required, the best way is to use different developing dishes and measures.

The hard surface of Black Japine makes it eminently suitable for rough treatment; almost any degree of friction may be used without fear of injury to the surface, and there is no risk whatever of abrasion during washing operations. One valuable feature of Japine prints is the ease with which they may be cleaned without in any way affecting the platinum image: this is a decided advantage where prints are exposed to dust, or to much handling. Ordinary dirt may be removed by rubbing the prints with soap and water, grease by the use of any solvent such as petrol, stains by bleaching, etc. It is not necessary to use glass in front of framed Japine prints, because they are so easy to clean.

Black Japine is most useful for plans of machinery, etc., for workshop use; dirt and grease can be cleaned off, and the prints returned to the office in a very different state to that usually experienced.

### Sepia Tones on Black Japine.

It is quite easy to get very good sepia tones on Black Japine by applying a mixture of glycerine, oxalate of potash, and mercuric chloride by means of a brush. A very good developer for sepia tones is:—

| | |
|---|---|
| Saturated solution of potassium oxalate | 1 part. |
| 3 per cent. solution of mercuric chloride in glycerine | 1 part. |

Warmer or colder tones are obtained by the use of more or less mercuric chloride.

If very warm tones are required, the time of printing should be increased, while for cold sepia tones the printing should be normal or rather less; the correct conditions can only be ascertained by trial.

It should be remembered that mercury-toned prints are not so stable as those produced by normal treatment; therefore, when very warm tones are desired, it is best to use sepia paper. A small addition of mercury, sufficient to produce warm black tones, may be used with little fear of injury to the permanence of the prints; but when sufficient is used to produce very warm tones there is a decided risk of injury, but such prints are fairly good if not subjected to too severe a test.

### Platinotype Sepia Paper.

Sepia platinotype is one of the most beautiful photographic printing papers in use at the present time; the results obtainable cannot be successfully imitated by any other process. It is well known for its artistic quality, beauty of tone, and range of gradation. It is not only one of the most satisfactory processes for the production of photographs, but it is one of the easiest, probably the easiest, to work. At one time sepia platinotype required more care in working than it has done during the last year or two.

The paper may be kept for months without fear of deterioration, providing it is kept in a dry state, and this may be ensured either by keeping it in a sealed tube or by storing in a calcium tube. It is not so easily affected by exposure to damp air as formerly was the case. Some prints made from paper exposed to the atmosphere of an ordinary workroom for twelve hours could not be distinguished from other prints made from the same batch of paper used direct from a storage tube, thus showing clearly that no extraordinary precautions are required in working sepia paper.

Sepia papers are remarkably uniform in quality, so much so that it would be difficult to detect any difference in paper made to-day from that of a year ago. There is considerable latitude in printing—that is to say, prints may be made light or dark without appreciable loss of gradation or blocking of shadows.

The sepia tone may be modified to some extent by varying the temperature of the developer; 160 deg. to 170 deg. is the best temperature for rich sepia tones, maximum detail, full gradation, and transparent shadows. A cold developer gives cold sepia tones and loss of transparency. A difference in colour and quality is noticeable for every 10 deg. variation in temperature of developer from 80 deg. to 160 deg. If a batch of prints is required of a uniform colour and quality, the temperature of the developer should be kept uniform.

Sepia platinotype is made in several qualities of paper—thin and thick, rough and smooth, and a smooth thick buff paper recently introduced; the latter gives beautiful results, and is very suitable for reproductions of old masters, drawings, etc.

The importance of correct exposure and development at the correct temperature cannot be too strongly emphasised if full advantage is to be taken of the capabilities of sepia paper. For special effects, warm or cool developers may be used with over-exposure and short development, but this treatment cannot give the same colour or gradation as the normal way of working.

### Japine Sepia.

Japine sepia has proved to be a great acquisition to those who prefer a smoother surface and warmer tones than can be obtained on the normal sepia papers. It is made in three varieties—medium thick, extra thick, and buff. Japine sepia is not intended to replace the ordinary sepia, nor can it do so, but both qualities may be used with advantage.

For artistic work the ordinary sepia cannot be surpassed for beauty of surface, colour, and delicacy, but at the same time it is not always possible to secure negatives which give the best results on sepia papers. A greater variety of negatives may be used for Japine sepia because the results may be modified in several ways. The latitude in printing is very considerable, and it is possible to get hard or soft results with the greatest of ease. This paper is easy to use, and is very uniform in quality; the surface is very hard, and there is no risk of abrasion during washing operations. Different effects from one negative may be produced with certainty.

Latitude in printing may be shown in the following manner:

Take a negative which requires, say, ten minutes to print from, for a normal print, then make several prints giving 8, 9, 10, 11, 12, and 13 minutes' exposure, and develop in the normal Japine developer. The result will be half-a-dozen prints of varying depth, but all of them good in colour, gradation, and transparency. Make another set of three prints all of the same exposure, develop one in a sepia developer heated to 160 deg. Fahr., the second in a Japine developer at 150 deg., and the third in a Japine developer mixed with one-sixth its bulk of glycerine at 130 deg., and the result will be:—No. 1, a soft print; No. 2, a more brilliant one; and No. 3, a very brilliant print with dark transparent shadows.

Developers containing glycerine should not be heated above 130 deg., as over-heating decomposes the solution.

To get the best results full development should be given, not less than 30 seconds for each print.

A developer containing glycerine should not be over-worked; an old developer gives increased contrast, and although this may sometimes be desirable, it is not to be recommended: the better way to obtain heavy contrasts is to use a developer containing more than one-sixth its bulk of glycerine; up to one-third may be used. For general use the Japine developer without glycerine gives sufficient contrast.

Japine sepia should be printed to give the right depth on development; in the clearing baths they will appear to be too light, but will darken on drying. Finished Japine prints have a much finer appearance if hot pressed. Dry mounting is the most satisfactory method of mounting Japine prints.

### Platinotype Fabrics.

Many kinds of fabric may be prepared with platinum, but the most suitable are linen, cotton, and silk. Those sensitised by the Platinotype Co. comprise fine and coarse linen, sateen, and nainsook, silk and satin.

For black tones, either of these materials give good results, but for sepia tones sateen is to be preferred. Prints on fabric are as easy to make as prints on paper; all operations are practically the same.

Printing requires a little more care and should be controlled by an actinometer, because if a print on fabric is examined in the printing frame, there is a risk of its not falling back into correct registration on the negative; this applies more particularly to nainsook and silk, both these materials being of a somewhat flimsy nature.

The best method of procedure is to expose a trial strip, develop, fix, wash, and dry it. It is advisable to dry the trial print, as depth is difficult to judge when it is wet.

In developing it is best to float the print face down on the developer until fully developed; linen and cotton require about a minute, while silk may take much longer; with correct exposure it is impossible to over-develop. Prints may be developed face up, but this causes the image to sink in. After development three or four changes of acid clearing bath, and an hour's washing in several changes of water should be given, and in order to neutralise any trace of acid, the last but one washing water should be made alkaline by the addition of a small quantity of carbonate of soda. The prints may be dried between blotting paper or suspended in the usual way.

Dried prints are improved by laying them face down on blotting paper and passing a hot iron over the back, in just the same manner as one would treat a handkerchief.

Dirty platinotype fabric prints may be cleaned by washing and boiling in the same way as a piece of plain fabric. Mounting may be done by sticking the print on to a mount coated with starch paste (dry mounting is not suitable, as the adhesive tissue shows through), or it may be stretched on a frame. Thin fabrics such as nainsook and silk are improved by being mounted on a white mount, but thicker material does not require a white backing and looks well if stretched on a frame. A very good way is to tack the print on a frame, and then to brush it over with a solution of celluloid, this will, when dry, cause the print to become quite taut. Fabric prints coated with celluloid are suitable for colouring, the celluloid prevents colours from running, it also protects the fabric from decay. Coarse linen prints look well when stretched and coated with beeswax; they may be polished with a hard brush.

Prints on fabric may be trimmed and mounted the same as paper prints if they are first coated with a 5 per cent. solution of celluloid in acetone. Coating the prints with celluloid makes them buckle on drying, but they are easily flattened by passing a hot iron over the back.

### Short Exposure Required for Warm Tones.

Generally speaking, platinotype papers which give warm tones require a shorter exposure than those made for cold black tones. Compared with normal cold bath black-tone papers, sepia requires about 25 per cent. less printing; ordinary black-tone papers, if developed in a hot developer, about 25 per cent. less printing; black Japine developed in a hot bath, 40 per cent. to 50 per cent. less printing. The addition of a minute quantity of a mercury salt to a developer also shortens the time required for printing. The addition of a large quantity of mercury has the opposite effect.

### Notes.

Developers after having been once used should be kept in bottles protected from daylight. They contain iron and platinum salts, and the action of light causes a reduction of platinum, which settles in the form of a black precipitate, and if such a solution is used for developing prints, before the platinum black has settled, it may give rise to black specks on the prints. Care should be taken to decant only the clear liquid from a bottle of developing solution.

Care should be taken to avoid bending Japine papers in the dry state; these papers are very hard and will crack if bent at a sharp angle. When the paper is in a wet state there is no danger of cracking.

"Sepia" papers should not be stored with "black" papers; contact between the two surfaces will cause stains on the "black" paper.

The sensitive surface of platinotype papers should be kept from contact with any metallic surface and from any dust. Contact with metal causes black spots. Dust may contain particles of metal or lime, or other substances. Lime dust causes white spots.

Negatives not free from hypo will cause white spots. Negatives intensified with mercury will cause brown stains on "black" papers.

Paper changes colour with age. Platinotype prints are sometimes said to be faded when the paper turns yellow. Such prints may be bleached in chlorine water; the paper will be restored to white and the platinum image will be quite unaffected. Almost any stain may be removed from a platinotype print without affecting the quality of the image.

W. H. Smith.

In reply to various questions Mr. W. H. Smith said that the action of the bichromate began to be slower from 80 degrees. The falling away was not very marked up to 100 degrees, but beyond that temperature it was rapid. The reason was that the developing action of the hot developer was so rapid that it out-paced and overcame the oxidising effect. If crystals were found in the developer it was best to re-dissolve them, putting in a little more water—5 to 10 per cent.—and a hot developer was always used fairly strong. He had been asked when the developer should be thrown away. The answer was never to throw it away at any rate until it got like soot. What was required to be done was to use the developer and afterwards to put it by, keeping it from the light and allowing the dirt in it to settle. Indeed, a developer that was used over and over again would give richer prints than a fresh developer. But unless acid or something similar were mixed with it the developer was always perfectly usable. The developer always contained some of the platinum salts and part of them were reduced; therefore, just as full development gave richer prints, so did a developer containing platinum. By making up the developer continually to the same bulk—20 ounces—it was difficult to get it into any condition in which it would not do good work. Someone had spoken of the impermanence of the rich brown tone in a print which had been sent to an exhibition in Paris. He (Mr. Smith) had passed round a mercury developed print which had this light tone and which was marked "not permanent." He did not know how they could be made permanent. The Platinotype Company had never advocated the use of mercury in their developers simply because it was not stable, and they would not include a formula in their instructions which would injure the reputation of platinum printing for permanency. When mercury was used in excess bright or red tones could be obtained, but the more mercury that was used the less permanent became the resulting print. But if anything more than a warm black were required, why not use sepia paper? As to the variety of paper that was most durable of all, to be used for record work and handed down to posterity, personally he would favour Black Japine. The question of smears in brush development had been raised. This depended to a great extent upon the age of the paper, because, as he had pointed out earlier in the evening, the pigment became attached to the fibre and was not so easily removed. The brush must be kept moving. If the partly brushed print were allowed to stand for a few minutes or even seconds some of the platinum black would stick to the paper. He recommended the use of a little more glycerine in such cases. Mr. Lambert had asked him for some hints as to stale paper. The only thing to be done was to put a great deal of bichromate of potash into the developer. The quantity depended upon the age of the paper and the kind of result it was desired to obtain. Prints thus treated would always be warm in tone, even with new paper. The effect on old paper was really very beautiful. There were, however, two kinds of old paper—old paper which had been kept dry and old paper which had been allowed to get damp. If the paper were old and damp the best thing to do was to destroy it, for there would probably be a slight reduction of the platinum salt which could not be remedied. But if the paper were old and dry, then there would be only a partial reduction of the ferric salt without any reduction of the platinum salt, and this could be remedied to a great extent by the use of such an oxidiser as bichromate of potash. He supposed that the flesh colour obtained in a platinum print of which one member had spoken might have been done with brush work in development. Various shades of colour could readily be obtained by using different developing solutions. Developers would keep for any length of time. He had on occasion used developers that were twenty years old. Sepia kept remarkably well, perhaps getting a little softer with age. One reason why the papers kept better now than formerly was because the material was better. The fibre of which the paper was made was harder and closer, and the pigment did not sink in to the same extent. If sepia paper were kept dry it was all right for twelve months. With regard to the developing salts, he had purposely left on one side the Company's instructions for working the paper, together with all reference to the Company's salts, and he had used everyday things such as oxalate and other ordinary chemicals so that they might more readily judge of the results. The more commercial side of the subject did not come within his province that evening.

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A Correction.—In a recent note on the late Mr. Philip Everitt we described him as the first secretary of the Traill-Taylor Memorial Fund. We are now informed that this was not so. The secretary for the first year or so was Mr. Alexander Mackie, who raised and organised the fund, and was succeeded by Mr. Everitt.

Balham Camera Club.—The fourth annual exhibition and entertainment of the above club will be held on February 11 at the Balham Assembly Rooms. Particulars may be obtained from the exhibition secretary, Mr. E. Saunders, 110, Ramsden Road, Balham, London, S.W.

# THE ART OF THE RETOUCHER.

(A paper contributed to the " Photo Era " by Clara Weisman.)

A RETOUCHER stands between the beginning of a picture and the finishing. He *re-touches* that which is begun with the camera, then followed up in the dark-room, and completed at the retouching-desk. Much can be done toward the making of a beautiful completeness by the use of a good quality of printing paper, and by work done on the print with brush and pencil.

One of the greatest faults of the work in a studio is that so little attention is paid to the management of light and shade and the camera, which plays such an important part in the making of good pictures. It is taken for granted that the retoucher and the printer will remedy all deficiencies, and yet much work is done by these workers which really is not necessary. Retouching, properly speaking, is not to remedy faults (though it can do this), but rather to perfect that which has already been begun. The first essential to retouching is to make better negatives—images which are more nearly perfect.

Suppose that the amateur really desires to make pictures. In that case he should decide carefully what shall be his specialty, and accordingly develop his individuality of expression and technique. A good retoucher is a student of character; herein lies the secret of all good work. In the first place, the amateur starts out right by doing all the work that belongs to any individual picture. In taking the picture himself, he has in mind a portrayal of his subject in regard to character and to personality, which idea often lightens one step in retouching. His difficulty is *what to do* and *how to do* to preserve, in a beautiful manner, the characteristics which individualise the subject. He thereby becomes a student, consciously or unconsciously distinguishing a portrait from a deeper psychological or artistic standpoint by coming in touch with human nature.

If a portrait of an individual fails to satisfy, it is usually because it has not presented the most pleasing characteristics with all the beauty possible. True pictures express the life of an individual—that is, they are living impressions; here an impression, there an impression, expressed in the portraits. The higher the ideals one possesses, the better the work. If the amateur feels distinctly the truth of the above statements, he will have little trouble to select the kind of retouching he wishes to perform.

## Two Kinds of Retouching.

There are two kinds of retouching, the mechanical and the artistic. The mechanical is usually the result of working for a " stipple " or grain—more attention being paid to that than to the artistic quality of the flesh-technique. To preserve that which is already beautiful and characteristic, or to produce the same, is the most difficult part of the art of retouching. As retouching begins with the beginning of a picture, retouching from its highest technical standpoint is intended to perfect a well-lighted, a well-timed, and a well-developed negative. A few leading hints may not be amiss. Avoid the tendency to use as bright a light as possible to illuminate the subject. Success is more readily attained in the softer, yet brilliant lights. This lessens the tendency to blocked lights and empty shadows, and to the ill-effects resulting from too strong an illumination. Next to this, avoid the tendency to produce very sharply focussed images, which makes objects sharper than nature—microscopically sharp, so to speak. Such work produces an effect of hardness and gives a decided definiteness to the already existing imperfections. Give rather a full exposure, almost an over-exposure. This softens the effect, and in its result is more like nature. The imperfections do not stand out so strongly, and, therefore, less work is required with the pencil. There is great latitude in plates, especially in the case of full exposures.

With all this, much depends on the result produced in the dark-room. Timing and the strength of the developer have much to say there. Use a developer with a little more water added than is required in the normal developer. The developer may be strengthened, if necessary, before finishing. Through this process the image has more time to come slowly and with surety. It will be right for a perfect exposure and for one that is not. In the under-timed plate, it prevents the high-lights from coming too quickly, and gives the shadows more time to come. In the over-timed plate, the high-lights will not be blocked so readily, and the developer will not be so strong that the shadows will rush up to meet the high-lights. There is more gained by a slower method of development than by a rapid process. Avoid the use of plates with too quick an emulsion. The slower plate is far more desirable, except for objects on the wing, which is not necessary in portraiture. This is all a part of retouching, and a *big* part. It cannot be too strongly emphasised. Let moderation be the watchword, and the difficulties of the extremes, which a beginner in any art experiences, will be overcome, thus arriving at the desired results so much the sooner.

## Advantage of Good Technique.

With a well-lighted, a well-timed, and a well-developed negative, much less retouching is necessary; sometimes not any. Technique is the foundation of all good work. A good negative, or one that possesses a good image of the face, is one where the flesh is visible in the high-lights and in the shadows. This, in a sense, and in a general way, constitutes good lighting, good timing, and good developing. Make a proof of the negative to ascertain whether this has been accomplished or not. Make the proof dark enough, so that the imperfections of the flesh will show in the highest lights. In this way all that is beautiful and perfect, as well as all that is imperfect and undesirable, may be seen and judged.

The first step in retouching with the pencil is to remove the transparent spots caused by freckles and other blemishes. These print black in the proof. They are often exaggerated in size and clearness. Remove these by a little accent-mark, or touch. Do this firmly and freely to remove them with as few touches as possible, in order to produce a looseness of effect. Avoid a filling-up process, and placing of a number of little strokes where one or two would suffice. Place the accent touches (not dots) firmly enough to bring the transparent places up in tone to the colour or tone of the negative surrounding the imperfections. Get the minor imperfections out of the way, those that have nothing to do with the real and true quality of the skin or flesh. Be careful not to be too precise in trifles. Cut up the imperfections, but do not fill them up.

For a beginner, these imperfections may be taken out all over the face to acquaint himself with pencil and negative, thus to lead the eye to see the other imperfections which are not visible at first. To remove transparent places, one must get closer to the work, so as to do it with greater accuracy and delicacy; that is, to avoid too heavy a stroke for the required spot. For the larger imperfections, get farther away. By so doing, one gets a view of the whole, and the larger imperfections are more readily seen. The larger imperfections deal more, or come closer in touch, with the modelling of the face, while freckles do not. The beginner cannot see the imperfections at close range, particularly the more delicate ones. After the transparent spots are removed, make another proof.

Make it dark enough to tell the whole story of success or failure. Now search for the mottled or clouded effects in the skin which may be caused by the light and shade effect that was used, or by the irregularity or roughness of the skin. These the proof will show, and more plainly, to the beginner, than the negative. To remove these, strokes are necessary, not mere hesitating touches.

### Retouching Methods

There are different methods, but whatever stroke is used, the principle is the same. Work slowly. Every stroke is either right or wrong, either adds to or takes from the value of the work. After the first stroke is made in a mottled place or imperfection (if that stroke was made with the right touch) the remaining part of the imperfection will suggest the direction and weight of the next stroke, and so on until the imperfection is removed. The weight of these strokes should be heavy enough, or light enough, to make the imperfection meet the colour that surrounds it, whether it lies in a high-light, a half-tone, or a shadow. Too heavy a stroke, or a stroke put in a wrong place, makes more work. The more work that is done—that is, a loading on of lead—the less art, the less beauty, the less nature. The true beauty of flesh is flesh. A different sort of thing, as "stipple" or grain or some something that is not skin, is not nature.

Strokes and touches must not be made so that the actual strokes and touches are seen as such. Do the work so delicately that no marks can be seen as marks. The work should become a part of what is already beautiful, with its workmanship skilfully hidden, as it were.

Too heavy a stroke is almost unavoidable at first. Too light a stroke is the next error. A beginner is sure to do too much. But with patience and careful study, and by the help of proofs, he soon learns how much of his work is superfluous. He learns to do only that which is necessary and to do it only where it is necessary. Examine the work at a greater distance to see if it is pulled together, to see if all the parts belong to each other. As the work proceeds, the strokes become longer; thus the natural skin-texture becomes perfected. The work blends in and becomes a part of the original flesh, instead of manufacturing it. One of the finest qualities in a painting is where flesh looks like flesh. Why not in retouching? Can any amount of lead perfect that which is already perfect in the negative?

### The Right Kind of Retouching.

Retouching, to be at all artistic, must be based on the same principles as art. Every stroke has its place and no other place will do quite as well. Each stroke should count for itself; each should be made to give its own desired effect. He who puts on a great deal of work has no consideration as to the number of strokes he uses. If one stroke accomplishes a purpose and two or three are used instead, this result can never be as artistic as it would have been had but one been used. Too many strokes produce a tightness, thus giving more of a marble or a plaster-cast effect. Too short a stroke necessitates a greater number of strokes, making the work look harder; the broader, freer, looser flesh-effect is destroyed, or rather it is not produced. It is the porous effect in the skin in nature that gives a softness; if it were not for this, the skin would look harder and more solid.

The most difficult part of retouching is to get the work to appear as though it were part of the original skin itself and not laid on top of the skin. Too many strokes, or too heavy strokes, force the work to be laid on top of the skin. Strokes in wrong places do this also. Varied weights of touches are necessary to accomplish the work properly, according to the imperfections, whether very distinct or faint. The weight of touch also varies with each gradation or tone in the negative from the highest points of lights to the deepest shades, from its densest portions to its most transparent. Each gradation requires its own weight of touch, the shadows requiring a much lighter touch than do the high-lights. Dense negatives require heavier strokes than thin negatives.

There is a difference in the fineness or the coarseness of the natural texture of the skin for the different ages of individuals and sizes of negatives. A child's face possesses a purer, clearer, and more delicate skin, therefore the work should be done more delicately. Very little or no work is necessary, because the skin is so free from blemishes. Avoid destroying its beauty. The best way to preserve the delicate, soft subtleness of a child's face is not touch it at all. Loving parents and friends have no objections even to freckles. The boy or girl whose complexion is still beautiful, but rendered somewhat imperfect by freckles, scars, and the like, retouch a little, but only as much as is necessary. The grown young people require the most work; here vanity is at its height, and imperfections also. Above all, do not obliterate character. The skin-texture is coarser than in childhood, that of a man coarser than that of a woman. In the middle-aged, especially those wishing to appear young, more harmful work is required than elsewhere, if one must do such. Oftentimes nothing short of character-lines removed will please them. If the work is done to please the workman, he will leave in all that is characteristic and beautiful, that which expresses the individual. The negative of the aged makes most beautiful pictures if left untouched or nearly so. Every character-line is a mark of beauty, every line a story—a story of a life lived to old age. In some of these, a beautiful skin-texture is shown, sometimes as beautiful as a child's, only lined with years.

While the work proceeds, that is, after the imperfections are removed, a little modelling here, blending there, softening of a line, bringing out a muscle here or a feature there, will cause the texture to take care of itself. A certain degree of finish is permissible and just. Nature tends to regularity and uniformity, and the natural pores of the skin are a good example. Nature teaches that an elderly person, having a coarse skin, should not receive as fine and as smooth an effect as a child. The effect must be in keeping with reference to age and individuality, if a natural appearance is the wished-for result.

### Necessity of Perfect Modelling.

Modelling is a great essential to good retouching. To a retoucher, modelling is shaping or forming; not alone that, but keeping what is already in the negative. Most of the modelling is done simply in the clearing up of the imperfections. It takes skill to keep from destroying the most delicate modelling of any of the features the image already possesses. Each feature of the face contains curves; no matter how sharply-featured a face may be, it tends to curves or roundness. In these curves are countless indistinguishable gradations, which should be left alone. One of the most important steps in modelling is to work from the high-lights down into the lower tones. By starting with the highest pitch or key, the retoucher can hold together or bind together the gradations in their relative values.

Lines are often accented, due principally to lighting, timing and developing. Lines should be softened and shortened, if necessary, to add beauty. The lines that are disliked the most are the lines of the forehead or those between the eyebrows, those under the eyes, those from the nose to the corner of the mouth and those that cause the lips to droop at the corners. All of these lines should be softened or shortened, and some removed, such as the lines of the forehead; depending, of course, on the individual and the force and strength of these lines. Laughing-wrinkles at the corners of the eyes can be removed without destroying the character. Lines should be very delicately and thoughtfully handled.

Character is expression. The character of each individual is expressed in his personality. To preserve this is to give a true representation of life. The retoucher must learn to recognise true expression, to feel, to idealise, and yet to preserve with judgment, according to age and individuality.

Clara Weisman.

## A FEW REMARKS ON ADVERTISING.

A paper bearing the above title was recently read before the Ealing Chamber of Commerce by Mr. W. J. Casey, and although it dealt more especially with advertising as applied to retail shopkeeping, many of the points raised by Mr. Casey are of general interest. At the outset the lecturer referred to the value of the window; the photographer's show-case comes under the same heading.

"We sometimes hear men who say, 'I don't believe in advertising,' but who, nevertheless, carefully dress their windows and then light them to the best advantage, which is just as much advertising as is taking a large space in a newspaper. Frequently it is much better advertising."

Importance is attached to the improvement in the artistic taste of the public, an improvement that is frequently denied by some photographers when urged to raise the standard of their work.

"In connection with the type used in setting an advertisement, it must be remembered that the artistic taste of the general public is steadily improving. It can be seen both in the decoration and the furnishing of our homes. If a publisher brings out a cheap series of books—for instance, Dent's 'Everyman' series—which, of necessity, has to sell in large numbers to pay at all, the format is artistic. How, then, can an advertiser expect to attract attention with printed matter that appears crude, and that is stamped with the worst features of the Victorian period?"

The same point was raised in connection with the issue of circulars, which the writer considered a valuable form of advertising.

"In all your circulars . . . avoid a jumble of different types and meaningless ornaments. . . . Good printing is invariably characterised by restraint. It is like furniture—the best of the modern productions are very largely based on old styles; the type of the first William Caslon, like the furniture of Sheraton, each roughly a hundred and fifty years old, are vastly superior to those of forty or fifty years ago. I only thought of furniture to compare with type as being something with which you are all familiar, and, therefore, it is remarkable that it was one man, the late William Morris, who contributed very largely to the improvement of the public taste in both matters. . . . Circulars done in good style are not necessarily more expensive than the other kind, and even if they cost double, which they do not, it would still be a better investment to issue 500 good than 1,000 bad ones."

Dealing with the coining of a house phrase, or "slogan," as it is termed in advertising parlance, reference was made to one that has doubtless been noticed by most of our readers.

"In Messrs. Raines we use the term 'Raines Service,' to describe the work we are doing for photographers, and for some years now every advertisement of ours in 'The British Journal of Photography' has ended with the phrase, 'The Service that helps.' The idea behind it is that when the photographer has more work than he can do, he naturally thinks of 'help,' and by this time he involuntarily connects the 'help' he requires with the name of the 'Raines Service.'"

The imitation typewriter letter was also mentioned.

"These have now been brought to such a degree of perfection as to call for the very closest examination to detect that they are not ordinary letters. But to do this the filling in of the name and address must be very carefully done indeed. The average typist cannot be entrusted with the work, and thus it is that there are firms that specialise in the work. They print the letters, fill in the names and addresses, address the envelopes, and, if need be, compose the letter itself. . . ."

A remark as to the shopkeeper's wares applies with equal force to the offering of photographs.

"It may be thought that advertising ends at the shop-window, but I would remind you of the definition, 'Advertising is every move that has for its ultimate aim the sale of everything,' and therefore the whole of your system of shop management comes under the heading. It is difficult to say where advertising begins and salesmanship ends; in fact, they are but two different terms for the one thing, the persuasion to exchange your goods for your customer's money. And so you must have the co-operation of your staff. Foster the team spirit—the feeling on the part of your employees that they are, possibly small, but none the less necessary, links in one chain. The effects of a striking advertisement, a fine shop front, and attentive assistants, may all be spoiled in the end by the dilatory messenger boy who delivers the parcel."

The following needs no comment:—

"Any paper on advertising would be incomplete without a reference to the trade journals. I consider it essential that every business man should read his trade journal carefully, not, as is sometimes thought, by way of duty to that journal, but to himself and his fellow traders. In our own business I have frequently been asked questions by customers, which only within the previous month have been answered in articles in 'The British Journal of Photography,' and I doubt not that the same thing applies in every trade. Even to learn lessons in advertising the trade journal may well be read. Note how the 'business card' style of advertisement, the one that contains only the name and address, fails to impress you, and compare it with another that is full of strong selling talk—reasons why you should stock the goods offered; by so doing you can easily gather many valuable advertising hints."

## ROYAL PHOTOGRAPHIC SOCIETY.

### Attendances of Officers.

As usual at a date some time in advance of the annual election of officers, the Royal Photographic Society publishes in its "Journal" the attendances of Officers, Members of Council and Committeemen from January 10, 1910, to December 13, 1910, both inclusive.

The following are the official figures:—

| Council Meetings No. of possible attendances. | Committee Meetings. Number of possible attendances. | Name. | No. of attendances at Council Meetings. | No. of attendances at Com'ittee Meetings. |
|---|---|---|---|---|
| 10 | *Ex officio* all. | The Rt. Hon. Lord Redesdale, G.C.V.O., K.C.B., &c. (*President*). | 7 | — |
| 14 | — | The Rt. Hon. the Earl of Crawford, K.T., F.R.S. <br>*Vice-Presidents* | — | — |
| 14 | — | Sir W. de W. Abney, K.C.B., D.C.L., F.R.S. | — | — |
| 14 | — | Sir Joseph W. Swan, D.Sc., M.A., F.R.S. | — | — |
| 10 | — | Sir J. Benjamin Stone. | 2 | — |
| 14 | *Ex officio* all dealing with finance. | Leslie E. Clift (*Hon. Treasurer*). | 13 | 11 |
| 14 | — | Francis Ince (*Hon. Solicitor*). | — | — |
| 14 | — | T. Thorn Baker, F.C.S. ... | 1 | — |
| 14 | 28 | A. W. W. Bartlett ... ... | 14 | 24 |
| 10 | 12 | A. H. Blake, M.A. ... ... | 5 | 6 |
| 3 | — | F. C. Boyes ... ... ... | 3 | — |
| 14 | 1 | Douglas English, B.A. ... | 3 | 1 |
| 14 | 6 | A. R. F. Evershed, M.R.C.S., L.R.C.P. | 10 | 5 |
| 14 | 2 | W. B. Ferguson, K.C. .. | 4 | 1 |
| 14 | 2 | T. E. Freshwater, F.R.M.S. ... | 9 | 1 |
| 14 | 2 | John H. Gear ... ... ... | 14 | 2 |
| 4 | 5 | E. T. Holding ... ... ... | 1 | 4 |
| 10 | — | Geo. Lindsay Johnson, M.A., M.D., B.Sc., F.R.C.S. | 1 | — |
| 14 | 3 | Rev. F. C. Lambert, M.A. ... | 12 | 3 |
| 14 | 12 | Furley Lewis ... ... ... | 13 | 11 |
| 14 | — | Ernest Marriage ... ... | 9 | — |
| 10 | 2 | Arthur Marshall, A.R.I.B.A.... | 2 | 1 |
| 14 | 12 | F. Martin-Duncan ... ... | 10 | 8 |
| 14 | 12 | C. E. Kenneth Mees, D.Sc., F.C.S. | 12 | |
| 14 | 5 | F. J. Mortimer ... ... | 2 | — |
| 14 | 15 | J. C. S. Mummery, A.R.I.B.A. | 12 | 8 |
| 14 | 27 | C. Welborne Piper, A.R.I.B.A. | 10 | 23 |
| 14 | — | E. Sanger Shepherd ... ... | 8 | — |
| 14 | 13 | James A. Sinclair ... ... | 9 | 10 |
| 4 | — | H. Snowden Ward ... ... | — | — |
| 4 | 2 | B. Gay Wilkinson ... ... | 2 | — |

The following gentlemen are members of Committees only. It should be understood that the attendances of members of the Selecting and Hanging Committees at the Exhibitions are not preserved.

| Possible attendances. | Name. | Actual attendances. | Possible attendances. | Name. | Actual attendances. |
|---|---|---|---|---|---|
| 2 | C. Beck ... ... | 1 | 2 | E. O. Hoppé ... ... | — |
| 1 | T. Bolas, F.C.S., F.I.C. | 1 | 2 | Chapman Jones ... ... | 2 |
| 1 | E. Clifton ... ... | 1 | [illegible] | Maj.-Gen. J. Waterhouse | — |

## THE R.P.S. ANNUAL EXHIBITION.

The following announcement is made in the "Photographic Journal" with regard to this exhibition, which will be held at Prince's Skating Club from May 9 till May 31. The Council have arranged the exhibition as follows:—

Section I.—Pictorial photographs.

Section II.—General photographs, including landscapes, architectural subjects, portraits, etc. This section is intended to show the possibilities of the craft, and photographs will be selected for their technical excellence only.

Section III.—Colour photographs.

Section IV.—Natural History photographs.

Section V.—Scientific photographs and processes of reproduction.

Medals will be placed at the disposal of the judges in Sections II., III., IV., and V.

Trade Section of apparatus, materials, and photographs.

The last day for receiving exhibits by carrier will be Monday, April 24.

The last day for receiving exhibits by hand will be Tuesday, April 25.

The Press view will be held on Monday, May 8, from 10 a.m. till 4 p.m.

The reception of members by the President and Council will take place on Monday, May 8, at 8.30 p.m. The reception combines the function of the soirée and private view.

The exhibition will be open to the public on Tuesday, May 9, till Wednesday, May 31, daily from 11 a.m. till 10 p.m. The Trade Section will close at 8.15 p.m., and from 8.30 till 10 p.m. lectures will be delivered in the Gallery.

Prince's Skating Club is situate midway between Hyde Park Corner and the Albert Hall, is within three minutes' walk of the Knightsbridge Station on the Finsbury Park, Piccadilly, Brompton, and Hammersmith Electric Railway, and can also be approached by many 'bus routes. The premises are larger and provide greater facilities for the holding of a truly representative exhibition than any which the society has previously occupied. Ample accommodation exists for all sections of photographic work, including the much appreciated Trade and Professional Sections, which, for want of space, were regretfully dropped last year. Leading photographic trade firms who were represented at the New Gallery during the series of exhibitions held there, and others, have already taken much more space than the society could formerly allot to them, and it is possible to accommodate still more. There is a handsome hall which will be set aside as a lounge and reading-room, and a convenient tea-room and refreshment buffet.

Prospectuses and entry forms will shortly be issued to members and the public.

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THE "NATURE PHOTOGRAPHER."—We have received No. 1 of the "Nature Photographer," the official organ of the Nature Photographic Society, edited by Carl Edwards, Fellow and secretary of the society, of which Mr. Richard Kearton is president. This little paper includes all the particulars and rules of the society, with a list of members, and also some illustrations, a short article, and some reviews. Copies will be sent free to society secretaries who apply first on an official postcard, while other non-members of the Nature Society can obtain it post free for two penny stamps. It is interesting to note that several members are bound by "an oath of fealty to maintain the society, with or without others, while life should last," which strikes us as a somewhat unusual but very effective method of ensuring the existence of the society for, we hope, a very long time.

# Photo-Mechanical Notes.

### The Dispute in the Printing Trade.

The compositors are asking for a reduction of hours from 52½ to 50 per week this year, and to 48 next year. This the masters' federation declare they cannot concede, and consequently the Union compositors are handing in their notices. While some firms have conceded the 50 hours, others are determined not to yield, one having locked out their men in consequence of their refusal to work overtime. Although the Lithographic Artists' and Process Engravers' Union is a member of the Federation of the Printing Trades, the dispute will not affect them directly, since most of their members already work only 50 hours or less per week. But if the strike becomes acute, the engravers are bound to suffer, because it will probably mean that a good deal of printing will not be done, and the printer or his customer will therefore not order blocks which cannot be used. This will especially be the case in those printing establishments having their own engraving department, as it will be inconvenient to have one department running while another important one is standing still. It is to be hoped that the dispute may be settled without any further stoppage of work.

### The Holmstrom Etching Machine.

This etching machine, which has long been popular on the Continent, is now introduced to the English market by the former agent for Dr. Albert's machine. It is similar in principle to the Mark Smith—that is, the acid is thrown against the plate by means of a paddle churning up a spray. The machine is made entirely of porcelain, and can be seen at work at the Agents', 4 and 5, Gough Square, E.C.

# Exhibitions.

## GLASGOW EASTERN PHOTOGRAPHIC ASSOCIATION.

THE exhibition of the Glasgow Eastern Photographic Association, in their rooms, Landressy Street, contains much good work. The federation class drew an entry of thirty-five pictures, many of them being well known prize-winners. Pride of place was taken by W. J. Hart's "Nightfall in the Valley," where a winding roadway runs right up the valley, a strong sky standing strongly out against some effectively limned trees. "The Provost," by W. S. Denver, is second. This is a fine old face, sympathetically drawn, simple, and realistic. Commended: H. Collins, J. McClure, W. S. Denver, and W. S. Crocket. The judge was Mr. J. Craig Annan, and the result of the members' classes is:—

Any subject (except portraiture).—1 and championship, "A Golden Glade," Alex. Gault; 2, "An Evening Pastoral," Robert Richmond; 3, "An April Shower," A. B. Crawford. Commended: G. Mackie, W. Silvie, and A. B. Crawford.

Portraiture.—1, "Innocence," James Hamilton; 2, "Good News," Robert Smith.

Novice.—1, Sam. Muir; 2, Geo. Cassidy.

Lantern Slides.—1 and winner of trophy, R. Richmond; 2, A. B. Crawford.

## GLASGOW SOUTHERN PHOTOGRAPHIC ASSOCIATION.

THE open classes in this exhibition were well filled, Class A having an entry of 53, Class B, night subjects, 17, and Class C, lantern slides, 46. The Federation, associates, and members' classes were also well up to the average.

Award List.—Best picture in the exhibition.—Silver plaque: "Mugdock Castle," J. Bruce Cameron.

Class A.—Bronze plaques: "Portrait Study," Wm. W. Weir; "The Pool at Night," F. A. Tinker. Hon. Mentions: "A Venetian Byeway," T. D. Ralli; "At Leigh, Essex," Louis Dick.

Class B.—Bronze plaques: "The Arch," J. McClure; "Night on the River Dee," John D. Stephen. Hon. Mention: "The Monarch of the Night," E. F. H. Crouch.

Class C.—Bronze plaques (slides, open): "The Last Gleam," A. Roffey; "Washing Day," J. Chapman; "Eventide, Scalloway

Harbour," J. D. Stephen. Hon. Mentions: "Lilium Candidum," Arthur Morton; "A Byeway, Venice," T. D. Ralli.

Class D.—Bronze plaque: "The Gardener," Mrs. A. Massue. Hon. Mention "Innocence," James Hamilton.

Class E. Bronze plaques: "A Quayside," W. H. Wilson; "Sunset, Winter," A. H. Watson. Bronze medals: "The Black Pall," A. McQueen; "In the Western Isles," John Baird; "Sunlight in the Minster," D. Lumgair.

Class F.—Bronze plaques: "Shadows," S. Robertson; "Narcissus," Douglas Brown. Hon Mentions: "Little Wamphrey," Miss K. M. Alexander; "A Sheltered Path," Miss M. O. McFarlane. Debarred bronze medal: "Jean," Douglas Brown.

Class G.—Bronze plaques (slides, members): "The Black Pall," A. McQueen; "Blackadder Crypt," Miss J. McQueen. Bronze medals: "A Wayside Beacon," Charles McKenna; "The Rivals," E. J. Grant; Dr. Richmond plaque for the best gum print entered by a member, "On the Zuyder Zee," Robert Ure.

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## FORTHCOMING EXHIBITIONS.

**January 28 to February 4.**—Glasgow Southern Photographic Association. Secs., S. Robertson, 79, Govan Road, Plantation, Glasgow, and W. S. Denver, 467, Eglinton Street, Glasgow.

**February 11.**—Balham Camera Club. Sec., E. Saunders, 110, Ramsden Road, Balham, London, S.W.

**February 11 to 18.**—Aberdeen Photographic Association. Sec., J. A. Brodie, 48A, Union Street, Aberdeen.

**February 25 to March 11.**—Birmingham Photographic Society. Entries close February 10. Sec., T. Matthews, 60, Newhall Street, Birmingham.

**March 3 to 18.**—Northern Photographic Exhibition (Liverpool). Entries close February 17. Sec., C. F. Inston, 25, South John Street, Liverpool.

**March 11 to April 8.**—South London Photographic Society. Entries close February 18. Sec., Horace Wright, 180, Friern Road, East Dulwich, London, S.E.

**March 15 to 16.**—Bedford Camera Club. Entries close March 3. Sec., C. E. Craddock, 194, Castle Road, Bedford.

**March 20 to 21.**—Folkestone and District Camera Club. Sec., Hamilton Smith, 20, Radnor Park Crescent, Folkestone.

**March 23 to 25.**—Beith and District Arts and Crafts Club. Sec., J. Peat Millar, 40, King's Road, Beith.

**March 25 to April 1.**—Sunderland Photographic Association. Sec., Wm. E. Kieffer, Stirling Road, Sunderland.

**March 28 to April 1.**—Sheffield Photographic Society. Sec., C. H. Parker, 67, Wadbrough Road, Sheffield.

**March 29 to April 1.**—Bolton Camera Club. Sec., J. E. Button, 491, St. Helens Road, Bolton.

**May 12 to 20.**—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 25, Harp Alley, Farringdon Street, London, E.C.

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**Press Photography.**—"Science Siftings," in its issue of January 28, provides some interesting reading of the methods adopted by American press photographers, and reproduces a photograph taken by the Byron Company, of New York, by means of a wide-angle camera specially built for taking photographs of high buildings at close quarters. It likewise illustrates some of the feats of American press photography, to the aid of which the steeple-jack, George Nealy, known as the human fly, has been called. Nealy has taken a photograph from the topmost point of the Singer building in New York. He made his way from the observation-room of the tower to the top with the boatswain's chair, a trapeze-like apparatus, which is built to slide up and down the pole. When he reached the top, Nealy secured his ropes, and then, in true circus-performer style, swung himself head down to sight the camera and take the picture. It was necessary for him to raise the camera by ropes from the observation-room to the height he had reached. Before righting himself he lowered the camera again to his awaiting assistant, and then, after performing a few acrobatic feats, slowly made his way down the pole to a more secure footing.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between January 16 and 21:—

**Frame.**—No. 1,173. Combination box photograph frame. Walter William Pyrke.

**Camera Stand.**—No. 1,214. Studio camera stand. Albert Edward Elsy.

**Apparatus.**—No. 1,365. Apparatus for measuring the permeability to rays of light of photographic negatives or other substances or materials. Richard Leumann.

**Dark-Slide Indicators.**—No. 1,423. Indicators for photographic slides or containers for sensitised plates or films. Friedr. Kunze.

**Colour Cinematography.**—No. 1,642. Form of camera for colour cinematography. Colin Noel Bennett.

## COMPLETE SPECIFICATIONS ACCEPTED.

***These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.***

***The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.***

**Focussing Roll-film Cameras.**—No. 22,425, 1910 (Oct. 1, 1909). The invention relates to a focussing device for roll-films by means of which the whole manipulation thereof is simplified in the manner that a focussing screen of flexible material, such for example as tracing linen, opaque strips of celluloid, etc., is wound under spring tension of a shaft, which spring is further tensioned on withdrawing the focussing screen and connecting it to the end of a roll film, provided on the oppositely disposed side of the focussing device, which is adapted for one exposure only. The roll-film is wound on a rotatable shaft of which the rotation is controlled by ratchet mechanism so that the film is retained in the rolled up condition when the corresponding focussing screen is provisionally connected. As soon, however, that it is acted upon by any mechanism, such for example as the closing of a cover provided behind the focussing device, and the exposure has terminated, this member, for example the cover, releases the ratchet mechanism and therefore permits of the rotation of the shaft on which the film is wound. In consequence of the release of the ratchet mechanism the shaft of the focussing screen which is under spring tension is rotated, the focussing screen is rolled up, and as it is connected to the roll-film the latter is withdrawn from the magazine and takes up the position previously occupied by the focussing screen so that the exposure can now take place.

On the termination of the exposure the film is again rolled up by any known device provided at the side of the focussing device; for example a crank by means of which the pliant focussing screen is again withdrawn so that on the removal of the exposed film and placing a new one in position, the mechanism is again in position for further operation. In order to prevent the focussing screen, which is under spring tension, from being rolled up whilst removing the exposed film for the purpose of placing a fresh one in position, there is provided above the shaft, which rolls up the focussing screen, a screw or other arresting member, which retains the shaft in position so that the focussing screen can also be secured in the drawn out position if the connection between it and the roll-film is omitted.

It will be understood that the adjusting device can only be employed with a roll-film for one exposure. The usual roll-films cannot be applied to this purpose by being cut to pieces, but it is necessary to alter them correspondingly. It will be more advantageous to make the roll-film magazine suitable for the present purpose, but it is necessary that the paper protecting strips usually employed with the ordinary roll films must not be of a length which is generally necessary for preventing the exposure to light, as otherwise the adjusting device of the frame thereof would be somewhat larger than the sheet exposed. It is therefore necessary to reduce the protecting strip as much as possible and other means must be provided to prevent exposure to light. Thaddäus Dropiowski, 5, Jagiellonskagasse, Cracow, Galicia.

The following complete specifications, etc., are open to public inspection, before acceptance, under the Patents Act, 1901:—

Cinematographs.—No. 493. Process for reducing the size of pictures or cinematograph films, and of projecting such pictures to their normal proportions. Zollinger.

Stereoscopic Cinematography.—No. 839. Method and apparatus for obtaining stereoscopic effect in cinematograph pictures. Calichiopulo.

Stereoscopic Cinematography.—No. 840. Method and apparatus for obtaining stereoscopic effect in cinematograph pictures. Calichiopulo.

## New Trade Names.

Prominal.—No. 329,206. Photographs and photographic paper. Actien-Gesellschaft für Anilin-Fabrikation an der Treptower Brücke, Berlin, Germany, manufacturers. December 9, 1910.

Omega.—No. 329,716. Chemical substances used in manufactures, photography, or philosophical research and anti-corrosives. Pinchin, Johnson, and Co., Ltd., Minerva House, 26 and 27, Bevis Marks, London, E.C., varnish, colour, and paint manufacturers. December 31, 1910.

# Meetings of Societies.

### MEETINGS OF SOCIETIES FOR NEXT WEEK.

Monday, February 6.

Bowes Park and District Photographic Society. "A Scamper through France and Switzerland." Walter Kilbey, F.R.P.S.
Scarborough and District Photographic Society. "First Impressions of Belgium." J. E. Adnams
Bournemouth and District Camera Club. "Architecture (Winchester Cathedral)." S. G. Kimber.
Southampton Camera Club. Lecturette Competition.
Kidderminster and District Photographic Society. "A Mediæval Abbey and the Men who Dwelt There" Rev. Canon Moriarty.
Stafford Photographic Society. "Practical Hints for Beginners." A. Leonard Yapp.
Maidstone and Institute Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.
Norwich and District Photographic Society. Autotype Carbon Demonstration.

Tuesday, February 7.

Royal Photographic Society "Primary Batteries and Small Electric Lamps for the Dark Room." E. A. Salt and W. H. Smith.
Halifax Camera Club. "In Search of the Picturesque." W H. Houghton.
Rotherham Photographic Society. "Florence and Her Great Men." Miss Strudwick.
Worthing Camera Club. "Screen Plate Colour Photography." H. Essenhigh Corke.
St. Helens Camera Club. "Portraiture." T. Lee Syms.
Leeds Photographic Society. The Members' Exhibition of Record Work, Prints and Lantern Slides
Hackney Photographic Society. "Picture Making by the Oil Process." B. C. Wickison.
Handsworth Photographic Society. Council Meeting.
Sheffield Photographic Society. President's Evening.
Keighley and District Photographic Association. "More Photographic Fakes." F. J. Seaman.
South London Photographic Society. Excursion to Leigh on-Sea.
Chelmsford Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

Wednesday, February 8.

South Essex Camera Club. Wansted Park. A. E. Fairants.
West Surrey Photographic Society. Lantern Lecture. G Lovegrove.
Edinburgh Photographic Society. Members' Slides. British Architecture.
Borough Polytechnic Photographic Society. Outings Print Competition.
Sale Photographic Society. "Oil Pigment Process." E. Barker.
Coventry Photographic Club. Judging No. 2 Competition.
G.E.R Mechanics' Institution, Stratford, Photographic Section. "Gum-Bichromate Printing" C Wille.
Partick Camera Club "Enlarging." W. J Hart.
Liverpool Amateur Photographic Association. Sale by Auction of Members' Superfluous Goods.
Croydon Camera Club. Third Print Display and Criticism.
South Suburban Photographic Society. "Pyreneean Wanderings." W. V. Goulstone.
Balham Camera Club "Pictorial Composition." W. W. Aldridge.
Acton Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

Thursday, February 9.

Leek Photographic Society. "Enlarging and Toning Bromoid Prints and the New Bromoil Process." J. C. Miller and H. A. Blades.
Batley and District Photographic Society. "Photographing Machinery." H. Crossley.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Boardoid Photography." B. Crossley
Liverpool Amateur Photographic Association. "Photo-Micrography." Edwin Thompson.
Handsworth Photographic Society. "The Development of a Negative." J. W. Baker.
Oldham Photographic Society. "Preparing the Exhibition Print." T. Lee Syms.
Wimbledon and District Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

### ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, January 31, Mr. John H. Gear in the chair.

Mr. F. G. Newmarsh gave a lecture, entitled "Through Algeria to the Sahara," illustrated with a large number of lantern slides, both lecture and slides proving of special interest to the large number of members present, who accorded a very hearty vote of thanks to the lecturer at the close of the meeting.

### THE SOCIETY OF COLOUR PHOTOGRAPHERS.

This society has now instituted a series of bi-monthly meetings, the first of which was held on Thursday, January 26, Mr. C. Welborne Piper being in the chair. Mr. E. T. Butler read a paper on and demonstrated his method of working the three-colour process, also showing various specimens of the special one-exposure camera that he introduced some time ago. The paper is printed in the Colour Supplement. The meeting was most successful in every way, and fully warranted the new departure on the part of the Colour Society.

Croydon Camera Club.—Quite an unusually interesting evening was spent last week, when Messrs. J. Keane and S. J. Taylor gave a joint lantern lecture on "Night Photography," a subject as yet unhackneyed, and fresh so far as the club was concerned. Judging from the large number of excellent slides shown, the lectures must have been indefatigable in their nightly prowls, and much experience must also have been necessarily gained.

Thanks to the increased speed, and extreme colour-sensitiveness of modern plates, together with present-day large aperture lenses, workers are no longer limited to flaring gin palaces or firework displays, and even moving figures can be included with shutter speeds as rapid as half or a quarter of a second. Some credit for these short exposures must, of course, be given to modern street illuminants, which are far more powerful than formerly. The lecturers said they had wasted no time in experimenting with "ordinary" plates, and had used with satisfaction various brands of ultra-speed orthochromatic and panchromatic brands, marked from 120 to 400 H. and D., with no appreciable difference resulting in actual results. Verb. sap. As to apparatus, they had employed a reflex camera, fitted with a Zeiss *f*/4.5 Tessar, in their possession, but thought this pattern of camera offered very little advantage. In their opinion the "hand-or-stand" type is quite as useful, especially if a between-lens shutter is fitted admitting of exposures up to one second by a single finger pressure. The smaller the camera the greater the chance of success; focussing is a difficult matter at night, and with a short-focus lens there is naturally more latitude in this respect. The screen should be of "micro-grain," with a little olive-oil rubbed over to secure greater translucency. If the box-form camera with focussing scale is employed, and it is quite suitable, it will be found advantageous to carry a pocket electric lamp for reading the divisions, the same little accessory being also of use for noting numbers of dark-slides and making exposure memoranda.

No hard-and-fast rule can be laid down as regards exposures, the old dictum, to expose for the shadows and let the high-lights take care of themselves, applying with added force to night work, since it is in the rendering of shadow *values* which make or mar the picture. In a sense, every night study must be under-exposed, as detail is not wanted which the eye cannot see. Wide variations of lighting have to be dealt with, and it will be found that at *f*/4.5 exposure will vary between a quarter of a second and five minutes approximately. The condition of the atmosphere counts for a good deal; a light mist or wet pavements shorten exposures considerably; wet pavements, moreover, throw up figures and vehicles into relief, and produce interesting reflections in what might otherwise develop up as a mere faint grey fog. Moonlight is useful to show roofs and trees, and undoubtedly reduces exposure—speaking generally, about one-half. Snow and frost produce beautiful effects, and also cut down exposure. There are many troubles and difficulties inherent to night work, the most obvious in practice being the creation of ghosts, flares, and halations. Halation of the first order may be entirely got rid of by re-halogenisation, but ghosts and flare-spots are awkward things to dodge. Their presence is not necessarily dependent upon the number of separated components in the lens, and a complicated system need not be assumed to be unsuitable for night work. A deep hood is of the utmost service in preventing stray lights from striking the front glass obliquely and scattering light inside the camera; it also keeps out the wet.

The slides shown were all "straight," and comprised many startling as well as beautiful effects, speaking highly for the good technique of the workers, and indicating a happy capacity for pictorial selection and artistic expression. Included were some examples kindly lent by "The Photographic Monthly." At the instance of the president, seconded by Dr. Mees, a most cordial vote of thanks was adopted, the latter very rightly acknowledging the debt of gratitude the club was under for a lecture which must have involved an enormous amount of painstaking work.

# Commercial & Legal Intelligence.

## NEW COMPANY.

American Film Trading Corporation, Limited.—This company was registered with a capital of £50,000 in £1 shares. Objects, to carry on the business of manufacturers of and dealers in cinematographs, biographs, bioscopes, cameras, negatives, plates and films, etc. First directors, A. H. Cohen and F. A. Wilkins (managing directors); qualification, £100; remuneration of managing directors, £700 each per annum; of ordinary directors, £200; minimum cash subscription, £7. Registered office, 81 and 83, Shaftesbury Avenue, W.C.

# News and Notes.

Mr. P. Frederick Visick notifies us that he has changed his address from Finland Road, Brockley, to 50, Stanbury Road, Peckham.

"Nyte-Lyte" Weekly Postcard Competition.—The cash prize of 10s. 6d. for the best "Nyte-Lyte" postcard sent in during the week January 23-30, has been awarded by Messrs. Marion and Co., Soho Square, W., to William Cheetham, 10, Malpas Street, Oldham.

The Late Mrs. G. Lockett.—We regret to hear of the death, on January 22, at the age of seventy-seven, of Mrs. G. Lockett (*née* Taylor), widow of the late George Lockett, of Kennington, who was for over twenty years manager of J. Solomon's photographic and optical warehouse in Red Lion Square, Holborn.

Specimen Negatives Wanted.—Messrs. Elliott and Sons, of Barnet, are wanting negatives made upon Barnet plates for specimen purposes, and are open to purchase a number. They should show good technical qualities of interesting subjects, and be suitable for straight printing. Prints should be submitted, and under no consideration are negatives to be sent until asked for.

The Fallowfield Smoking Concert.—We hear from Mr. Jonathan Fallowfield that this annual event will take place this year on February 10, at Queen's Hall, London Tavern, at 8 p.m. Mr. F. W. Hindley, F.R.P.S., will take the chair, and the programme, an advance proof of which we have seen, affords the promise of a most enjoyable evening. The hon. secretary is Mr. J. C. Preece, 146, Charing Cross Road, W.C.

Manchester Amateur Photographic Society.—At the annual general meeting, held on Tuesday last, January 31, at the society's rooms, the annual report placed before the members showed that the year's work had produced very satisfactory results. The chief feature of 1910 had been the formation of a technical section to promote the study of the technical and scientific aspects of photography. This appears to have been much appreciated, and gives promise of being by no means the least important branch of the society's work. The society is also to be congratulated on its financial position, the statement of accounts submitted by the treasurer showing a substantial cash balance of over £100.

Turin Exhibition.—We are informed that among the well-known firms exhibiting in the Photographic Court of the British Section at the Turin International Exhibition, 1911 (to be opened by the King of Italy on April 29), are the following:—Messrs. Campbell Gray, Limited, W. A. Mansell and Company, F. Hollyer, Walton Adams and Son, Edwin Hadley, C. Vandyk, "Histed," Alfred Ellis and Walery, John W. Beaufort, T. Chidley, Medrington's Limited, The Autotype Company, Illingworth and Co., Limited, Burroughs Wellcome and Company, Houghtons Limited, The Platinotype Company, Wellington and Ward, W. Butcher and Sons, Limited, Thornton-Pickard, Hyde and Company. Special arrangements have been made by the Exhibitions Branch of the Board of Trade by which it is anticipated that the Court of Photography, which occupies a very important position in the British Section, will be quite unique.

We learn from the "Bradford Daily Telegraph" that Leeds photographers are up in arms against the proposal of the Corporation to increase the cost of water. For many years the Corporation sold water at the rate of 6d. per thousand gallons; that price has now been raised to 9d. An extra charge is to be made to photographers—10s. per annum as a minimum for amateurs and 30s. per annum as a minimum for professionals. The assumption is that a Leeds amateur photographer uses 40 gallons of water per day—13,000 gallons in a working year—whereas the president of the Leeds Photographic Society has made a little calculation of his own, and it works out at 1,500 gallons per annum. The society challenges the legal right of the Leeds Corporation to impose this charge, and failing concession threatens to take a test case to a higher court. Photography will become a very expensive hobby if the total cost is to be increased 12½ per cent. for the use of water.

A Generous Gift.—We see from the "English Mechanic" that Dr. Tempest Anderson, president of the Yorkshire Philosophical Society, and well known in the photographic world for his striking photographs of volcanoes, has offered to build a new lecture theatre for the society's museum at York. The work will be commenced immediately. The new theatre will be erected on the west side of the present building, space being reserved for a further enlargement if it is found to be necessary. The basement will be used as a covering for the ruins of the vestibule of St. Mary's Abbey Chapter House, which have been greatly damaged by exposure. The ruins are considerably below the floor level of the theatre, and the basement will be lighted and ventilated, and will provide a hall for the display of the many mediæval stone remains which now crowd up the Roman antiquities in the lower story of the Hospitium. The proposed theatre will be about 79ft. long and 47ft. wide, and will seat nearly 400 people.

British Professional Photographers in America.—Mr. William Crooke, of Edinburgh, and Mr. H. Walter Barnett, of Knightsbridge, who have recently been paying a visit to the United States, were entertained in characteristic style by Mr. J. C. Strauss, at his studio at St. Louis. The St. Louis "Star" of January 9 reproduces a group taken in the courtyard of Mr. Strauss's premises, and showing the two British photographers in company with leading workers in America, such as H. H. Pierce, S. L. Stein, Mr. Strauss himself, and others. An exhibition of portraits by Messrs. Crooke and Barnett was held in one of the Strauss galleries. During their visit to the St. Louis studio the two British visitors, in company with their American hosts, held a mutual school of photography. They all made sittings in succession of the same subject, each photographer being allowed ten minutes, and being permitted to make as many negatives as he chose. A chance visitor to the studio consented to serve as model for the sittings, and an interesting series of portraits was the result.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## THE R.P.S. ELECTION.

To the Editors.

Gentlemen,—It is due, I think, to those Fellows and members of the Royal Photographic Society who, in considerable numbers, have nominated me for election to the 1911 Council, as well as to those Fellows and members who have nominated me in the same way for elections in the past, that I should explain my reasons for resigning my membership of the present Council, while accepting nomination for the forthcoming election.

The conditions under which the Society's business is at present conducted are, in my judgment, such as to preclude any member of Council, who is not also a member of the General Purposes Committee or of the Exhibition Organising Committee, or of both, from giving due consideration to many matters which are of vital importance to the Society.

The constitution of these two committees is, according to the "Photographic Journal" of March, 1910, as follows:—

General Purposes Committee.—Messrs. Bartlett, Blake, Clift, Martin-Duncan, Mees, Mummery, Welborne Piper, Sinclair, and Furley Lewis.

Exhibition Organising Committee.—Messrs. Bartlett, Blake, Clift, Martin-Duncan, Mees, Mummery, Welborne Piper, Sinclair, and Mortimer.

The arrangements for and organisation of the 1911 exhibition remain at present in the hands of the 1910 committees.

The result of their management of the 1910 exhibition has been a disastrous loss to the Society, and my resignation is a protest against their committing the Society to a highly speculative undertaking in 1911, before the Society, as a whole, has been made aware of their 1910 failure.

My acceptance of nomination for the forthcoming election is due to my conviction that this view will be shared by many other Fellows and members of the Society.

I propose to move at the annual general meeting of the Society on February 14:—

"That it is desirable that the members of Council appointed to committees under Article 30 of the Articles of Association should not exceed five in number on any one committee."—I am, Sir, yours, etc.,

Douglas English.

[Though we publish the above letter from Mr. English, the fact that we do so does not imply that we agree with the writer's contentions in any way. In the first place, the failure of the 1910 exhibition is already a matter of common knowledge among the members of the Society, who are fully aware of the difficult circumstances under which it was held. An exhibition confined to pictorial work alone, and without any other attraction, cannot be run at a profit, and, as everyone knows, the Council last year had to face the choice of two evils—the minor one of making a loss on that one year, or the disastrous one of not holding an exhibition at all. As a member of the Council responsible for the choice, Mr. English should be fully aware of all the facts relating to the 1910 exhibition, and also of the conditions that compel the committee of 1910 undertaking the preliminary work of the exhibition of 1911. The argument advanced in favour of weakening the committees by reducing their numbers seems to us to be a ridiculous one. The General Purposes Committee includes nine and the Exhibition Committee eight members (Mr. English, we would note, has confused these two committees). Virtually, they are only eight apiece, seeing that the official list of attendances shows that one member of the former committee has not once attended. Are we to understand from Mr. English's letter that these eight members are so all-powerful and awe-inspiring that the remaining twelve, including Mr. English himself, are reduced to a state of impotence, and rendered incapable of considering any important matter laid before them? In this case the twelve cannot be of much account as councillors. We feel it far more probable than the majority of them have confidence in and support the committees' suggestions, which fact is possibly not known to Mr. English on account of the rarity of his attendance. We note from the official list of attendances (printed on another page of this issue) that he has only attended three Council meetings out of a possible fourteen, and from this meagre record it is obvious that he has not given himself such opportunity of either considering or discussing or protesting against the proposals of the Organising Committee for the 1911 exhibition.

It is also obvious that his personal knowledge of the doings of the Council cannot be sufficiently great to qualify him as a critic of their proceedings. The fact that the exhibition of 1911 has been under consideration by the Council and its committees has been public knowledge for some considerable time, and if Mr. English found his protests made upon the Council to be unavailing, we think it due to the members that he should explain why he has delayed his public protest until the matter is practically settled.—Eds. "B.J."]

## AN INDEX OF SPECIMEN NEGATIVES.

To the Editors.

Gentlemen,—In reference to the suggestion under "Ex Cathedra" as to an index of negatives for specimen and window-show purposes in your issue of 20th inst., I would respectfully point out that my "Photographers' Daily Register" (see the "B.J. Almanac," 1911, page 1,212) contains a column, the thirty-seventh and final, which is expressly provided, and admirably answers, for the very purpose mentioned, viz., to denote the *best* in negative, subject, and pose; not only for that, but it also indicates, when put into proper use, whether sitter has given the *desirable* permission.

This separate clue to suitable negatives for display does away with any amount of "irksome" work in selecting, and prevents "wrong 'uns" being picked out.—Yours faithfully, W. T. Clarke.

47, Evesham Street, Redditch,
January 23, 1911.

## SUNDAY WORK IN PHOTOGRAPHIC STUDIOS.

To the Editors.

Gentlemen,—I have waited patiently for some weeks to see if any of your readers would bring forth any serious argument why Sunday work should be discouraged, but, with the exception of religious views and the cry of overworking the poor assistant, I have found no logical argument brought forth. We have a saying in Ireland, and I think it is a true one, "Hard work never killed anyone," and as it is not many years ago since I was an assistant myself, I know what I am talking about. I have worked, operating in studios all day and developing work afterwards, from ten o'clock in the morning until ten at night, and it never hurt, and as I knew my work I was well paid for it. Modern conditions, with the introduction of dry plates, P.O.P., and bromide paper, tank developers, etc., have brought into the photographic profession a lot of work-shy assistants, who have failed at everything else, who, after purchasing a packet of P.O.P., and printing it very well, think they are photographers. As Mr. Arnall, of Paris, points out, the Factory Act in Ireland and England protects the photographic "young persons and women" in all workshops, and the only ones which it does not protect are those good folk who, if they had their way, would put a curtain across the heavens to prevent the sun shining on a Sunday.

Can these people think? If not, I would advise them not to read the Monday morning paper, as it (the naughty fellow) was printed on a Sunday.—I am, H. Roe McMahon.

11, Harcourt Street, Dublin.
January 25, 1911.

**Death of Mr. J. B. Panting.**—We regret to have to record the death, on January 24, of Mr. John Borthwick Panting, of 23, Foyle Road, Westcombe Park, who was for many years connected with the Woolwich Photographic Society, and was also well known in the district in connection with various schemes for local improvements.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photographs Registered:

Agnes J. Debenham, 72, High Street, Cowes, Isle of Wight. *Two Photographs of H.R.H. Prince Leopold of Battenburg in the Uniform of Princess Beatrice's Own Regiment.*

E. Williams.—Write Mr. Lyddon at the Polytechnic.

"Jay Nay."—Carl Ernst and Co., 19, Rungerstrasse, Berlin, S.O.

W. J. K.—There can be no objection to your issuing similar photographs, so long as you do not copy a registered design. It may be the same or a different size.

Electrician.—Your query is hardly in our province, and you had better send it to the "Electrical Engineer" or some other publications devoted to the subject.

Vautier-Dufour Camera.—Will you be so good as to inform me through your journal where I can obtain a camera similar to the enclosed illustration?—Telepho.

We understand it is made by Messrs. Gautier Frères, Grandson, Neuchatel.

Stereoscopic Slide Publishers.—I shall be much obliged if you can inform me the name and address of the firm who publish the series of stereoscopic photographs taken by Mr. H. S. Ponting.—A. W. M. Dickens.

H. C. White and Co., 110, Strand, W.C.

United States.—I am most anxious to secure a position in New York, U.S.A., as general photographer. (1) Should be obliged if you could inform me as to prospects. (2) Also a good journal I could advertise in.—Position.

(1) General prospects are rather better than here. (2) "Camera Craft," 713-715, Call Building, San Francisco, California, U.S.A.

Factory Act.—I would be obliged if, through the medium of your journal, you could tell me whether my premises at above, consisting of reception-room, studio, dark-room, and printing-room, come under the rules, etc., of the Factory and Workshop Acts. I have one assistant, a youth of seventeen.—Dave W. Jacubs.

Yes, legally, the premises come under the Factory Act.

Models and Costumes.—I am about to take some character photographs. Could you inform me as to any agency where I can hire models; also where I can hire the costumes?—R. B. Sharpe.

We should recommend you to apply to some firm of theatrical costumiers, such as C. H. Fox, Ltd., Wellington Street, Strand, for the costumes, and possibly they can also give you information with regard to models. We know of no agency for the latter.

Photo Mechanical Journal.—I should feel much obliged if you would let me know in this week's "B.J.P." if there is a journal that deals chiefly with photo-mechanical processes.—J. V. Thomas.

The "Process Engraver's Monthly," published by Messrs. Dawbarn and Ward, 68-74, Carter Lane, E.C. See also Penrose's Pictorial Annual.

Postcards.—Will you please let me know, through your columns, the simplest way of getting postcards to keep flat when exposed in windows, etc.? I notice enamelled cards generally keep flatter than those not enamelled. Is there any way of getting matt-surface cards to keep as flat as enamelled cards?—Postcard.

A thin celluloid varnish—that sold as Zapon—will not affect the surface, and will preserve the flatness of the cards.

Lewis.—We know of no photographic society that possesses a laboratory of the kind you require. Most work of this kind is done either in works laboratories or in private ones. We should certainly advise you to join the R.P.S., as, though even this society does not possess a laboratory, yet the matters in which you are interested are frequent subjects of discussion, and you would meet many who are personally engaged in research work. Further, you could make use of the fine library.

Micro-photographs.—Could you give me the name of the book or the formula for making photographic plates for "micro-photographic" work?—George W. Hayes.

Presuming that you refer to the minute photographs mounted on Stanhope lenses, these are usually done by the wet-collodion process, the best book on which is that by Arthur Payne, published by Mawson and Swan, Newcastle-on-Tyne, England, and obtainable in America from Tennant and Ward, 122, East Twenty-fifth Street, New York.

Meniscus Condenser.—I shall be obliged if you will let me know the practical advantage (if any) of a meniscus condenser over the more usual form of double plano-convex lenses for projection purposes. Does the former give a brighter or more sharply defined picture, or otherwise, other conditions being equal?—"Lantern."

We should say that a meniscus condenser used alone would have no practical advantages. The meniscus is commonly used behind the ordinary double condenser, and such a triple combination has the advantage of collecting more light and of giving a brighter image.

Reproduction Fee.—Some time back I submitted to the ——— a portrait of a gentleman for reproduction. The portrait had been of great interest, and was reproduced full page. On charging what I thought a reasonable fee, two guineas, I was told they never paid more than one guinea for full-page reproductions. I may say there had been no question of fee when portrait was accepted. Do you consider two guineas a reasonable price for full-page reproduction, and ought I to get it?—Repro.

Unless the subject is of very special interest, the usual fee for full-page reproduction is one guinea, and the paper is treating you fairly in offering this sum.

Fixed-focus Lantern-slide Camera.—I want to make a fixed-focus camera, using a 5 in. lens, to reduce from ¼-plate to lantern-plate, or, allowing for rebate, from 4 in. to 3 in. Will you tell me the correct distance from negative to lens and from lens to lantern-plate, and if the measurement to lens is taken to the diaphragm? Calculating according to directions on page 894 of the "Almanac," I make the distances, negative to lens 8¾ in., and lens to lantern-plate a shade over 5 1-7th in., but do not feel sure those figures are correct.—R. E. Weston.

The approximate distances are 8¾ in. and 11 2-3rds in. Measure from the diaphragm; but, as this is not absolutely correct, you must fix the exact distances by trial, using, say, a full-size cardboard model of the cemera.

Infringement of Copyright.—During the recent election the proprietors of a local paper reproduced a copyright photograph of mine without my permission. What is a fair amount to demand from them for the infringement? Could I claim 21s., and, should they refuse to pay, am I justified in issuing a summons against them through the County Court?—H. N.

It is usual to accept double the fee usually paid A guinea would be a fair sum. We doubt if you can sue for the money in the County Court. It is very unusual for copyright infringements to be dealt with in these courts. Presuming that the registration of the photograph is in order, we advise you to approach the parties through your solicitor, first asking what they propose doing, but not naming any sum.

Copyright.—I agreed to take a group of men without a definite order, it being understood that I had a reasonable chance of selling copies. A group was taken, and copies sold. I was then asked to submit proofs of postcards of the photograph, and agreed to a certain price. After doing so I found that another photographer was supplying postcards of my photograph, which he had copied, and, to make matters worse, was charging a lower price for them: result—no order for me. If you would advise me as to my position in this matter, and (if he is liable) the amount, I should be greatly obliged. Kindly quote section of Act, and where a copy can be obtained.—Memo.

Register the copyright at once, or get our publishers to do so, and you can then restrain further sales, but you cannot take action for infringement prior to registration.

Old Lens.—I recently bought a good-class studio camera and stand, with lens complete, but I have no use for the lens in my business, and wish to dispose of it. I am, however, not familiar with portrait lenses, and do not know the monogram engraved on it. I enclose a photograph of the monogram, and shall be glad if you will be kind enough to tell me the name of the maker, and if possible whether the lens is of any value. It is 12½ in. long (including 3½ in. hood), and the diameter of the lenses is about 4½ in. I am afraid it is an old and out-of-date pattern, although the lenses are in first-class condition, and the mount is also quite good.—Chas. R. H. P.

We are unable to identify the monogram of which you send print. The lens is of no marketable value, although it may work well. It would fetch only a few shillings.

Two-colour Stereo Slides.—Some time ago there was an article in the "B.J." on two-colour photography, suitable for stereoscopic work, in which one of the stereoscopic pairs was taken through a red screen, and the other through a green screen, and transparencies printed from negatives so obtained, one being stained green and the other red. These, when viewed in a stereoscope, gave a pleasing, if not correct, colour rendering. Would you kindly let me know the correct colours of the two filters; also the dyes to stain the transparencies with? Or can you let me know the number of the "B.J." the article appeared in?—Herbert R. Hodgson.

We are not acquainted with the method you describe. There is one in which black tone transparencies are viewed through red and green screens, but the results are not satisfactory, while theory does not show any possibility in it. We cannot therefore suggest correct dyes.

Bevelling Mounted Prints.—Can you kindly tell me whether there is any machine on the market for bevelling photographs, mounted on eight or ten sheet boards? I have made inquiries from Kodak and Houghtons, and various others, but have not been able to get from either anything of the sort. We do a lot of the "sketchy" work here, and do all bevelling by hand, which is rather laborious and slow. Do you think it would be possible to convert a good guillotine cutting machine to cut a bevel instead of a straight edge? If so, could you give me names of makers of guillotine cutters? Any suggestion you can make in this matter will be gratefully accepted and appreciated.—Bevelling.

So far as we know there is no machine made for this purpose. We assume that you wish to bevel mounts singly. In that case Evenden's mount cutter or the "Victor" mount cutter, No. 2. would possibly answer your purpose. A printer's engineer might be able to make you some sort of clamp so that you could cut a bevel with an ordinary guillotine. Such firms as Furnival and Co., 32, St. Bride Street, or Hughes and Kimber, 3, West Harding Street, Fetter Lane, London, would be able to help you.

Portraiture.—1. As a reader, I should esteem it a favour if you will inform me of a good book to get on studio work, lighting, and portraiture, as I want to take up this all-important branch, after some years' experience in the printing-rooms, etc., but wish to read books on the subject first. I might mention that I have the November number of the "Photo-Miniature." 2. Will you also please tell me if "Camera Craft," which you urged readers to take in recently, can be obtained in this country?—as I applied for a copy from a local man, and have been informed that it is an American paper, and can only be obtained direct from the publishers in that country.—F. J. H.

1. "The Photographic Studio," by T. Bolas, 2s.; "Lighting in Photographic Studios," by P. C. Duchochois, 1s. We believe these are still in print: other books, which are out of print but obtainable by advertising for them, are: "The Studio, and What to Do in It," by H. P. Robinson; "Artistic Lighting," by James Inglis, 2s. 6d. Another very good book (in print) is "Art Principles in Portrait Photography," by O. W. Beck, published by B. T. Batsford, 12s. 6d. 2. That is right; apply direct to 713-715, Call Building, San Francisco, Cal., U.S.A.

Arc-lamp.—I wish to use an arc-lamp for projection purposes. Alternating current, 50 volts, from a transformer. Capacity of transformer, 25 ampères. Periodicity, 40-100 ∽. I wish to use 15 ampères only. Advice as to best type of lamp, resistance, and carbons would be acceptable. I believe there is some device for ensuring the arc always facing the condenser.—E. Watts.

We assume you mean to use the lamp for enlarging purposes or for projection of lantern-slides. Any of the open arc-lamps has the disadvantage of requiring more or less frequent adjustment, especially at so low a voltage as 50 volts. A lamp such as the Ewon will work well for enlarging, but requires occasional attention. As higher voltages will give so much better results, why transform? Enclosed arc-lamps require higher voltages. An enclosed arc of the semi-automatic type on a 100 volt circuit would run for 5 to 10 minutes, or on a 200 volt circuit for 20 to 30 minutes. The type with one carbon vertical and one horizontal and pointing to the condenser would probably best fulfil your conditions, and 5 as well as 10 ampère lamps for 100 and 200 volt circuits are now being made. If the lantern body is large enough, an automatic enclosed arc-lamp, which would run for several hours without attention, would save trouble and give satisfactory results. Ordinary hard carbons would not be suitable. The semi-automatic lamp on 100 volt alternating circuit requires both carbons cored, and on 200 volt circuit the horizontal carbon cored. The automatic lamp may in the same way have both carbons cored on 100 volt alternating current, and one only cored if the current is 200 volt.

◆

Burglary at Messrs. Dallmeyer, Limited.—Messrs. J. H. Dallmeyer write us as follows.—Some time between 6 p.m. on Friday night, January 20, and 9 a.m. on Saturday morning, January 21, a burglary was committed at the showrooms of Messrs. J. H. Dallmeyer, Ltd., at 25, Newman Street, Oxford Street. Two showcases were forced open and some valuable apparatus stolen. Photographers should therefore be particularly careful in examining any apparatus offered to them for sale. Any information which might help to identify the burglars would, of course, be very much valued. The apparatus stolen is as follows:—

¼-plate Penric plate camera, fitted with No. 2, Series II., Dallmeyer.
Stigmatic lens, No. 74720, in compound shutter. No slides.
Postcard size roll film Penric camera, fitted with No. 3, Series II. Dallmeyer Stigmatic lens, No. 73619, in Koilos shutter.
¼-plate Penric focal plane camera, fitted with No. 2, Series II. Dallmeyer Stigmatic, No. 72605, in focussing mount. No slides.
¼-plate Unicum shutter.
Pair of X 3 Service Prism binoculars, No. 2128.
Pair of X 4 Service Prism binoculars, No. 1902, in aluminum.
Pair of opera glasses (lorgnette model). Handle and bag left.
Pair of aluminium opera glasses.
Pair of brass field glasses.
Pair of aluminium field glasses.

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## The British Journal of Photography.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2649. Vol. LVIII. FRIDAY, FEBRUARY 10, 1911. Price Twopence.

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## SUMMARY.

Mr. F. F. Renwick, in an article on page 96, communicates some remarkable results, the outcome of experiments made in the Ilford laboratories. He finds that scum-like markings on tank-developed plates are produced by light-action, caused by pouring the developer into a tank with a reflecting inner surface, the liquid at the same time being illuminated by the dark-room light.

A two-developer method, using tanks, is advocated by Mr. Harold Baker in the current number of "Photographic Scraps." (P. 101.)

The methods which are of practical service in obtaining a moderate and pleasing amount of diffusion, particularly in photographic portraits, are the subject of a leading article. (P. 95.)

Some practical points connected with the efficient washing of prints in dishes are mentioned in an editorial note on page 93. A washing tank providing an automatic flush, used in conjunction with a syphon, may be suggested to photographic workers on a large scale as providing a rapid and efficient means of removing hypo. (P. 94.)

The considerations which should guide the photographer in glazing portions of his studio with ground glass are the subject of a note on page 94.

A miscellany of eminently practical hints on professional portraiture is quoted from an article in the current number of "Camera Craft." (P. 99.)

Prints mounted with the thick adhesive pastes can be conveniently de-mounted by the method given on page 94.

A French worker, M. Jung, has given working details of a reversal process for the making of enlarged negatives on paper. (P. 98.)

Scottish photographers are arranging an important photographic section for the forthcoming exhibition of national history, art, and industry at Glasgow. (P. 93.)

The inventor's description of the Saalburg process of rotary photogravure has now been published in the patent specification. (P. 102.)

Improvements in the electrical transmission of photographs have been patented by Mr. Thorne Baker. (P. 104.)

A criticism of the policy of the R.P.S. in instituting a section for "general photography" appears on page 108 from the pen of Mr. F. C. Tilney.

Sunday work, markings in tank development, and the forthcoming R.P.S. election figure, among other topics, among "Correspondence." (P. 108.)

## EX CATHEDRA.

**Photographic Fashions.** Any observant person may now note a tendency among the better class of photographers to abandon the low-toned sepia prints and to adopt a lighter and more sketchy style, the vignette coming in for a considerable amount of attention. The recent proposal to standardise the external sizes of mounts is a good one and should result not only in economy and convenience to photographers in the execution and despatch of their work, but should also tend to a revival, in portfolio form, of the family album. Some time ago one of the professional associations in America issued a standard portfolio for issue by its members, but we do not know how it was received by the public, at all events, it might be worth while for the members of the P.P.A. to consider the matter, and we have no doubt that the mount and portfolio makers would rise to the occasion.

* * *

**Another "Scottish" Exhibition.** The echoes of the Scottish Salon have hardly died when we are confronted with another "national" show beyond the Tweed. Glasgow is busily engaged erecting buildings at Kelvingrove for a monster "Scottish Exhibition of National History, Art, and Industry." The exhibition will remain open during the summer, and will doubtless be visited by immense crowds. The exhibition committee are quite up-to-date, and photography secures a place in the fine art section. Mr. James McKissack, Glasgow, is convener of the photographic section, and associated with him are Messrs. Archibald Cochrane and Frank P. Moffat; as these gentlemen have been for years associated with the Scottish Salon we may expect the best traditions of that exhibition to be maintained. The section will be confined to Scottish workers, and the exhibition will be purely an invitation one—work being judged from the pictorial standpoint. Space will be provided for Autochromes and other colour transparencies, carriage being paid both ways upon all invited work. It does not, however, follow that all invited work will be hung, that entirely depends on the quality of the work sent. The committee, we understand, made a special inspection of the recent Salon and selected a large number of pictures, but in addition to that they have past exhibitions to draw upon, and it will be interesting to see how the work of some years ago fares when compared side by side with the work of to-day.

* * *

**Large Dishes for Washing.** It has often been pointed out that the most effectual and rapid method of removing the hypo from either plates or prints is that which involves a succession of soakings in various changes of water. More hypo can be removed in this way in a given time than by simply leaving the print or negative in "running" water for the same time, but the method is not popular because it involves the frequent attention of the photographer. Most workers find it more convenient to set the tap running and then go away for an hour or so than to give the matter of washing their constant attention for, say, twenty minutes, even though they may know the latter method to be the more effectual, especially in the case of prints. Some of the modern automatic plate washers, such as the "Scientific," are very effective, and with a small expenditure of water will effectually wash a dozen or so plates in less than an hour, but print washers are not generally so reliable, and being at the best very bulky and inconvenient articles, are usually ignored in favour of dishes. With dishes far more personal attention is necessary than is generally given, for prints will stick together if not looked after, while it is in any case difficult to ensure a continual change of water in the dish. It is essential to keep an eye on the progress of this washing operation, but it is well to remember that the amount of attention required will depend greatly on the method employed, and, in particular, on the number of prints in hand and the size of the dish. A print soaked for ten minutes in a 20 x 16 dish is more effectually washed than it would be if left in a 10 x 8 dish for the same time, because the former dish will hold about eight times as much water. One very thorough soaking in the big dish, the water being kept on the move all the time, will therefore be about equivalent to eight changes of water in the small dish. A few changes in the big dish will be as good as a great many changes in the small dish, but this advantage is thrown away if the big dish is overloaded with prints. Unfortunately, this is just what usually happens. If a gross of prints has to be washed the whole gross is put in at once, with the result that the washing cannot be guaranteed to be sufficient in a couple of hours. If, however, the batch be divided into quarter grosses, and each quarter is washed for half an hour, then the proper treatment of the lot can be ensured with the minimum amount of attention. A few prints in a very big dish will get along very well by themselves for ten minutes, for there is plenty of water and plenty of room for them. A slight stream from the tap will keep the water moving, and three or four complete changes will clear the whole lot in half an hour, or less. A mass of prints cannot, however, be left alone. Someone must be at hand to keep them separate, otherwise some prints will never be freed from hypo at all, while many will be only freed in patches.

* * *

**Scientific Washing.** The most effective type of big washer that could be devised would be one on the automatic flush tank principle. That is, we want the actual washer to discharge its contents at regular periods and to be immediately refilled from a supply tank acting automatically in a similar fashion. Automatic tanks of this description have been brought to great perfection and can be made of any size or be arranged to discharge at almost any period. So far as we know, however, they have not been made use of for photographic purposes, and attention might very well be directed to them. We may suggest the following as a workable system. Assume the washer to require two gallons of water to cover the plates, etc. This two gallons can be supplied in a few seconds from a flush tank and another gallon can be added from a slowly-running tap, making three gallons in all at the end of, say, five minutes. This three gallons will then start an automatic syphon discharge which will empty the washer in a few seconds. The moment it is empty the flush tank is automatically set in action and another two gallons is supplied to the washer. If the flush tank fills itself in, say, three minutes, it will always be ready when required, and we can see no trouble in the way of fitting up such a washing system. The only novel feature would be the automatic synchronisation of the two tanks, and this should present no difficulty. We have no doubt that any manufacturing firm of sanitary engineers could very easily devise and provide all the appliances, while it is evident that washing conducted in such a fashion would be both effective and rapid.

* * *

**Mountants and Unmounting.** A point which seems to have been missed by the makers of the various white dextrine mountants now so generally used, is the ease with which pictures on which they have been used can be removed from their supports without damaging either print or mount. It is occasionally necessary to unmount a photograph because it has been put upon a wrongly coloured board or, in the case of specimens, because the mount has been soiled. When starch is used this is a matter of some difficulty, but with the commercial mountants of the "Higgins" type it is only necessary to cut a thick piece of blotting paper to the exact size of the print, to damp it and press it into contact, placing an old negative or piece of glass to keep it in position and prevent it from drying. In a few hours the print can be lifted from the mount, which usually is not even warped while the print is just limp enough to remount.

* * *

**Ground Glass Studios.** A studio glazed with ground glass is an easy one for the inexperienced or inartistic operator to work in, but is not perhaps so well suited to the needs of the photographer who has a thorough grip of the various methods of lighting. There is always an initial amount of diffusion, and if the studio be a large one it is very difficult to get the strong painter-like effects which are now so much in favour. Another drawback is the loss of light which accompanies a very moderate amount of dirt upon the ground surface, which, by the way, is difficult to keep thoroughly clean. We were remarking upon this in a studio quite recently when the owner disagreed with us, saying that he had the surfaces washed regularly and there was practically no stoppage of light; but a day or two later one of the sheets was broken, and when the new one was placed in position it proved the truth of our contention. There are, however, circumstances under which the ground glass studio is actually quicker in working than a clear one; for example, in positions where much of the light is intercepted by buildings or fences the lighting is apt to be harsh, there being little general illumination, and what light there is being too concentrated for most subjects. Here the ground glass improves the general lighting as it catches light at angles which would otherwise be lost to the studio, and, moreover, softens it to such an extent that white blinds or other diffusers are rarely needed. From experiments we have made in an ordinary room we are inclined to think that white Muranese glass would in many cases replace ground glass with advantage. It is very pure in colour and has a wonderful power of catching light at very oblique angles and transmitting it to the interior of the room; moreover, it seems to stop a direct beam of sunlight very effectively, and is besides an effectual means of screening off any overlooking from adjacent windows or walls.

* * *

**Apprentices and Teaching.** All too frequently we come across complaints made by a parent or guardian who has paid a premium for instruction to a son or ward which is not being given. In some instances we may admit the apprentice is not very bright, and is really unable to learn quickly, but we have met cases where an apprentice has completed his term of apprenticeship during which his master undertook to teach him the business, without having acquired any practical knowledge of operating or re-touching. In regard to re-touching, there is no excuse to be offered. It can be, and ought to be, taught as thoroughly as printing usually is. Operating is a different matter, but while we see that the head of a concern cannot hand over the sittings to an apprentice, we submit that this fact does not free the master from his obligations to the apprentice. A good deal may be learned by a smart lad who is acting as a studio assistant, but this should be supplemented by some actual practice, which may be arranged by allowing the apprentice a sitter of his own once a week. The apprentice is too often regarded, not only as cheap labour, but as cheap labour which brings with it a little to add to capital account, and the obligation incurred is lost sight of. On the other side we often find an inclination on the part of the youth, and perhaps his mother, to think that anything in the nature of drudgery is to be avoided because the premium has been paid. Nothing so surely blasts a youth's chances as this. The lad of seventeen who, with a year's experience, wants nothing less than a full-fledged manager's position is quite lacking in idea of perspective. A little stern discipline, well away from his mother's sphere of influence, is distinctly beneficial in such a case.

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## DIFFUSION.

**There** is no subject on which the orthodox photographer is more hazy than upon that of diffusion of focus, "flou artistique," or "fuzziness," as it has been variously termed by its friends and enemies. Since 1866, when the late J. H. Dallmeyer produced the first commercial instrument for this class of picture, thousands of lenses with adjustments for modifying the character of the definition have been made, but as a general rule such adjustments are entirely neglected, even if the lens owner is aware of their existence, which, judging by the numerous inquiries which we have from time to time received, he frequently is not. Although it is difficult to distinguish between them, there are, undoubtedly, different qualities of softness in photographic definition, varying not only in degree but also in their character. The softness which is obtained by the utilisation of spherical aberration differs widely from that resulting from enlarging a sharp negative upon paper placed slightly out of the plane of sharpest focus. For "soft focus" effects a much stronger style of lighting than is ordinarily used is necessary, otherwise the first impression created will be that of simple unsharpness or blurring rather than that of breadth of effect without harshness of outline, and further, the degree of diffusion must be in proportion to the scale on which the subject is rendered. For example, the circles of confusion, by whatever means produced, must be only half the size in a two-inch portrait of a head that they would be in a four-inch one, which would look equally sharp at the increased distance at which it would naturally be viewed. The methods which may be employed to produce soft pictures are varied in nature. They comprise what may be termed optical and mechanical systems, the softness being either obtained at the time of exposure or by subsequent manipulation of the negative or print.

The optical methods are undoubtedly the most important, and the most characteristic results are those resulting from the use of lenses in which both spherical and chromatic aberrations are present, such as the Puyo-Puligny, the Smith and Dallmeyer-Bergheim systems. With these it will be found that there is a sort of indefinite sharpness, if the expression may be permitted, extending over several planes, an effect which is totally different from the softness produced by spherical aberration alone. That this is a fact was proved by the late T. R. Dallmeyer, who constructed a lens of the Bergheim model, but having both lenses carefully achromatised. This was placed in the hands of a photographer who was already skilful with the chromatic form of the same lens, with a request that he would test it in competition with his old lens. He did so, and the results were disappointing in the extreme, the quality of image being totally different and lacking the painter-like effect which is so desirable.

The image produced by a simple or "spectacle" lens is of the right quality, but, as a rule, such lenses are of small diameter, and consequently do not give a sufficient amount of spherical aberration for large work. With a lens of two inches in diameter and a focal length of thirty inches we have only an aperture of *f*/15, at which point the spherical aberration is reduced to a minimum. The single lenses of many modern anastigmats which are not sold for use with large apertures are nevertheless invaluable when spherical diffusion is all that is required, the same applying also to the front lenses of most portrait combinations, which should, however, be reversed in position so that the convex side faces the plate when the spherical aberration will be greater and the diffusion more even over the entire field.

The diffusion arrangements of portrait lenses demand special mention, as by their use varying degrees of softening, ranging from absolute sharpness to a decided blurring, can be obtained at will without appreciably altering the working aperture; a simple separation of the glasses forming the back combination of the lens introduces any desired degree of diffusion. The Dallmeyer Patent Portrait, Bausch and Lomb Portrait, and Cooke Portrait lenses all have adjustments of this nature, the latter, of course, being slightly different in design, although the general principle is the same. The more recent Voigtländer and some Swift portrait lenses are capable of adjustment in the same way, but not having been specially designed for the purpose have to be set by taking out the back combination and slightly unscrewing the inner cell. Portrait lenses of the ordinary or Petzval type cannot be used in this way—the effect of separating the components of the back combination is very slight indeed. Many persons labour under the mistaken idea that simply unscrewing the entire back combination in the tube has a diffusing effect, this is quite erroneous, it is only adding to the length of the tube and affects the covering power rather than the general definition.

What may be classed as mechanical effects for producing diffusion are mainly printing dodges, such as printing through one or more thicknesses of celluloid, paper, or the like, or even by reversing the negative in the frame so that the back is in contact with the sensitive paper. All these tricks have their uses, especially where the best has to be made of a hard, sharply defined negative, but better than these is to produce the print in the enlarging camera or lantern, using a lens of the nature already described. Even with an ordinary lens with a fairly flat field, a greatly improved result can be obtained by judiciously focussing the image so that it is not too sharp, but just sharp enough.

An entirely different way of producing a soft image is by the use of bolting silk, which may be used either in the ordinary way in making an enlargement or in the camera between the lens and plate to soften the definition in the negative. We have also seen a gauze screen interposed between lens and sitter for the same purpose, but without the result which was anticipated, as when the gauze was sufficiently out of focus to obliterate the mesh the effect was rather that of fogging than softening of the lines.

# SCUM-LIKE MARKINGS IN TANK DEVELOPMENT.

Anyone who has had a certain amount of experience in photography knows that a change in his mode of working nearly always leads to troubles never before encountered. Frequently the origin of the fault is very obscure, and its discovery involves the expenditure of much time and material. Only too often the tack is given up as hopeless, or the unlucky victim contents himself with the conclusion that something was wrong with the plate or paper used. The correspondence columns of this journal during the past few weeks show clearly that the tank method of development is giving rise to troubles the causes of which remain unknown. Various workers have found that occasionally a tank-developed plate shows peculiar dark scum-like markings of very delicate and intricate design. These vary from mere tiny wisps of tracery, which almost escape notice, up to strong bands covering a large part of the plate. Figures 1, 2, and 3 show very bad cases of the fault uncomplicated by the presence of a picture, and are three out of the many intentionally produced in studying the problem. Fig. 4 is an enlargement to 12 diameters magnification of the small area of Fig. 1 enclosed within the black square in the middle of the plate. It shows something of the very delicate and complex character of the fine markings of which the whole is composed.

Although the examples selected are fairly characteristic of bad cases, it is impossible to give here an adequate idea of the wonderful variety of forms displayed or their delicacy and beauty as seen on the original plates under a good magnifying lens. They all consist of a highly complex irregular pattern composed of black lines which vary greatly in opacity, and range from about 1-32 in. down to about 1-1,000 in. in width. These lines may be sharp and separated by relatively wide intervals, or may merge into one another at their edges to form a band of fog composed of indistinct darker and lighter wavy lines. In bad cases the whole pattern is often found to be roughly divided into a number of bands by clear intervals which run parallel to the surface of the liquid in the tank. This is clearly shown in Figs. 2 and 3. In producing these, no difference was made in the conditions, except that for the former the plate stood, as usual, with its top and bottom edges horizontal, while for the latter the tank was tilted to nearly 45 deg. during the time that the developer was being poured in, so that the developer rose obliquely across the plate.

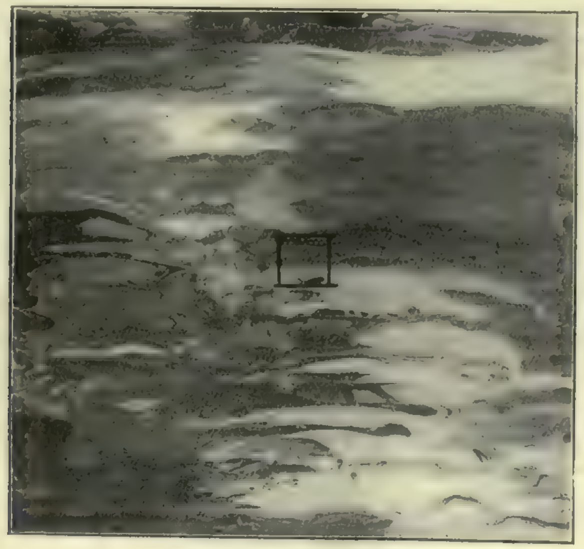

Fig. 1.

Under the most favourable conditions the production of the so-called "scum markings" is extremely easy, and almost certain; but, since the conditions which appear to govern their formation are ordinarily very variable, it is not surprising that the phenomenon is not of commoner occurrence, nor that, when it presents itself, it should be vaguely attributed to defects in the manufacture of the plates. The fact that these markings can be produced under the proper conditions in a larger or smaller degree on perfect plates of each of the five different brands tried proves that this is not so.

Experiments made in the Ilford laboratories appear to show that the only indispensable conditions for the formation of these peculiar markings are the following:—A liquid must be poured in a continuous stream into a white (e.g., earthenware) developing tank containing unwetted plates, from a vessel which is being held in the direct path of the light from the dark-room lamp, or else the interior of the tank itself must be illuminated as the liquid is poured in.

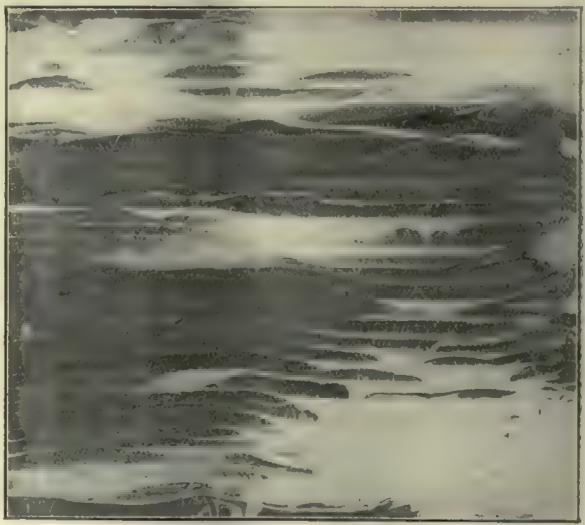

Fig. 2.

Small variations in the above conditions appear to affect the intensity of the phenomenon very greatly, and I am unable to give exact details which will enable anyone to produce results equal to those shown. There appears to be a certain position of the light, slightly above the top of the tank, which gives the strongest markings, and probably other conditions, which so far I have been unable to trace completely, were exceptionally favourable when these and many others like them were obtained; but a few trials would certainly enable anyone to get traces of the markings with prolonged development.

It is certain that the effect is produced by light, because exactly the same procedure carried out in darkness or in deep shadow invariably gives perfectly clear plates.

The plates themselves need not be directly illuminated. Provided that the liquid, as it is poured into the tank, is in the direct rays from the lamp, the tank may be completely covered, and the liquid passed into it through a glass funnel without appreciably diminishing the intensity of the markings.

It is not necessary that the liquid poured in should be a developer. Pure water produces precisely the same effect under the conditions described if the plates are subsequently developed in total darkness.

It is necessary that the inside of the tank should be capable of strongly reflecting light. If the inside of the tank be thoroughly blackened, and the plates protected by an opaque cover, through which the developer is passed down a funnel, as described above, the effect is either not produced at all or is extremely feeble.

It is apparently necessary that the plates in the tank should be dry. If they are first wetted in darkness, and then put into the tank, no markings are obtained, even when other plates, not previously wetted, but treated with them in the same tank, show them strongly.

The explanation of these results is, I think, to be found in a very powerful concentration of light from the dark-room lamp by multiple reflections within the liquid as it passes from the upper vessel to the tank, the inside of which becomes strongly illuminated. Within the tank some of this light is collected by the convex meniscus which forms at the line of junction between the sensitive film and the liquid as the latter rises, and is either brought to a more or less sharp focus upon the sensitive surface at once, or later, after refraction and reflections inside the glass.

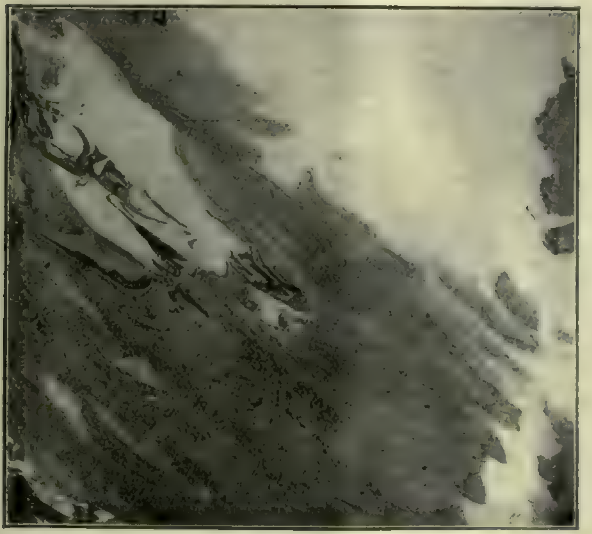

Fig. 3.

That this concentration of light actually occurs in a high degree can be readily shown by allowing the light from a dark-room lamp to pass obliquely upwards through the bottom of a bell-shaped glass measure containing developer which is being poured in a continuous stream on to a plate in a dish held above the level of the lamp, when a bright circle of light will be seen where the liquid strikes the plate, and often the whole dish will be strongly illuminated.

It is to me most astonishing that in the very short time needed for the liquid to submerge the film, enough light can be concentrated to give an image as strong as that which the uncondensed light from the lamp takes from 30 to 60 minutes to produce. This was found to be the case in favourable circumstances, when less than half a minute was taken to fill a tank taking nine quarter-plates and holding about 1½ litres of liquid. Even when the light was switched rapidly on and off only once during filling the tank, similar markings were obtained. The intensity of the light striking the film at the parts affected must be many thousands of times that of the light striking the liquid.

I have already indicated that the dark-room lamp used need not be at all unsafe for any ordinary photographic manipulations. It would be impossible to make a safelight, sufficiently bright to work by, which, at the same time, could be relied on never to give rise to this effect under the conditions described.

Variations in the intensity of the effects seem to occur under similar conditions, not only with different varieties of plates, whether produced by the same or different makers, but apparently also with different batches of the same plate. Possibly this is due, in part, to the differences in colour-sensitiveness which are known to exist between plates, even among those not specially colour-sensitised; but more probably to minute differences in the condition of their gelatine films (such as their dryness, hardness, smoothness, and other properties), and also to differences in the surface tension of the developer employed. The manufacturer will therefore be unable to guarantee freedom from this trouble to the plate user.

I hope that I have made it clear that it is quite easy to avoid such markings by preventing the dark-room light from striking the developer as it is being poured into the tank.

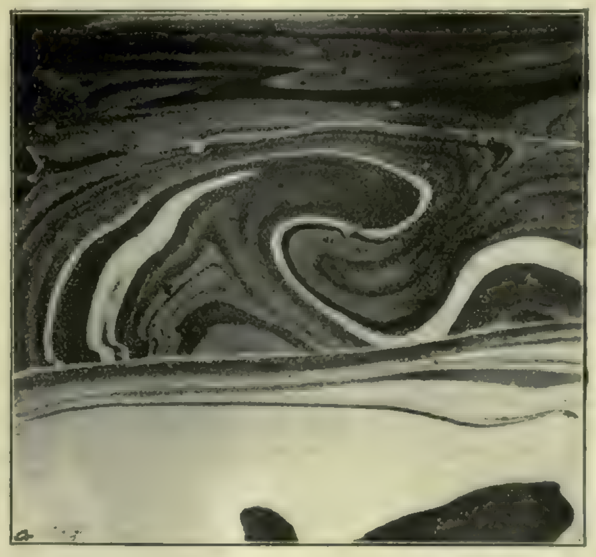

Fig. 4.

No doubt makers of development tanks could almost entirely prevent these accidents by blackening the tanks inside.

The same markings have been known to occur when developing in an open porcelain dish. They have been met with most frequently by process workers who colour-sensitise their own plates before use, working by a deep-red safelight.

In an open dish it is very difficult to bring out the markings with certainty, although I have done it several times, and have proved it to be a light-action; but the necessary conditions probably remain essentially the same in the two cases.

The subject presents many points of interest and difficulty which require further elucidation before the conditions most favourable to the formation of the markings will be properly understood; but my immediate object will have been attained if those who are troubled by them appreciate the fact that they are due to light-action and can be easily avoided.

My best thanks are due to Messrs. Ilford, Limited, in whose laboratories the experiments were carried out, for permission to publish this account of them. F. F. RENWICK.

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MR. F. A. SWAINE, photographer, of Southsea and 106, New Bond Street, asks us to contradict rumours which have come to his notice that he is giving up his London studio. These, he assumes, arose from his contemplation of removing to other premises in New Bond Street, but he has now decided to remain at his present establishment, 105-106, New Bond Street.

# ENLARGED NEGATIVES BY REVERSAL.

[Methods for the production of enlarged paper negatives direct on bromide paper by a reversal process having been frequently advocated, and having, too, proved somewhat difficult in actual practice, the following instructive article in the current number of the "Photo-Revue" is worthy of note, since the author, M. Ch. Jung, confines himself directly to the precautions found necessary in working out the process.—Eds. "B.J."]

It would seem that hitherto enlarged negatives made direct by reversal have not met with favour at the hands of photographic workers, despite the advantages of the process. This appears to be the result of the want of exactness in the directions for working the process. After numerous experiments, I have arrived at the following method, which, applied to some hundreds of cases, has invariably given me magnificent negatives, clear and brilliant, and reproducing the faintest details of the original negative. The enlarged negatives have proved excellent for printing on pigment papers, such as the "Fresson" paper, or for the oil process. The following are the stages in the process, and any worker who will pay due regard to the various precautions is assured of success.

### The Sensitive Paper.

The bromide negative papers specially sold for the purpose will, of course, answer well with the process, but I prefer to use ordinary bromide papers sold for positive printing. The cost is much less, and they may be obtained from any dealer. Such a paper should respond to two conditions:—It should be on a thin support, and it should allow of a certain latitude in exposure. For the greater part of my work I have used the Velvet bromide paper of the Kodak Company. Its speed is about one-quarter that of the blue label Lumière plate.

### An Invariable Precaution.

It is most important to avoid all contact with the surface of the paper either of the fingers or with brushes. The least pressure on the paper leads to stains, which will deface the final negative. All the operations, from the moment the paper has been placed in the first bath up to the removal from the fixing, should be done in the one dish, and without touching the paper.

### Exposure.

The paper is exposed in the same way as for an ordinary enlargement, except that the time should be considerably longer. It is well to expose about three times the period which would be given for an ordinary enlargement: even a longer time may be given—say, seven or eight times the normal—and perfect negatives obtained. In all cases it is better to give too much than too little exposure.

### Development.

The paper, having been laid in the dish (from which it should not be removed until finally fixed), is covered with water for about a minute, and a developer then applied. The developer is as follows:—

| | |
|---|---|
| Amidol | 1 gm. |
| Soda sulphite cryst. | 5 gms. |
| Water | 1,000 ccs. |

For use 30 ccs. of this solution is mixed with 30 ccs. of water. This quantity is for a sheet of paper 9½ x 7 inches. If there are several prints to treat in succession, the same bath can be used, it being replenished, as required, by further addition of the stock solution given in the formula above.

The image appears very rapidly. Reckoning from the moment when the subject of the picture is fully visible on the paper, development is continued for a further five minutes, rocking the dish without interruption. This average time (5 minutes) for development has given the best results. Adopting it, there is no need to observe the density of the image by transmitted light.

### Exposure to Light.

After development the print is rinsed three times in succession, laid on the bottom of the dish to drain, and then brought out into daylight.

The time during which it should be exposed is an important point, and requires a certain amount of practice. If too short, the negative will be harsh; if too long, it will be flat and lacking in contrast. The normal time to be given in order to obtain an enlarged negative, with gradation corresponding to that of the small original, is reached when the high-lights of the image have acquired a quite distinct rose tint. If these high-lights assume a violet tint, it is a sign that too long an exposure has been given.

If there are no high-light portions in the subject, a very simple photometer may be used as a guide to the exposure:—Arrange on the edge of the dish, before exposure to the daylight, a small strip of the bromide paper which has been used. As soon as this latter has attained the rose tint the exposure will be complete. In December, at noon, with an over-clouded sky, the average time will be 45 to 60 minutes.

### Reversal.

The paper is now flowed over with the solution for dissolving away the reduced (developed) silver. Various formulæ may be employed for this purpose, compounded from permanganate or bichromate of potassium. As a 2 per cent. solution of potass bichromate is used as a sensitiser of the "Fresson" papers, and for those of the oil process, I have used it conveniently for reversal, adding to it nitric acid. The following is the formula:—

| | |
|---|---|
| Potass bichromate | 2 gms. |
| Nitric acid | 2 gms. |
| Water | 100 ccs. |

Under the action of this solvent bath the image disappears very rapidly: the action is complete when all the shadows have disappeared, leaving behind a faint orange outline of the original image.

The print is then rinsed twice and placed in a dish containing:—

| | |
|---|---|
| Soda bisulphite liquor | 10 gms. |
| Water | 100 ccs. |

The yellowish tint of the print immediately disappears in this bath, and only the heavy shadows of the subject are most faintly visible. The solution may be used for a fairly large number of prints, despite the greenish tint which it soon acquires.

### Washing.

The print is washed for about five minutes, rocking the dish and replacing the water by fresh each minute. These washings are very important, and should be done with care; otherwise parts of the gelatine will be left containing bisulphite or acid bichromate, which latter acts on the amidol, when the latter is used as a re-developer, producing stains. The washings should be done in red light, in order to avoid the action of daylight on bromide of silver which has not been completely reduced.

### Second Development.

The developer used is the same liquid which serves for the first development. The time during which it requires to be applied to the print will range from between five to fifteen minutes, according to the time of the exposure to daylight. Development may be considered complete when the image seen by reflected light as it lies on the bottom of the dish, held 10 cm. from the dark-room lamp, appears almost uniformly black.

### Fixing.

After development the paper is rinsed twice with water, and then transferred to the fixing bath of 20 per cent. hypo. Immersion here for a few seconds is sufficient to dissolve the small quantities of unreduced silver bromide left in the paper. The print is finally washed and dried in the usual way.

### Translucing.

The paper may be rendered more or less transparent by rubbing it at the back with a tuft of cotton-wool soaked in paraffin or in oil of sweet almonds. The paper takes up the oil almost instantaneously, and the process seems to me better than that in which a mixture of linseed oil and alcohol is used. If the gelatine side of the negative is accidentally greased, the mark can be cleaned off with a tuft of wool saturated in chloroform.

These various operations, which, on paper, may appear somewhat complex, present no difficulty in practice. For a single negative the time from first to last is about half an hour. Where a large number of negative prints are being made together it may be convenient to proceed with two at the same time, using a separate dish for each. In this case the time per negative will be reduced to a quarter of an hour. CH. JUNG.

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# A MISCELLANY OF HINTS ON STUDIO WORK.

[The following narration of his own experience by an American professional photographer, Mr. R. W. Eddy, is the contribution gaining the monthly prize awarded by our excellent contemporary "Camera Craft," which in the same issue prints a half-dozen examples of the author's portrait work. Mr. Eddy simply claims to write of what he has found to work in his own career of "running a studio."—EDS. "B.J."]

IN the first place, get a good, up-to-date camera of the 11 x 14 size; one on the order of Century Grand or New York Studio Outfit. And the reason for so doing is just this: You are no doubt a stranger to nearly every person that will enter your studio, and you will find that you are judged, in no small degree, by the appearance of your camera. The average person has a distinct recollection of a small, cheap-looking instrument that produced some mediocre work for him at an outing or in a post card tent. When you do want a large camera, you have it; and, for myself, I prefer the 11 x 14 size, even for the small work.

You will require one good white background with floor extension, one red-black ground, and a large ground for groups and the like. Have at least two good head screens, one white and the other black; and, what I find most useful, a plain screen, 2 feet wide by 6 feet high, covered with thin, black cloth. This I use to shade the drapery in full-figure work. It should be placed between the subject and the light, as close to the subject as possible without being in the picture, unless the subject is short or in a sitting position, when it should be moved toward the light until it shades just up to the chin.

### Systematise Your Operating.

Now for a few words about operating. Find just where you must place the subject for the different kinds of lightings, and keep this information in mind. Then you will be able to place your sitters at once and without asking them to get up and move two or three times. When you go into the operating room with your subject, keep up a conversation of some kind, as it enables you to study the sitter without appearing to do so. As long as you are talking to a person, it does not cause embarrassment to look at him, but keep looking at a person without carrying on a conversation and he begins to "feel foolish," as a sitter once explained to me. Try to keep moving and do not stand and look, giving the impression that you are inexperienced or in doubt. Handle your camera and accessories quickly, but quietly, not going at it as if you were trying to see how much furniture you could break.

First, place your camera somewhere near where you will use it; then take a look at the ground-glass and get it just where you want it, and proceed to focus. There is a great diversity of opinion about the proper way to focus, but the method I use, and one that has the endorsement of some very successful photographers, is as follows: Focus the eyes just as sharp as you can, then rack the ground-glass toward the lens just as far as you can and still keep the eyes sharp; sharp, I say, and not blurred, and this will leave the nose in good focus also. By doing it in this way you will get the full depth of focus of the lens; which, in my opinion, is none too great in lenses of high speed, such as *f*/4 or faster. Never stop down your lens unless it is absolutely necessary in order to get a sharp negative, for there is no reason in paying a high price for a lens working at *f*/4 if you are going to stop it down to make your pictures.

### The Swing-Back.

I use a 6½ by 8½ portrait lens of 16in. focus, working at *f*/4, making 7 x 5 groups, when there are only two rows of subjects, with lens wide open, and have no trouble in getting them all in focus. If you use the swing-back with good judgment, you can accomplish a great deal with your wide-open lens. In using the swing-back, simply bear in mind that the farther away the object is from the camera, the closer the ground-glass must be to the lens. If you are taking a picture of the baby sitting on the edge of a table, the feet will be closer to the camera than the face, so swing the top of the ground-glass back away from the lens, which will bring the feet and face in focus at the same time. In making a group of two persons, one behind and to one side of the other, use the side swing to bring the side of ground-glass showing the one behind nearer to the lens. In making a group of two rows of heads, bring top of ground-glass back until both rows are in focus at the same time.

### Compose the Portrait on the Ground-Glass.

There is a little convenience that I want to mention here, one that will save lots of trouble and disappointment. Take some pieces of thin mount or bristol board and cut an opening in them the exact size of the different pictures you make—say, one-fourth square, one-half square, full cabinet, and so on; doing the same in the ovals, leaving the coardboard about ½in. wide all around the opening. Then, when you are focusing, just place the desired size of cardboard form up against the ground-glass and you will have no trouble through getting the image too large or too small for the size of picture your customer has picked out. I find, a great many times, that these forms aid me in determining how the finished print will look before the negative is made. If you try to compose a small picture on a large ground-glass, you will find yourself saying, as you look over the proofs: "Had I known they were going to look like this, I would not have made the exposure." The forms advised above will save you from many such regrets; not all, but a part at least.

### From Dish to Tank.

A few words about making negatives. If you have always done your developing in a tray, it will be hard to give up the method; at least, I found it so; but once you use the tank until you get just the kind of negatives you want, you will have to admit that the tank will give you more good printing negatives than you can get by using the tray. As the plate demonstrator for the Eastman Company has complimented me on the quality of my negatives, and could offer no suggestions as to how they could be improved, I may be pardoned for describing my method of tank development. I use the Eastman tank because it is watertight and can be reversed as often as one likes without slopping developer about. I fill the tank nearly to the line with water at just 70deg. Fahr., and then put in stock solution as given in the Seed formula. I develop just nineteen minutes, reversing the tank about every three minutes; then rinse well with three changes of water, turn on the electric light, take plates out of cage and place in fixing bath. This last is made up according to the formula given for developing papers, except that I use only one-half the given amount of acetic acid when making it up, and add the other half after the bath has been used for some time. I think this the best plan, because it keeps the amount of acid more uniform during the whole time of using the baths. I fix my negatives for a full thirty minutes, and then wash in fast running water for fifteen minutes. The acid fixing, the long fixing, and short washing are resorted to because the tap water here in the South tests 87deg. through the warm season: but, in handling plates in this way, there is no trouble through softening of the films.

### Avoiding Air Bells.

If you want nice, clean negatives, there is one thing you must be careful about, and that is in placing the plate-holding cage in the tank of developer. Place your forefinger on one side and the thumb on the other corner of the tank rim, and slide the cage down between, guiding it so that it does not bind and stick. If it does catch and stop, if only for a second, you are pretty sure to collect a crop of air bells on the emulsion side of the plates; and pulling the cage up and down after these air bells once attach themselves does but very little good towards knocking them off. Developing as described above gives me good negatives for Aristo-platino and Artura papers. For vignettes and white grounds, I develop considerably longer and use plenty of bromide in the developer; or else I use a stronger developer, in a flat tray, with plenty of bromide, and carry development somewhat further than for dark grounds. I find that when a vignette is developed the same as a dark ground it does not print with enough snap and brilliancy. I am always very careful to give my plates good, full exposure, as, in my estimation, an undertimed negative is worthless; while, on the other hand, an overtimed plate, if not given more than six times the correct exposure, will give a good printing negative if developed in the tank.

And, after having taken good care to get a good negative, be careful you do not spoil all your good work in the retouching. If you do the retouching yourself, or hire it done, see that all customers are treated alike and all get good work. For myself, I believe in retouching a negative so that it shows a fine stipple, and has had as much retouching as it will stand and not lose the likeness. Say what they may, most of the men and all of the ladies like to look just as nice as possible in their photographs. Here and there one may explain to a friend that it is the photographer's fault that he has been made somewhat better-looking, but his so doing does not mean that he is displeased with the work. Furthermore, if the negatives are given a fine stipple, when you come to make an enlargement you will get a much better result than when enlarging from coarse work.

### Some Printing Hints.

When you come to print, if you are using printing-out paper and happen to over-print, print another. Don't let it go and try to satisfy your customer by telling him the old fiction that you thought he would prefer having some of them rather dark. He may take the prints, but mark my word, he will not forget it. If you are using developing paper, do the same. Time every print and they will all be alike. I have a cheap watch hanging right over my printing machine, and it takes no longer to print them all alike than it does to have each one different from all the others. And when they are finished they will be better-looking prints than if you had guessed at the time and tried to correct matters in the developer. And in making sepias it is impossible to get first-class results without uniform and correct exposure of the prints in the first instance. I have heard a demonstrator tell his class that they must so time their prints that they would develop in from forty-five to sixty seconds in first development, if they wanted good sepia prints; and I chanced, a short time afterward, to see three of these same photographers using the same brand of paper, printing so far that the prints were fully developed in ten to fifteen seconds and had to be hurried into the fixing bath. And these same photographers wondered why their sepia tones were so flat and lifeless. And remember, your paper is not capable of making good prints without some help, and the more help you give it the better your finished work will appear. Use plenty of developer, as being stingy with your chemicals is penny wise and pound foolish. You need not be wasteful, but use plenty.

### Handling the Customer.

And to return to the treatment of the customer; follow the Golden Rule, treat every customer that comes into your studio, from the time he enters until he leaves, just as you would like to be treated yourself. Nearly everyone likes to joke and laugh; and, if your customers are that kind, don't be grouchy, but joke with them, and get them at their ease as soon as possible after they come in. If the parents bring in one of the little ones, take plenty of notice of the child, but do it from a distance at first. Do not rush up to them and try to make friends as soon as they enter, for, as a rule, children are somewhat bashful. A few words at a distance, with the right kind of an expression, and the child will not be afraid of you in the least. There is not more than one baby out of a hundred brought to my studio that I cannot take and handle without their being afraid. Of course, it is somewhat of a knack, something that cannot be explained in words, but it is a knack that can be cultivated quite easily if one will but observe the effect of different treatment when a child is being dealt with.

### Some Business Policies.

Charge your customers all the same price for the same style of work; charge enough so that you can afford to make first-class work, and do not deliver any that is not first class. Always bear in mind that a dozen pictures are so many advertisements that will either bring you new customers or discourage prospective customers from coming to you; each of the twelve having its good or bad effect on twelve different people, perhaps more, as many will see each separate one. Compare your own work with that of other good photographers, and, if it does not look as good as theirs, get busy and make it so that it does. Keep your street case filled with a few pictures of people that are well known in your town, but do not invite in half the population to make samples of, and then give them one for their trouble. They will come of their own free will if you wait; and for my part I would rather be waiting than making a lot of work to give away.

I have told you a few things that have been learned by experience; things that are worth taking into account; and things that I can only hope may be of benefit to some of the younger members of the profession whose experience is mostly limited to a perhaps too brief apprenticeship with some one particular studio.

R. W. Eddy.

## TANK DEVELOPMENT OF ZENITH PLATES.

(A Note in the current issue of "Photographic Scraps.")

Tank development is growing in popularity, judging by the number of its advocates in the photographic press. After reading descriptions of several methods, I decided to try it. At first I was very pleased with my results with the diluted developer, but further experience considerably modified my views, especially when I had under-exposed plates to deal with.

Of course, I may be told that there ought not to be such things as under-exposures, in these days of exposure meters, but when photographs of babies and fidgety people have to be taken in dull weather, under-exposures do unfortunately present themselves, and such plates developed in a tank with dilute developer are useless. The long time of development is a further disadvantage to the professional photographer, unless he develops at the end of the day, when he is not likely to be called away and leave his plates too long.

For a time, therefore, I gave up the tank and went back to "one minute development," as it is called. Then it occurred to me that the two methods might be combined, and I tried two tanks, and used the concentrated developer which I recommended for "one minute" in my article in "Photographic Scraps" of August, 1909.*

The rack containing the plates was lowered into No. 1 tank, which contained developer made up according to the formula recommended for Ilford bromide paper, with slight modification; bromide of potassium, 2 drams; water, 100 oz.; metol, 5 drams; hydroquinone, 2 drams; metabisulphite of potassium, 2 oz. After about one minute the rack was taken out of tank No. 1 and lowered into tank No. 2, containing potassium carbonate, 10 oz.; water, 100 oz.; and kept there for one or two minutes, then withdrawn, and carefully drained for half a minute, to avoid waste of solution.

The plates were then carefully examined for density, and so on. Those that had acquired sufficient density were fixed, the others being returned to tank No. 2 for further development. The variation in density is due to difference in exposure; plates which have received full exposure gain density more quickly than those slightly under-exposed. But this may be compensated for by giving longer development to those plates that need it. It is well to turn the tanks about during development.

This method of development is of great value to the busy man who prefers to develop his own exposures, as I, for one, do, for I believe, in spite of the advocates of automatic development, that the personal equation counts for much in photography, and a method which enables me to develop a dozen plates in five minutes appeals to me very strongly. Some will perhaps think it expensive, as it necessitates the use of concentrated solutions of considerable quantity, but in my opinion it is really more economical than either the usual method or the tank with diluted developer, because No. 1 solution can be used over and over again without any perceptible loss of energy; additional solution must, however, be added from time to time to make up for that absorbed by the gelatine film of the plates.

I am now using the same tank of No. 1 with which I began some month or two ago, occasionally adding fresh solution to keep it full. It is advisable to filter roughly through a tuft of cotton-wool, to remove sediment, scraps of film, etc., which accumulate in time. The No. 2 solution must be renewed more often, as it becomes exhausted, works much more slowly, and inclines to produce flat negatives. If used too long it gives the same effect as under-exposure; I recently found in using a fresh tank full of No. 2 that the plates appeared much over-exposed.

At this time of year the temperature of the developer is of great importance, and it is advisable to keep the tanks in a warm place, when not in use, so that they may be somewhere about 50 deg. or 60 deg. If a number of plates are to be developed which are known to be under-exposed the temperature may be higher with considerable advantage, and they may be fixed in an acid fixing-bath, containing alum, afterwards. As, however, the Ilford Company does not approve of such a bath, a separate alum bath, and well washing before fixing, can be substituted. Considerable control over results may be obtained by varying the time of the immersions; a long time in No. 1, followed by a shorter time in No. 2, will give harder and more brilliant negatives than the reverse method.

Merely varying the total time of development also gives great control over the quality of the negatives. The time required for development varies with different brands of plates, but the Zenith, which appears very rich in silver, will need about one minute in each tank, at about 55 deg., if the solutions are fresh, to give good density suitable for portraits. A longer time is necessary for interiors, and still longer for landscape subjects; but I should be afraid to develop landscapes by this method unless I felt that the exposures were under rather than over. I have lately developed some interiors very successfully in this way.

Harold Baker.

## THE INTRODUCTION OF PHOTOGRAPHIC TRANSPARENCIES AS LANTERN SLIDES.

(A Note in the Journal of the Royal Society of Arts.)

It is hardly possible for the multitudes of the younger generation of professional and amateur photographers to comprehend that the entire development of photography, as a useful art, lies in the period between 1839 and the present; and that many men are now living whose activities include this entire period, and who successively witnessed the rise of the daguerreotype (1839), the calotype (1841), the albumen picture on glass (1847), the collodion picture on glass (1851), and finally the gelatino-bromide dry plates of the present.

It is also difficult to appreciate, when viewing the successive scenes of the magic-lantern and of the moving-picture machine, that a very much greater number of men living at the present time have witnessed the entire development of the photographic processes necessary to make such an exhibition possible.

From the first the wonderful, almost magical art of photography fascinated a multitude of workers in all Western nations. Many of the processes and much of the apparatus were repeatedly and independently devised or invented by many individuals. It is natural, therefore, that, although a man may have lived during the entire development of the art, he would have exact knowledge about only those parts with which he has been personally connected. At least, this was found to be the case in the effort to trace the origin of the now almost universally employed photographic transparencies for lantern slides in place of the hand-painted pictures first used in the magic-lantern by Walgenstein as early as 1665.

As finally worked out, it was found that photographic lantern slides were introduced by at least two different parties working independently and entirely unknown to each other. One utilised the albumen process of Niepce de Saint-Victor, and the other the collodion process of Scott Archer.

I. *Magic-Lantern Slides by the Albumen Process*, 1850.—Two brothers, W. and F. Langenheim, daguerreotypists and owners of Fox Talbot's patents in America for negative and positive pictures on paper, were successful artists in Philadelphia. In 1850 the brothers issued a catalogue of photographic lantern slides made by the albumen dry plate process of Niepce de Saint-Victor, in which the positives as well as the negatives were made on glass.

The first published account which I have found concerning these photographic lantern slides is by the physicist, Robert Hunt, in the "Art Journal" of London, Vol. III., N.S., April 1, 1851, pp. 105, 107. Hunt says: "In the original French photographs on glass, the negatives only were received on that substance, the positive copies being received on paper. . . .In the *Hyalotype* both the positive and the negative impressions are obtained on glass, and the result is as near an approach to perfection as we can imagine. The *Hyalotype* is the invention of Messrs. W. and F. Langenheim, of Philadelphia . . . the proprietors of Mr. Fox Talbot's American patent. These gentlemen state of their process that . . . 'the distinguishing feature consists in the material on which the impressions are taken. We have substituted plate-glass for the paper in the negative and also in the positive, altering the process to suit the new material.' " . . . Robert Hunt continues: "The most interesting application of this discovery is the construction of magic-lantern slides from nature by the camera obscura without the pencil or brush. . . . We have now before us a series of these magic-lantern slides—the *Hyalotypes*—and we feel bound to declare that their delicacy and the perfection of the details cannot be overstated. In a view of Spring Garden Hall, Philadelphia . . . the delineation of the details is marvellous. . . . A view of the United States Custom House in Philadelphia is in every respect equally perfect. . . . In this picture, for the purpose of showing the facilities afforded by this process, a slight transparent tinting has been given to the trees, a neighbouring house, and the sky; and thus by the magic-lantern is produced a picture faithful in all its details, with the beauty of colours superadded. . . . Already these photographic artists have published 126 views around Philadelphia, Washington, and New York, including Mount Vernon, and the Capitol at Washington."

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* See "B.J. Almanac," 1910, p. 535.

Many of these photographic lantern slides were sent by the Langenheims to the first International Exposition—"Exhibition of the Works of Industry of all Nations," held in London in 1851. The official report of the jurors of this Exposition, p. 227, has this to say: "Langenheim (U.S. No. 62). . . . This artist also exhibits a series of subjects designated by him under the name of *Hyalotypes*, being delicate miniatures excellently adapted for magic-lantern subjects. The material would appear to be collodion, albumen, or some similar preparation forming a film on glass, capable of receiving the impression."

In the illustrated catalogue of the Exposition issued by the London "Art Journal," p. xii., this is said: "The *Hyalotypes*, or photographs on glass, both positive and negative (many of the pictures being coloured for magic-lantern slides), are pleasing applications of the [photographic] art."

The "Athenæum" for June 14, 1851, pp. 631-2, in discussing "Photography in the Palace of Glass," says, concerning the matter in hand: "The *Hyalotypes*, or glass pictures, are of a remarkable character. They are but a modification of the process of Mr. Talbot and of M. Evrard as applied to glass; but the idea of copying Nature on this material—and, having obtained a fixed picture of the shadowed image, of magnifying it by means of the magic-lantern, and thus producing a truthful representation of the original—is certainly due to the artist of Philadelphia. Many beautiful views of the Smithsonian Institution, of the Custom House in Philadelphia, and of churches in several cities of the United States, show the minuteness of detail which can be obtained by the use of the albumenised glass."

II. *Magic-Lantern Slides by the Collodion Process*, 1851-2.—Every new process in photography was especially welcomed and enthusiastically practised in America, hence almost immediately after the publication of the *collodion process* by Scott Archer in the "Chemist," in 1851, the photographers of the United States were making use of it for the production of *ambrotype* portraits, and it soon became applied to the production of lantern slides as follows: A young physician near Boston, Daniel H. Briggs, like so many of the New England physicians, wishing to aid in the education and improvement of the community in which he lived by giving public lectures, and having skill in drawing and painting, put this to use in making hand-painted lantern slides to illustrate the lectures he gave on anatomy and geology. Hearing of picture-making on glass by photography, it occurred to him to apply the method to making lantern slides. After receiving some hints from Whipple, of Boston, who was making *ambrotype* portraits, he succeeded in making lantern slides by photography of the subjects upon which he was lecturing. These he coloured to give them the natural appearance.

Dr. Briggs was so successful with his lantern slides that he taught his son the art. In 1872 they moved to Philadelphia. The son, Mr. C. W. Briggs, who still continues the lantern-slide business in Philadelphia, has kindly given the following: "The process of the Langenheims, I find upon comparison of dates with my father's first work, 1851-2, was entirely different. They coated the glass with albumen and used a dry plate in exposing, while my father used a wet collodion plate. Each party worked entirely unknown to the other." Finally, in 1875, the Langenheims sold out their entire business, including negatives, etc., to Mr. C. W. Briggs.

It is thus seen that photographic transparencies were applied as magic-lantern slides almost as soon as the albumen and collodion methods with glass plates were devised. Both methods lent themselves to the production of perfect slides, and the first makers applied colours, as had been done with hand-painted slides. In a word, photographic lantern slides were perfected in the very beginning.

It is interesting also that Dr. Briggs used his first slides for illustrating lectures upon anatomy and geology, that is, for instruction in these subjects, which are so largely illustrated by lantern slides in lecture courses of the present day. The first slides of the Langenheims were of buildings and natural scenery, portraits, engravings, and of war scenes. In the very beginning, then, photographic lantern slides included the whole field of illustration.

Simon H. Gage.

# Photo-Mechanical Notes.

### The Saalburg Process of Rotary Photogravure Printing.

The application for patent rights made by Mr. Charles W. Saalburg has now been granted by the British Patent Office, the complete specification (No. 22,776, 1909) having now been published. It will be remembered that at the time the specification lay open for inspection, pending acceptance, we commented upon the considerable amount of knowledge public in the domain of machine intaglio printing, and took occasion to point out the known processes which may be combined together in different ways to provide systems of rotary machine printing. In view of the developments in photo-mechanical processes which are likely to take place along the lines of the intaglio method, it may be important to place on record precisely what is claimed in the Saalburg process, and we therefore quote the essential portion of the patent specification:—

In the making of a picture by my process I first make a negative direct from the picture or object to be reproduced. I next make a positive transparency from this negative, and preferably do any necessary retouching upon the positive. So far no printing screens or other devices for breaking up the surface into printing divisions have been used. Next ordinary commercial "carbon" tissue is sensitised in the usual manner by a bichromate solution and squeegeed, for drying, on a smooth surface, such as a glass plate, from which, when dry, it is stripped.

After the "carbon" tissue is sensitised, it is exposed under a screen by which are obtained on the tissue relatively large unexposed uniform areas bounded by straight hardened lines, and on the photographic image being impressed, development of the "carbon" tissue on the metal plate or cylinder will give on etching well defined or substantial walls or dykes bounding clearly cut cavities of varying depth. For the purpose of obtaining such unexposed uniform areas bounded by straight hardened lines, I use a single line screen such as can be made by black varnishing a sheet of glass and taking a diamond and running white lines, about 135 to the inch, through the black varnish.

The "carbon" tissue is exposed under the screen for preferably one quarter of the time which it will require under the positives. After the tissue has been exposed under the screen with the lines running in one direction, the screen is turned at right angles to print lines running in a corresponding direction and the tissue is again exposed for a similar time as before.

This crossing of the single line screen may be at first sight regarded as resembling that method of using the screen which is often practised in making special negatives for block production, but in the case of my invention the aim and use are different, as I produce a carbon print or resist for transference to and development upon metal by hot water.

After the screen lines have been printed on the carbon tissue, as above indicated, the tissue is exposed under the positive.

After exposure under the positive, the exposed "carbon" tissue is squeegeed on to a carefully cleaned flat or cylindrical metal surface, and the backing stripped off leaving the gelatine film of the "carbon" tissue adhering to the metal surface. If this is cylindrical, care is to be taken to place the tissue so that the horizontal axis of the picture is exactly parallel to the axis of the cylinder.

The exposed portions of the "carbon" film have had their gelatine rendered insoluble by the action of the light, while the remaining portions of the gelatine are soluble. By the application of warm water, the soluble gelatine is washed off, leaving the negative of the picture on the metal surface in gelatine. The plate or cylinder, after covering the portions of the cylinder which it is necessary to protect from the etching fluid with asphaltum, is now ready for etching. The plate or cylinder is now etched in the usual manner in which photogravure plates are etched, and the positive of the picture is thus sunk into the plate or cylinder, but is divided up into rectangular cells by the screen lines. These cells are of varying depths according as they are under the high-light, or shadows or intermediate tones of the picture. My method thus depends on not using any absolute or bituminous or resinous resist, of the kind dusted on the bare metal plate in operating the "Klic" process. It is this characteristic, combined with the special and novel mode of producing the etching resist which differentiates my method from other methods more or less based on the "Klic" process.

Of course, if the etching action were permitted to continue long enough, the etching agent would strike through and etch the screen lines and the high-lights. It is by stopping the etching action at the right point to preserve the screen lines and high-lights, while giving time enough to etch the darker portions, that the proper effect is obtained. The film is not hardened to produce a "resist." The cells preferably cover a much larger portion of the area of the cylinder than do the screen lines. The gelatine is then removed from the plate or cylinder, and the plate or cylinder is ready for printing.

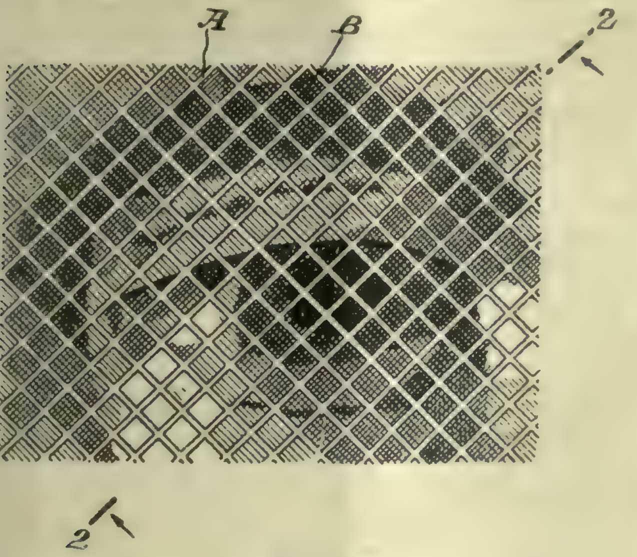

Fig. 1.

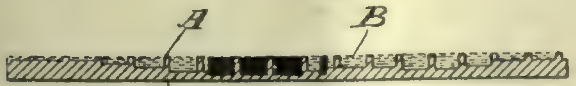

Fig. 2.

The cylinder is placed in a rotary printing press. In printing the picture, ink is applied to the plate or cylinder in a sufficient quantity to fill all the cells between the screen lines. The ink is then wiped off in the case of a plate, or in the case of cylinder, scraped off preferably by the revolution of the cylinder against a sharp steel blade, which fits closely against the cylinder, and which is preferably moved back and forth across the face of the cylinder in a direction parallel to the axis of the cylinder, the length of the blade running parallel to the axis.

The scraper or "doctor" removes the ink from the cylindrical surface of the cylinder wherever such surface remains, namely, from all the screen lines and from all the blank portions of the cylinder, which are to represent white in the picture, and the white margin around the cylinder, and this operation leaves the cells or pockets between the screen lines completely filled with ink.

In the accompanying drawings, the formation of the printing surface is illustrated as applied to a plate.

Fig. 1 is a plan view of a plate adapted for printing a positive according to my process; and Fig. 2 is a section taken on the line 2—2 of Fig. 1.

The metal which was protected by the screen lines is not eaten away and forms a series of rectilinear walls A, the tops of which are all on the same surface level, resulting from the independent exposure of the screen, and which, crossing each other, forms enclosed wells B. The wells B are of varying depths, according to the depth of colour, or according to the contrast of the light and shade, to be reproduced, and in the illustrated embodiment they are of uniform area. It is essential that the area of the ink wells be sufficiently large so that the walls between them may be of sufficient thickness to prevent their being eaten away and undercut by the etching fluid. In other words, the walls between the wells must be of sufficient thickness so that the wells can be etched deep enough to hold a sufficient quantity of ink to give the required contrast and attain the desired result, especially when this ink is thin enough not to be, or without that tenacity which might cause it to be, dragged out of the wells in scraping the surface in the case of a cylinder.

As it is exceedingly difficult perfectly to clean a cylinder surface outside of the picture where it is desired to have the paper in its natural condition, and without having any ink on it, I adopt the expedient of arranging an elevated first plastic, then resilient surface on the impression cylinder exactly corresponding to the picture, so that during printing, the paper shall not be pressed against those portions of the printing cylinder which have not been etched, thereby preventing any set off of colour from such non-engraved portions of the cylinder.

The mode adopted of providing this elevated surface on the impression cylinder is as follows:—

A number, usually five or six, pieces of Manilla or other strong paper, is taken and cut to the proper size. The cylinder is then cleaned with a light solution of lye or other solvent of fatty matter. The pieces of paper are then coated with strong glue, and adhesively fastened on to the cylinder, one on the other. To maintain the printing height and keep the action even, each end of the impression cylinder is preferably provided with a bearing in the form of a ring or band projecting above the surface of the impression cylinder at substantially the same height as the elevated surface. This ring or band may be of paper or the like, or metal. When metal rings or bands are used each of these may advantageously be made in two or three pieces, and be arranged to be secured to an end of the impression cylinder by countersunk screws, this arrangement allowing of adjustment being made by placing one or more layers of paper under the bands to vary the height if necessary.

After the elevated surface has thus been provided on the impression cylinder, pressure is put on the press and the press started running. The bearing bands at the ends of the impression cylinder keep the pressure just right, and the wet glued paper layers are pressed down to the exact thickness of the bands.

When the elevated paper surface is partly dry, the printing cylinder is inked up, and the press revolved once to print an impression on the elevated surface. Now all those portions of the elevated surface outside of the picture, as the margin, where it is desired to leave the paper clean upon which the picture is to be printed, is cut away. In this manner an elevated surface is left on the impression cylinder exactly corresponding to the picture, but not extending beyond it, and in fact, depressing or removing the remaining portions of the impression cylinder surface. In this manner, when the printing takes place, the paper on which the picture is to be printed is not pressed against the portions of the surface of the printing cylinder, which are not engraved, and thus any slight film of ink which may remain there is not transferred to the paper.

It is better to have the elevated surface composed of a plurality of super-imposed layers of paper than to employ a single thick layer, as the former arrangement is found to have a longer life than the latter.

The impression cylinder is twice the diameter of the printing cylinder, so that the printing cylinder can have two revolutions between each printing operation. By the use of this arrangement of cylinders and the ink, I find that a single colour can be printed upon a dry sheet of paper of dull or matte surface at a high rate of speed, so that many hundreds of such impressions can be made in a single day. It is not necessary to damp the paper, nor to heat the cylinder, and it is not necessary to rub the cylinder off by hand or with a cloth as heretofore. The "doctor" does not injure the surface of the cylinder, and the cylinder thus has a very long life.

The difference between the picture produced by my printing surface and that by a half-tone intaglio printing surface will be more or less apparent, but I may state that in the latter case the ink is of the same density and the tones produced by varying size of dots, whereas with my printing surface the various tones of the picture are produced by different depths of ink varying from transparency to opacity.

### PHOTO-MECHANICAL PATENTS.

The following patent has been applied for:—

**Half-Tone Printing.**—No. 2,069. Process or method of printing half-tone blocks on blotting-paper or other paper having a rough surface. Edward Douglas Kendall.

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### FORTHCOMING EXHIBITIONS.

February 11.—Balham Camera Club. Sec., E. Saunders, 110, Ramsden Road, Balham, London, S.W.

February 11 to 18.—Aberdeen Photographic Association. Sec., J. A. Brodie, 48a, Union Street, Aberdeen.

February 25 to March 11.—Birmingham Photographic Society. Entries close February 10. Sec., T. Matthews, 60, Newhall Street, Birmingham.

February 25 to March 11.—Edinburgh Photographic Society. Entries close February 16. Sec., J. C. McKechnie, 31a, Castle Street, Edinburgh.

March 3 to 18.—Northern Photographic Exhibition (Liverpool). Entries close February 17. Sec., C. F. Inston, 25, South John Street, Liverpool.

March 6 to 9.—Worthing Camera Club. Entries close February 24. Sec., E. F. H. Crouch, 11, South Street, Worthing.

March 11 to April 8.—South London Photographic Society. Entries close February 18. Sec., Horace Wright, 180, Friern Road, East Dulwich, London, S.E.

March 15 to 16.—Bedford Camera Club. Entries close March 3. Sec., C. E. Craddock, 194, Castle Road, Bedford.

March 20 to 21.—Folkestone and District Camera Club. Sec., Hamilton Smith, 20, Radnor Park Crescent, Folkestone.

March 23 to 25.—Beith and District Arts and Crafts Club. Sec., J. Peat Millar, 40, King's Road, Beith.

March 25 to April 1.—Sunderland Photographic Association. Sec., Wm. E. Kieffer, Stirling Road, Sunderland.

March 28 to April 1.—Sheffield Photographic Society. Sec., C. H. Parker, 67, Wadbrough Road, Sheffield.

March 29 to April 1.—Bolton Camera Club. Sec., J. E. Button, 491, St. Helens Road, Bolton.

May 8 to 31.—Royal Photographic Society. Latest date, carrier, April 24; hand, April 25. Sec., J. McIntosh, 35, Russell Square, London, W.C.

May 12 to 20.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 25, Harp Alley, Farringdon Street, London, E.C.

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**Photography at the Turin Exhibition.**—A branch of the British section which is sure to attract special attention is that devoted to photography. The list of firms taking part is unusually representative, and includes, amongst others, the Autotype Company, Illingworth and Co., Ltd., Burroughs, Wellcome, and Co., Houghtons Ltd., the Platinotype Company, Wellington and Ward, W. Butcher and Sons, Ltd., Thornton Pickard, Hyde and Co., Campbell Gray, Ltd., W. A. Mansell and Co., F. Hollyer, Walton, Edwin Hadley, C. Vandyk, "Histed," Alfred Ellis and Walery, John W. Beaufort, T. Chidley, Medrington's, Ltd. Special arrangements have been made by which it is anticipated that the Court of Photography, which will occupy an important place in the British section, will be in many ways distinctive and unusually attractive.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between January 23 to 28:—

**Packing Device.**—No. 1,753. Packing device for sensitised photographic materials. Albert George Nepean Ford.

**Cameras.**—No. 1,756. Reversing back photographic cameras, to supersede the square detachable reversing frame. William Arthur Steward.

**Studio Lamps.**—No. 2,033. Lamps for use in photographic studios and the like. Henry Howell.

**Multi-Colour Printing.**—No. 1,937. Photography relating to multi-colour printing on paper from colour record negatives. Edwin Tranter Butler.

**Animated Pictures.**—No. 1,877. Motion picture photography and projection. Albert Edward Jackson.

**Kinetoscopes.**—No. 1,841. Kinetoscopes. Thomas Henry Blair.

**Cinematographs.**—No. 2,077. Re-winding mechanism for cinematographic films. Charles Sverin Dickinson.

**Cinematographs.**—No. 2,154. Cinematographs and like optical-projection apparatus. Provincial Cinematograph Theatres, Ltd., and Ronald Grierson.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

**Electrical Transmission of Photographs.**—No. 361, 1910 (January 5, 1911). This invention relates to the electrical transmission and reception of signals, drawing, photographs, and the like, an important feature of the present invention being the use of receiving apparatus of the oscillograph type with a wireless system of communication between the two stations. The thread or wire of the oscillograph at the receiving station is so situated relatively to a source of light, that the shadow cast by the thread or wire, or by a screen or shutter thereon, normally falls upon or passes through an opening or transparent slit or aperture in a box or chamber containing material the electrical resistance of which is sensitive to the action of light; the material employed is selenium, and is connected through a relay with a local receiving circuit comprising a battery and a permanent recording apparatus of a kind that is operated by the electric current from the battery. For this purpose the paper employed is discoloured by the passage of the electric current through it from a stylus riding upon its surface.

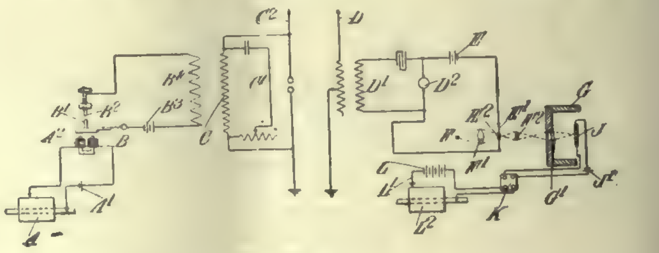

Fig. 1.

The current conducting thread of the oscillograph constitutes part of the electrical receiving circuit so that every time an electric current passes through the thread, the latter, owing to its being in a strong magnetic field, is displaced laterally in a known manner and thereby permits the light, which it previously obstructed, to pass through the slit or aperture in the box or chamber and fall on to the selenium.

Fig. 1 represents diagramatically one arrangement for the wireless transmission and reception of a photograph. Fig. 2 represents a modified arrangement at the receiving station, the selenium cell being dispensed with and replaced by a sheet of sensitised paper.

Referring first to Fig. 1, the left hand part represents a transmitting station and the right hand part the corresponding receiving station. The apparatus at the transmitting station comprises the battery $A^1$, the electromagnet $A^2$, and the drum A, on which is mounted the print or impression prepared as described in the Specification of the prior Application No. 9,518 of 1908. B is the armature of the electromagnet $A^2$ and carries a contact piece $B^1$ which co-operates with another contact piece $B^2$. The two contact pieces $B^1$, $B^2$ and the armature B form part of an electric circuit which also includes a Battery $B^3$ and the primary winding $B^4$ of a transformer. The secondary winding C of the transformer forms part of an oscillatory circuit $C^1$, connected in any well known way with the transmitting antenna $C^2$.

The apparatus at the receiving station comprises the receiving antenna D, and the oscillatory receiving circuit $D^1$, which includes the cymoscope $D^2$. The cymoscope $D^2$ forms part of a circuit including a battery E, and the silver-coated quartz thread or fibre, or silver wire, $E^1$, of an oscillograph, the magnet poles between which the wire passes being omitted for the sake of clearness. $E^2$ represents a thickened portion of the thread or wire or a small screen attached thereto. F is a source of light, the rays from which are focussed by a lens $F^1$ on to the portion $E^2$ of the thread or wire $E^1$. $F^2$ is a second lens for collecting the diverging rays that pass the portion $E^2$ and for directing them through a transparent window in a light-tight box or chamber G. The rays passing through the window are directed by means of the lens $G^1$ on to the surface of the selenium cell J. This cell is connected in circuit with the battery $J^1$ and relay K. The relay K controls the current in a circuit containing a battery L, in metallic stylus $L^1$, and the revolving receiving drum $L^2$, on which is mounted a sheet of paper of the kind that is discoloured by the passage of a current through it by way of the stylus $L^1$. The normal current flowing through the relay K from the battery $J^1$ is insufficient to operate the relay K, but every time the thread or wire of the oscillograph is displaced and the light falls on the selenium plate J, the resistance of the circuit is reduced, and the current from the battery $J^1$ is then strong enough to actuate the relay K, with the result that the circuit of the battery L is closed, and a mark is made upon the paper of the drum $L^2$.

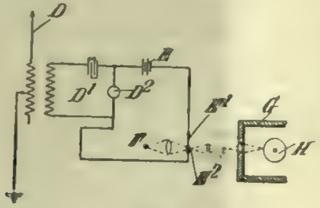

Fig. 2.

In the arrangement shown in Fig. 2, the selenium cell is removed and replaced by the well known arrangement of a sheet of sensitised paper, which may be ordinary photographic paper, mounted on a drum H. The drum H is made to rotate and simultaneously move in an axial direction at a uniform rate. Thomas Thorne Baker, 15, Grosvenor Gardens, Cricklewood, Middlesex.

**Cinematograph Mechanism.**—No. 18,088, 1910 (July 29, 1910). The invention relates to an arrangement of a device for automatically and progressively opening and closing the diaphragm of the lens of photographic apparatus adapted to effect the progressive appearance of one subject simultaneously with the progressive disappearance of another subject in combination with the ordinary film moving mechanism. R. W. Fell, 1, Queen Victoria Street, London, E.C., for the Compagnie Générale de Phonographes, Cinematographes, et Appareils de Précision, 98, rue de Richelieu, Paris.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

**Viewing Album.**—No. 15,347, of 1910. Album for transparent photographs. Duchenne and Forbin.

## New Trade Names.

(**Device**).—No. 327,020. Light-sensitive plates and films, chemical photographic developers, and photographic chemicals. The firm trading as Otto Perutz, 50, Dachauerstrasse, Munich, Germany, manufacturers of dry plates. September 19, 1910.

**Pharos.**—No. 329,249. Cinematograph films for exhibition purposes. Deutsche Mutoskop und Biograph Gesellschaft mit Beschraenkter Haftung, 187-188, Friedrichstrasse, Berlin, Germany, manufacturers. December 12, 1910.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Preparing Photographs for Colouring.

**Mr. H. Cecil Pelley**, writing on the above subject in "Photography and Focus" for February 7, gives the following hints. The old-fashioned method of colouring by the use of ordinary water-colour paints has long been supplanted by the introduction of aniline dye solutions, which are true stains, and as such lend themselves better to dilution and to application in the form of washes. These dyes are now on the market in the form of concentrated solutions put up in sets for the convenience of photographers, and needing nothing beside dilution.

The easiest prints to tint are gaslight or bromide prints on glossy paper, but glossy P.O.P. will do as well provided the toning has been carried far enough for the image to be a cold brown. If it has a pronounced red or purple tint, this will modify the effect of colours subsequently put on it. The print, whichever may be selected, is fixed, well washed, and placed in a bath of formalin one part, water twenty parts, for five minutes. It is then rinsed and dried. When dry it is ready for tinting. As the slightest greasiness of the surface interferes with the application of the colours, it should not be touched with the fingers, but should be handled throughout just as sensitive paper is handled. A gentle rub over the face of the print with a piece of cotton wool moistened with very dilute ammonia (strong ammonia one dram, water five ounces), followed by a rinse, will sometimes be found advantageous.

### Removing Films from Old Negatives.

A writer in "The Amateur Photographer and Photographic News" for February 7, says:—"There are many methods of removing films from spoilt negatives, and something new is always cropping up, but when all is said and done, there is nothing so simple or effective as plain warm water (not hot) *properly used.* Most people make two mistakes; they do not soak the negative long enough, and they scrape the film off with a knife. The negative should be placed in warm water (if the water is too hot the film is melted instead of softened), and left to soak for about half an hour. Then the film must be *rolled* off. By scraping the finger against the edge of the negative, the film is turned back away from the glass, and can then be rolled off in one piece with ease. With a little practice this can be done without any trouble, and if, sometimes, it does not work properly, a knife can be used as a last resource.

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**Royal Institution.**—A general monthly meeting of the members of the Royal Institution was held on Monday afternoon last (the 6th instant), the Duke of Northumberland, President, in the chair. Mr. and Mrs. Alfred Carpmael, Dr. W. S. Colman, Mr. Guy Ellis, Mrs. E. B. Fielden, Dr. A. H. Levy, Mr. Basil Mott, Mr. A. F. C. Pollard, and Dr. N. Raw were elected members. The treasurer reported that he had received £1,200, part of the legacy to the Royal Institution of the late Miss Wolfe, and £62 10s., a portion of the legacy of the late Mr. C. E. Layton. The special thanks of the members were returned to Dr. J. Y. Buchanan for his donation of £100 to the fund for the Promotion of Experimental Research at Low Temperatures. The institution has recently received a gift of £1,000 from Dr. Hugo Muller. The special thanks of the members were also returned to Dr. F. Blumbach and Mr. H. N. Mladentseff for an etched portrait of the late Professor D. Mendeleeff, by the Russian artist Roondaltseff.

# New Books.

"Die Bildnis-photographie." Berlin: Gustav Schmidt. 6 Mk.

In this volume, which is the third edition of the work originally written by the late Herr Fritz Loescher, the text has undergone considerable revision by the present "bearbeiter," Herr Otto Ewel. In the introductory portion is given an interesting account of the development of photographic portraiture from the Daguerreotype, through the stages of the conventional studio portrait, to that of the more individual work of the present day. The second portion deals with the principles which should guide, and the methods which may be used by, the professional portraitist. The volume is very fully illustrated, not only by examples illustrating technical methods and defects, but also by a large number of reproductions of portraits by leading German, British, French, and American photographers. Those who read German will find much excellent instruction in the text, while even those who are unfamiliar with the German tongue can hardly fail to derive much help from the study of the 150 reproductions.

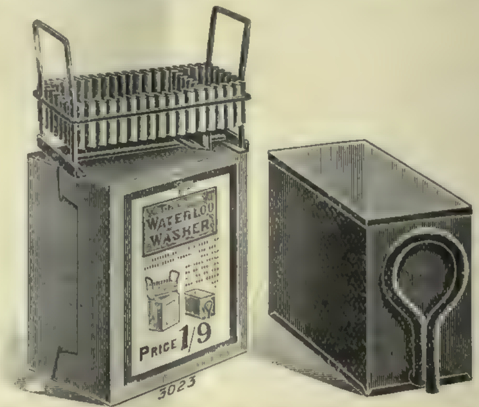
"TRAVEL AND EXPLORATION."—A "Voyage of Discovery" in Greece occupies the place of honour in the February number of "Travel and Exploration" (Witherby and Son), though it is not strictly an exploration article. But the real exploration articles are those by Hesketh Prichard and "Zakpho." Mr. Prichard gives a vivid account of his trials in attempting to penetrate the Labrador Hinterland. "Zakpho" describes the almost unknown Indian Fenland in the delightful travel paper entitled "The Meres of Sylhet District." Motoring is not perhaps associated as yet with exploration, otherwise Mr. W. W. Magee's account of his motoring trips in the Philippines might be so described. The author of "The Tourist's India" continues his readable series of papers on the "Show Cities of India," and in this number gives a pleasantly written account of the historic capital, Delhi.

ENGINEERING ABSTRACTS SUPPLEMENT.—Those who are interested in obtaining a rapid glance over current technological literature will welcome this publication issued by the English branch of the International Institute of Technical Bibliography, 57 and 58, Chancery Lane, W.C. It is a fortnightly publication containing references to the chief papers and articles in the technical press. A large section is devoted to the graphic arts, photography, process work, printing, paper-making, and bookbinding, whilst in section V., devoted to technical physics, optics, and other branches of natural science bearing on photography, are likewise dealt with by the compilers. The publication arranges the various papers under the authors' names, giving references to the place of publication, with, in many cases, a few words describing the subject-matter of the paper. It is evident that the compilers have carefully gone through the British and Continental photographic press in making their abstracts, and their publication should be assured of a welcome from those workers who have not the time or opportunity to glance through all the photographic periodicals, but yet desire to be informed of particular papers likely to interest them.

"DIE KINEMATOGRAPHIE."—A second edition of this well-written and illustrated manual of the cinematograph by K. W. Wolf-Czapek has been issued from the press of the Union Deutsche Verlagsgesellschaft. The author has revised many portions of the work, preserving the quite practical nature of his text. The volume is an excellent practical guide to cinematograph practice, not merely of the ordinary kind, but for scientific and technical purposes. One point in which we feel bound to differ from the author is in his criticism of the Smith-Urban two-colour process, the results of which he describes as far inferior to that of machine-coloured pictures. In the case of subjects for which it is suitable, those with strong saturated colours, the Smith-Urban method is surely much superior to machine-colouring, not only in the fidelity of the colours, but in the rendering of details. We can only think that Herr Czapek has not witnessed the projection of the Smith-Urban pictures under proper conditions.

# New Apparatus, &c.

THE "WATERLOO" WASHING TANK.—Messrs. Houghtons have just issued under this name a washing tank, taking quarter, 5 x 4, and half-plates, at the price of 1s. 9d., a moderate figure indeed for a tank and rack strongly made of zinc; the much smaller liability of this metal to corrode when wet specially fits it for washing and racks, and purchasers of the "Waterloo" apparatus may be confident that the washer will outlast several made in the cheap tin-plate.



A DARK-ROOM INCANDESCENT LAMP FITTING.—A most useful little accessory for the photographers who have electric light in their homes and desire to use an ordinary sitting-room or bath-room for the time being for development purposes, has just been issued by Messrs. Houghtons, Ltd. It consists of a ruby globe, provided with a brass fitting, which allows of the globe being attached to the standard holder of an incandescent electric lamp. The globe is made in such size that it will accommodate the larger metallic filament lamps, and the fitting, which is known as 64a, and is sold at 5s., provides the simplest form of dark-room lamp. From a spectroscopic test of the light we see that the chemical rays are most efficiently cut out by the glass, and the lamp may thus be used with confidence for the most rapid descriptions of ordinary plates, and with ordinary precaution for those of the orthochromatic variety. If preferred, the fitting may be purchased with an orange globe, or this latter may be supplied separately at the price of 3s. 6d.

THE STUDIO, AND WHAT TO DO IN IT.—The publishers, Messrs. Iliffe, of this handbook by the late H. P. Robinson, inform us that we were in error in naming it in a reply to a correspondent as out of print. The price of the book is 2s. 6d. net.

THE NEW PRISMATIC DIXIO STEREOSCOPE.—We hear that application has been made by Professor Pigeon for a certificate of addition to his existing British patent, to cover the new prismatic model of the Dixio stereoscope, described in an article in our issue of January 27.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### FRIDAY, FEBRUARY 10.

Watford Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### SATURDAY, FEBRUARY 11.

Sheffield Photographic Society. "In London Streets." W. L. F. Wastell.

### MONDAY, FEBRUARY 13.

Kidderminster and District Photographic Society. Slide Competition
Scarborough and District Photographic Society. Y.P.U. Prints.
Cleveland Camera Club. Y.P.U. Slides.
Southampton Camera Club. "Exposure in Relation to Development." C. M. Cooper.
Derby Photographic Society. "Noctona Gaslight Printing." A. Webb.
United Stereoscopic Society. "Stans and His Surroundings." G. W. Stannard.
Shropshire Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.
Caterham Camera Club. Autotype Carbon Demonstration.
Coatbridge Camera Club. Autotype Carbon Demonstration.

### TUESDAY, FEBRUARY 14.

Royal Photographic Society. Annual General Meeting.
St. Helens Camera Club. "Combination Printing." A. M. Poole.
Leeds Photographic Society. "Bromoil." Harold Baker.
Hackney Photographic Society. Short Lectures by Members. Nominations of Officers and Council.
Borough Polytechnic Photographic Society. Annual Dinner.
Halifax Camera Club. "Leeds in the Old Days." A. Mattison.
Rotherham Photographic Society. "Flower Photography by Artificial Light." R. Seymour.
Sheffield Photographic Society. "Passe Partout." C. H. Parker.
Birmingham Field National Club. "Tramps Abroad with a Kodak." W. F. Slater.
Otley Camera Club. Autotype Carbon Demonstration.

### WEDNESDAY, FEBRUARY 15.

Partick Camera Club. "Old and New Photography." Thomas Illingworth & Co.
Croydon Camera Club. "Carbon Printing." J. M. Sellors.
South Suburban Photographic Society. "Flower Photography." Mrs. E. Human
West Surrey Photographic Society. "Lantern Slide Making." Mr. Collyns.
Borough Polytechnic Photographic Society. 1910 Affiliation Slides.
Sale Photographic Society. Everton C.C. Folio.
Coventry Photographic Club. "Ozobrome." Rev. H. W. Dick.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. "Spotting and Elementary Retouching." H. W. Bennett.
Balham Camera Club. "Control in Development." C. W. Coe.
Mayers Green Society and Lit. Society. "Tramps Abroad with a Kodak." W. F. Slater.
Croydon Camera Club. Autotype Carbon Demonstration.

### THURSDAY, FEBRUARY 16.

Midlothian Photographic Association. "Mounts and Mounting." Dan Dunlop.
Batley and District Photographic Society. "Garden and Wild Flower Photography." T. G. Hibbert.
Camera Club. "History of Three Centuries, Told by Roman Coins." S. Nathan, M.D.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Seltona." J. W. Barrons.
Handsworth Photographic Society. "The Manufacture of Printing-out Paper." E. S. Taylor; and a Demonstration on its Use. John Gough.
Oldham Photographic Society. "A Holiday in North Devon." Tom Taylor.
The Sutton Photographic Club. Members' Lantern Night.
Liverpool Amateur Photographic Association. "Tramps Abroad with a Kodak." W. F. Slater.
Nottingham Camera Club. Autotype Carbon Demonstration.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, February 7, Dr. C. E. Kenneth Mees in the chair.

The fixture for the evening was a demonstration of primary batteries and small electric lamps for the dark-room by Messrs. E. A. Salt and W. H. Smith. A paper describing the most advisable forms of primary battery and the principles on which they were used was read by Mr. Salt, and was illustrated by a number of diagrams by the aid of which a very clear explanation was afforded of the meaning of electrical quantities, such as voltage, ampèrage, and resistance, and in particular of the working of Ohm's law in using primary batteries. The authors showed the efficient use which could be made of the convenient forms of primary battery by taking advantage of the small metallic filament lamps now obtainable from several makers. They demonstrated methods for the home preparation of the batteries, and exhibited a variety of dark-room lamps specially devised for utilising this self-contained form of electric light. They commended a new form of metal plate supplied by Mr. Bamber, which provided a perfectly satisfactory substitute for amalgamated zinc and dispensed with the trouble and expense of amalgamation. On the proposition of the chairman, a hearty vote of thanks to the demonstrators was accorded. The society has arranged that the batteries and written particulars of them should remain at the society's house for some little time, in order that those interested in them may have the opportunity of inspecting them at leisure.

# Commercial & Legal Intelligence.

## NEW COMPANIES.

ARNOTT AND CO. (LEEDS), LTD.—This company was registered with a capital of £12,000 in £10 shares. Objects, to take over the business of a photographic mount manufacturer, etc., carried on by E. C. Arnott at Marshall's Mills, Holbeck, Leeds, as Arnott, Halliday, and Co. Signatories are to appoint the first directors. Qualification, £200. Registered by C. Doubble, 14, Serjeants' Inn, E.C. Private company.

KAPELLA, LTD.—This company was registered with a capital of £2,000 in £1 shares. Objects, to carry on the business of makers and dealers in photographic and other lenses, optical apparatus, scientific instruments, etc. Registered by Waterlow Bros. and Layton, Ltd., Birchin Lane, E.C. Private company.

# News and Notes.

WORTHING CAMERA CLUB.—The sixth annual exhibition of the above society will be held from March 6 to 9, inclusive, at the Bedford Hall, Worthing. Of the five open classes, one will be set apart for colour photography—prints, transparencies, or lantern slides, by any process. The awards will take the form of silver-gilt coronation spoons, and a number of these will be placed at the disposal of the judge, Rev. F. C. Lambert. A gold medal will also be awarded for the best picture in the exhibition. Entry forms may be obtained from the hon. sec., Mr. E. F. H. Crouch, 11, South Street, Worthing, to whom these, accompanied by the necessary fees, must be returned not later than February 24.

MESSRS. FOULDS AND HIBBERD, photographers, of Seaforth, Oxton, and Southport, gave a social and dance to their employees and friends last Saturday, at the Waterloo Town Hall. There were nearly 200 guests present, and an interesting programme by some clever entertainers was arranged, as well as a whist drive and dance. The arrangements were exceptionally good. Amongst the guests were Messrs. Jones and Hutchison, of Kodak, Ltd., Liverpool, and Mr. Wahltuch, of Gold, Smith, and Co., Ltd., Manchester. At the end of the proceedings a very hearty vote of thanks was proposed to the firm, which was received with great enthusiasm, and both Messrs. Foulds and Hibberd replied briefly and suitably. It is particularly gratifying to see harmonious relations between employers and employees such as evidently exist in this firm.

AN ATLAS OF TERRESTRIAL RELIEF.—The next International Geographical Congress, which will assemble in Rome, will be invited to approve an important scheme drawn up by Professor Emile Chaix, of Geneva, in conjunction with Professor Frederick Bruhnes, for the compilation of an atlas of photographic representations of terrestrial relief. This will be the first scheme of its kind in the world, and its advent will be particularly gratifying to instructors of geography. At the Congress at Geneva in 1908, before which Professor Chaix first submitted his project, it was agreed that a committee should be formed to concert the necessary measures, while a sub-committee was entrusted with carrying out the work. It is proposed that the photographs be published on separate plates of quarto size (each of which is to be accompanied by a brief commentary), a map showing the precise point of view, and a diagrammatic representation of the ground. The plates would be issued in sets to be classified either systematically or regionally.

FLASHLIGHT PRESS PHOTOGRAPHY IN THE HOUSE OF COMMONS.—During the assembling of Parliament on Monday last one unusual incident occurred. Just about noon some twenty or thirty members of the Labour Party walked into the House of Commons and arranged themselves in their customary places below the gangway on the Ministerial side of the House. Meanwhile a photographer (of Messrs. Barratt's Press Agency, 8, Salisbury Court, E.C.) whom they had brought with them fixed up a camera on a tripod in the gangway on the Opposition side. While he was focussing his lens and making sure that all the party were in the picture, the Labour members chatted and joked among themselves. Mr. Ramsay MacDonald exhorted the photographer to "hurry up." Then, to the amazement of the onlookers—one policeman and a member or two showing visitors round the House—two flashlight photographs were taken of the group. As the members dispersed, Mr. Will Crooks raised a laugh by the remark, "I always said we should illuminate the House when we got into it."

LANTERN SLIDE EXHIBITION.—On Friday evening, January 6, an exhibition, the second of its kind, and consisting of a group of selected English slides sent over by the editor of the "British Journal of Photography," was held at the New York Camera Club. The slides showed the work of eighteen English camerists, namely, the Rev. H. W. Dick, Dr. C. Thurstan Holland, Messrs. J. D. Berwick, Godfrey Bingley, Graystone Bird, S. L. Coulthurst, T. G. Hibbert, H. Holt, C. F. Inston, J. Dudley Johnston, Fred Judge, Ellis Kelsey, S. G. Kimber, H. T. Malby, R. A. Malby, F. Nicholson, J. J. Phelps, James Shaw, A. G. Thistleton, F. G. Tryhorn, C. E. Wanless, J. R. Wigfull, and R. Williamson. The notice of the meeting stated that this set had been circulated among the clubs comprising the American Lantern Slide Interchange, and that it was one of the finest and most varied sets ever shown at the camera club. It was now exhibited the second time at the request of many members. The pictures were greatly appreciated, and applause was frequent. Mr. Beach announced at the beginning of the exhibition that this set had been sent over for exhibition in that country in exchange for a similar American set sent to England, and was now about to be returned. That the set had been travelling over the whole United States and into Canada (for the past eighteen months), something over a total of ten thousand miles, without the breaking of a single picture. Mr. H. Rowley presided at the lantern, assisted by Mr. Milner. The titles of the pictures were announced by Mr. Ed. Heim. For the first lantern slide exhibition of the new year it was voted a great success.

BEVELLING MOUNTED PHOTOGRAPHS.—In reference to the query on page 92 of last week's issue, Messrs. F. E. Jones and Co., 22, Gray's Inn Road, London, W.C., send us particulars of Hamilton's mount-cutter and beveller, supplied by them (price 8s. 6d.). By its aid the most inexperienced person can work it with certainty; it is only necessary to merely push along the bevelled guide or runner, and it ensures the certainty of a correct and true bevel in every cut, irrespective of its length. No instructions are necessary with this cutter, beyond always to keep the knife sharp, and at the angles as originally sent out. The knife can be regulated (by raising or lowering) to cut any thickness cardboard with equal ease, and is just the article, the want of which has long been felt.

The Victor Co. also write us as follows:—"We have ceased to make both the No. 1 and No. 2, in favour of our new model, as advertised in this year's 'B.J. Almanac,' at 12s. 6d. net. This new model can be adapted to this purpose, and we enclose a few samples of six and ten-sheet mounts, with various bevels, for your inspection, and we shall be pleased to supply these machines, complete with cutting-board, for various bevels, at 17s. 6d. each, carriage paid, to order only."

Messrs. Hood and Co. also write:—"We have much pleasure in giving your correspondent, 'Bevelling,' the address of Messrs. Hampson, Betteridge, and Co., 2, Fann Street, E.C., and also Kamp and Co., 2, Sandland Street, Red Lion Street, W.C., who make or are the agents for a very handy form of card-bevelling machine for bevelling single cards at a time. The cost is somewhere about £10 to £12. It needs rotary power, however, but it is a form of beveller which can be very strongly recommended. A quarter-horse motor might possibly be big enough to run it quite well so far as we can judge from actual use."

PRESENTATION TO MR. S. G. KIMBER.—A very interesting presentation took place on Thursday evening last at the Bungalow Café, when the members of the Southampton Camera Club made a presentation to Councillor S. G. Kimber, F.R.P.S., of a Chippendale pattern silver salver and an album containing the autographs of those who subscribed to the gift, in appreciation of his services as secretary to the club for the past thirteen years.

Mr. Wm. Burrough Hill, F.S.I. (president of the club), made the presentation, and expressed the sorrow of the members at Mr. Kimber's resignation. Mr. Kimber, he said, had brought the club from what was quite a small concern up to the high position it now held in the photographic world; in fact, Mr. Kimber had been the Camera Club itself. Although they were losing him as secretary, he was working for his fellow-townsmen in another cause.

Messrs. Trigg and Vivian also spoke of the progress the club had made during the time that Mr. Kimber had been secretary.

Mr. Kimber, in reply, said how very grateful and pleased he was to accept the beautiful salver and autograph album. No one regretted his resignation more than himself, but it was absolutely impossible for him to carry it on any longer, as he had his hands full in other directions; but his interest in the club would still be the same as ever, and he would be only too willing to give his help at any time. He was sure they had a good substitute in Mr. C. M. Cooper, as he was a hard worker, and that was what the club required. He thanked them all very much indeed for their kindness, and Mrs. Kimber and himself would always value the gifts most highly, especially the autograph album, which contained the names of those who had worked with him.

AN ESPERANTO TABLOID BOOKLET.—The study of Esperanto is undoubtedly making rapid strides, and is accumulating a literature of its own, which, if it cannot vie with those of the historic languages of the world, is yet full of interest, and is daily becoming more important from a scientific, commercial, and utilitarian point of view. Up-to-date business firms, whose clientèle lies among the educated classes of all nationalities, are already appreciating its value and using it for their announcements; for instance, a booklet has recently been issued by an English firm (Burroughs Wellcome and Co.) in Esperanto, giving information with regard to their products. The subjoined passage on "Tabloid" Tea has been abstracted from its pages, and, with its English translation, serves to illustrate how readily the two languages are interchangeable.

> 'TABLOID' TEO estas teo sola, sed ne la tuta
> *'TABLOID' TEA is all tea, but not the whole*
>
> folio. Ĝi enhavas nenion krom pura teo de bona
> *leaf. It contains nothing but pure tea of fine*
>
> kvalito, de kies folio oni jam forprenis la
> *quality, the leaves of which have been freed from the*
>
> senutilĵaon, t.e. la trunketo kaj mezripo. Tial
> *useless portions—the stem and midrib. Therefore*
>
> ĝi estas pli koncentrigita ol ordinaraj teoj, kaj
> *it is more concentrated than ordinary teas and*
>
> donas pli bonan kaj pli agrablan trinkaĵon.
> *produces a finer and more agreeable beverage.*
>
> Post kunpremado oni povas facile meti en la
> *It being compressed, one can easily carry in the*
>
> poŝon sufiĉan por la preparado de 50 ĝis
> *pocket sufficient for the preparation of from 50 to*
>
> 100 tasoj.
> 100 *cups.*

# Correspondence.

**** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

**** We do not undertake responsibility for the opinions expressed by our correspondents.*

### THE R.P.S. EXHIBITION.

To the Editors.

Gentlemen,—Perhaps I may be pardoned for this letter since your "Ex Cathedra" paragraph of last week distinctly offers a challenge. You say, in speaking of the new class for general photographs, "We consider the Council are to be congratulated on this new class, and we cannot conceive that any one will be able to devise any reasonable objection to it."

Objection is rather a strong word to use in a case such as this, where the proposed condition does not matter, one way or the other; but it is quite probable that many, like myself, will think that the new class will serve no really useful purpose. That fact may not matter either. Yet as your paragraph seems to take it for granted that this innovation of the Council's is going to mark an epoch of prosperity for the Society, let me state my reasons for doubting.

I would ask, What is the value of a photograph that is neither pictorial nor scientific nor a record: that is to say, what is the value of a photograph *per se*, however technically perfect? We all know that such things as perfect photographs can be taken, are taken, and will be taken, especially if medals are to be awarded for them. We know, further, that the real reason why mere technical efforts have hitherto not had a class in exhibitions is because in these days the processes are so simple and automatic that no credit attaches to the results beyond that which we should grant to ordinary care and deftness.

If, as I understand it, the Society will accept and exhibit a photograph of, say, the Royal Exchange in "front elevation" and taken in clear daylight, then whatever interest may attach to it from the point of view of architecture, archæology, historical or other associations, effect, environment, accessories, or what not, will have to be overlooked by the judges, and that, it seems to me, is a thing almost impossible to be done. If, however, these considerations count in the least, then the new class stands confessed a useless thing. The selecting committee will be powerless to cast out such factors from their mind when it is a case of making a selection from a mass of works ten times larger than they want. They will claim that their selection will be pushed to the extreme of technical perfection; but the answer to that would be that there are no degrees of comparison in perfection. If a thing is technically right and good it deserves a place; if it is less than that by a hair's-breadth, it must go. No discussion must be admitted from a point of view of taste, as may be in the pictorial section. How, then, will the judges pick out their favoured examples unless by a falsification of the principle which the new class implies?

Now let us imagine a wallful of these perfect things *sans* pictorial effect. What an arid waste! Where is the public that will pay shillings to see it? Is it possible that the honoured technicians will stand about and point to their triumphs, saying, "Behold, alone I did it; with my fixed-focus camera I myself pressed the button. I myself did the developing in a tank by turning a handle."

Photography that is neither pictorial nor scientific in its purport is no more than handwriting in a copy-book. That the R.P.S. should, after all these years, when skill and knowledge is no longer demanded for making photographs, go out of their way to put a premium upon the kind of skill required in following certain printed directions is an anomaly. Its equivalent would be for a learned body like the French Academy to award distinctions for handwriting.

If there be need at all for any innovation, it surely is a class of pictorial photographs, direct and uncontrolled from negative to print, these to be judged upon their combined merits. There is only one narrow path along which pictorial photography can go without running foul of some principle or other, and that is in the direction of making as good a picture as possible by purely photographic means. When this is done everybody ought to be satisfied; and to those who "play the game" honestly the result will be difficult enough of achievement to merit praise and encouragement.

F. C. Tilney.

[We fear our correspondent overrates the ease of photography. He appears to think that a print from a negative obtained by good fortune of an easy subject represents the whole craft of photography. If we understand aright the description of the photographs eligible for Section II., the aim of the R.P.S. is to encourage the craft of photography, and surely no one familiar with the numberless ways and means available in negative making and printing will question the wisdom of such a policy of preservation. Not interest, but difficulty from the photographic standpoint, will weigh with the judges, and whether the section will be an arid waste of non-pictorial things—for that we must wait and see.—Eds. "B.J."]

## THE R.P.S. ELECTION.

To the Editors.

Gentlemen,—If, as would appear, I have accidentally transposed the names of Messrs. Furley Lewis and Mortimer in the lists of the members of the above committees which I communicated to your last issue, I would hasten to express my regret to both gentlemen.

The correction, however, does not affect the fact that each committee includes nine members, Mr. Clift being an *ex officio* member of the Exhibition Organising Committee, nor does it affect the fact that, excluding Mr. Furley Lewis from the one and Mr. Mortimer from the other, the two committees are identical in composition.—Yours, etc.,

Douglas English.

[We must point out that as Mr. Clift was treasurer, and not an ordinary member of council, there were still twelve members of council (not on the committees) who should have been quite capable of giving consideration to the recommendations of the committees and of amending them if they thought amendment desirable.—Eds. "B.J."]

To the Editors.

Gentlemen,—One seems to remember the expression "the news while it is still news" in connection with your journal. In your current issue you certainly justify it, for you deal at length with the modifications in the programme of the R.P.S. exhibition, and also furnish a valuable comment on Mr. Douglas English's letter with reference to the resolution he proposes to move at the Royal Photographic Society's annual meeting.

Having regard to the nearness of the date of the meeting, one feels that the members of the Society are indebted to you for the information thus given—information that members may well carefully consider before attending the meeting.—Yours, etc.,

A Member of the R.P.S.

February 8, 1911.

## MARKINGS IN TANK DEVELOPMENT.

To the Editors.

Gentlemen,—In reply to Mr. R. W. Harvey, *re* copper tanks making marks on plates, I do not think the copper has anything to do with the trouble. I have, or have had, every tank I know of on the market, and many experimental ones of my own. I have had markings in zinc, and especially in German silver (plated) tanks, but I traced the trouble to the nearness of the films together, which caused what I may call sympathetic action (the marks on one plate coinciding with high-lights of plate facing), and also ribs of backing (over-thick ready-backing), which had not been removed.

Most tanks still have the plates too near each other. My copper tanks have not this fault, and resulting negatives are always free from such markings. Zinc mostly used for tanks is much more liable to action by solutions. Why double price should be charged for a tank in copper or brass instead of zinc I know not. It means 5s. or 6s. a lb. or more for the change of metals.

Frank J. Lobby.

Blackman House, Canon Lane, Chichester.

## MODELS AND COSTUMES.

To the Editors.

Gentlemen,—By way of addition to your reply to your correspondent, R. B. Sharpe, in last issue of the "B.J.," I may say that costumes of all kinds, suitable for photographic and artistic purposes, can be obtained, on hire, from the Artists' Costume Supply Co., 40, Abingdon Road, Kensington, and the addresses and particulars of a large number of professional models, by inspection of the register kept, for the use of artists, at the offices of the "Art Chronicle," 33, Chancery Lane.—With compliments, I am, yours faithfully,

Drinkwater Butt, F.R.P.S.

Roseneath Studio, Cathnor Road, W.,
February 4, 1911.

## SUNDAY WORK IN PHOTOGRAPHIC STUDIOS.

To the Editors.

Gentlemen,—I have employed assistants—male and female—and they have stayed with me for years. They were engaged for six days a week, but they did not get Sunday off. One clear weekday was the holiday, and I can assure you they appreciated that arrangement, for all the places of amusement were open, and they could enjoy themselves when off duty.

If assistants would go for limitation of hours per week, they would get that, but they will have a struggle if they try to coerce employers into closing on Sundays. Have assistants ever considered how many would be discharged, no work for them to do, if Sunday closing came into force?—Yours truly,

Thirty Years a Photographer.

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To the Editors.

Gentlemen,—Seeing Mr. H. Roe McMahon has written the second letter on Sunday work, will you kindly allow me the same privilege? Mr. H. Roe McMahon's letters are very amusing. In his first letter, December 9, he commences by attacking high-class photographers, saying they know the cheap photographers are taking their trade, describing his trade as such. Then he states they need not howl, as his customers would never think of going to their studios. Then why, Mr. H. Roe M., your bombastic remarks about them? "They ain't a-done you any harm," and they don't open Sundays.

Then Mr. M. accuses "Clapham" and myself as simply writing for self-preservation, ending his remarks by stating a certain class are his customers, and he intends to retain them (I suppose that is not self-preservation this time). Then Mr. M. takes a plunge into theology, and tells us "Sunday is not Sunday at all." Now, unfortunately, my theology is very limited, and I would not for one minute attempt to match it against Mr. McMahon's; but I believe it is stated that every seventh day mankind should rest from their labours, which, I understand, is a command given by our Creator, which command is good for soul and body. But maybe Mr. McMahon knows best. Now, sir, for Mr. McMahon's knowledge; and to keep him from jumping to further conclusions, I am in a cheap, middle-class trade—postcards 2s. per dozen, etc. I have three studios, all the same class of work. One studio is open Sundays from 2 to 4; my manager especially asked for it, because another photographer doing the same class work had opened Sundays. Now, we get more sitters on Sunday than any other three days in this studio, so, you see, I am prepared to give up my Sunday sitters for the sake of principle. But although we get a rush on Sundays during the twelve months, we do no more work than we did before either studio was open Sundays, which proves that customers will come in the week if they know all studios are closed Sundays.

However Mr. McMahon could have read the correspondence in the "B.J." from December 2 up till now and formed the conclusion he has done is past my comprehension. It has been shown plainly that sitters will come in the week if Sunday indulgence is not open to them. This has been shown by "Professional," January 6, "Reid Bros.," January 13, and others. Then it has been shown how very unfair it is to assistants by W. Coles, January 6, "Nimrod," January 13, and nearly all the others, which Mr. McMahon admits; and yet he has got the audacity to write his second letter and to say there has been no serious argument that Sunday work should be discontinued. If he had said there had been no argument for Sunday work, he would not have been far wrong. Take the case of "Manager," December 16. His studio is closed by one o'clock p.m., when most other studios are opening. But "Manager" is prepared to support Sunday closing if it does not interfere with his arrangements—*i.e.*, studios closed by one o'clock. Then take the sand-grown argument, "Blackpool," December 30. His customers, he states, are seaside visitors, nothing to do but kill time with pleasure, yet he says, "when they have their Sunday best." He also states sitters come on Thursdays (I am surprised!), and they occupy the next Sunday packing and sending the Thursday's sitters' photographs. I suppose they only get sitters Thursdays and Sundays. Fine argument that. A little wind, and the sand-grown argument totters. I think if anyone had read the correspondence about Sunday trading with an open mind they would say the argument was against it. I hope some members of the P.P.A. will note all the correspondence, and at their next meeting see if a petition can be signed, the same as our Scottish Association *has* done, and sent to the Home Secretary. May it never be said photography was the first trade to bring about universal Sunday work.—Yours truly,

F. J. S.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photographs Registered:

E. C. Houghton, 31, Tudor Road, Leicester. *Photograph of St. Barnabas Church, Schools and Vicarage, Leicester.*

W. Sullivan, Victoria Road, Stanford-le-Hope, Essex. *Photograph of Mrs. Joseph Tinworth of Stanford-le-Hope, aged* 100 *years.*

J. T. Eltringham, 23, Portsmouth Road, Woolston, Southampton. *Two Photographs of Privates Smith and Ross, R.A.M.C., described as "The Long and Short," at Royal Victoria Hospital, Netley.*

Constant Reader.—All the firms you mention are thoroughly reliable, and we advise you to state your requirements to them very clearly and take their advice.

Ashford Tripod.—Can you give us the address of the maker of Ashford's patent camera stand?—Davies and Thornton.

179, Aston Road, Birmingham.

R. P. S.—What steps have to be taken to become a member of the Photographic Society of Great Britain?—Bromona.

Apply to the secretary, 35, Russell Square, London, W.C., for a form of nomination.

A Sufferer.—We should say you are under no liability to pay anything. Your offer appears to have been made on the condition that the youth would come as improver, if satisfactory. If he now repudiates the terms offered we cannot see that you are bound to pay him anything.

Puzzled Pro.—(1) We should say certainly, you can. (2 to 5) As regards the signature facsimile, the agreement, we think, implies the right to use any advantages accruing from the name, and we think you would fail in an attempt to deprive the party of the use of the facsimile on the premises, mounts, etc.

Burnisher.—Will you please give me the name of a firm that I can send my burnisher to be overhauled? It has not worked at all well lately. Cannot get a proper polish. It is a Globe.—G. Austin.

Alfred B. Allen, 20, Endell Street, London, W.C.

Mirrors.—Would you be good enough to state in your next the address where I may apply for mirrors silvered on surface, in quantities, small sizes, similar to those usually fitted to reflex cameras?—Daylight.

M. A. Petitjean, 50, Fonthill Road, Finsbury Park, London, N.

Amidol Stain.—Can you give me a formula for removing or preventing amidol developer stains upon the hands and nails?—Edward Grafton.

We know of no way of removing amidol stain quickly. It is a most persistent stain, but will wear off in a week. The only way to prevent it is to either use finger-stalls or else keep your fingers out of the developer.

Carborundum Powder.—I shall be obliged if you will say where the carborundum powder mentioned in your last issue can be purchased. Local shops know nothing of it.—R. L.

We should have thought that any ironmonger's or tool shop would stock it, but if you cannot obtain it in Derby write to George Adams, 77 and 78, High Holborn, W.C. Ask for the finest powder if you want it for grinding glass.

Paraffin Paint.—In your issue of November 25, 1910, appeared an article, called "Running a Studio Rightly," by an American. The writer advises the making of wooden dishes painted with two coats of paraffin paint to make them water-tight. Could you tell me how to make or mix this paint?—E. E. H.

We can only suggest that the writer meant melted paraffin wax, applied with a brush. This serves the purpose well, but it should be well worked into the wood by running a small, warm smoothing iron over it.

**J. M.**—You *can* use the attachment on a twin-lens camera, provided the latter racks in sufficiently close. This, because the attachment shortens the focus of the lens somewhat. But you must recollect that these supplementary lenses are sold at a low price, and are liable to differ slightly in focal length; any difference affecting the accuracy of the work done with a twin-lens. Their use, therefore, requires care, and on the whole we should advise you to use the lenses as they are, or obtain a pair of the required larger aperture.

**Photographs of the King.**—Would you kindly answer me through the "Correspondents'" column:—I understand that a photograph of the King is not copyright, and that a photograph cannot be copyrighted, as every subject has an interest in their King. Is this so?—An Inquirer.

Certainly not. Photographs of the King (except those taken for his Majesty's private purposes) are the copyright of the photographer to whom the King grants the sitting. Your surmise is not uncommon, but it has no foundation in fact.

**Shutter Exposures.**—We are using, say, plates, speed 500 H. and D. Do you think we should obtain as fully exposed plates with the "Multi-Speed" shutter as we should with the focal-plane shutter, both, of course, working at the same speed?—Dalton.

From our experience of the "Multi-Speed" shutter, we should say the efficiency is quite equal to that of the focal-plane. Indeed, without being able to give a theory of it, some exposures made with the "Multi-Speed" have yielded results which are better, as regards exposure, than those with a focal-plane.

**Bleach-out Paper.**—I should be greatly obliged if you would let me know, through the "Answers to Correspondents," the name of a firm who supplies a paper for producing colour photographs by the bleach-out process (Utocolor paper, from J. H. Smith). Could you recommend me a good book on this method?—Victor Lenander.

So far as we know, the paper is not on the market. You will find the latest information on the subject in a paper read by Dr. Smith before the Royal Photographic Society, and printed in our issue of May 6, 1910.

**Blackening Wood.**—(1) Please give simple instructions for dead black on wood, as on inside of camera fittings. (2) For shiny black, as on outside of same. (3) Are commercial spirit stains and stain varnishes to be recommended?—Varnish.

(1 and 2) We cannot recommend any better or simpler methods than those given on page 495 of "Almanac" for 1911. Possibly you have missed these. (3) Ebony varnish stain will give a good finish to outside work if you put on two or three very smooth coats, and finish with French polish. We do not know of any stain that gives a good dead black.

**Reproduction Fee.**—Having had photograph of a public man in the London press, and received £2 2s. for a front page, and £1 1s. for full inside page, in fees, can I demand half-fees if same picture is reproduced again, as the public man in question will come into prominence again shortly?—Veritas.

There is no custom that the fee for a second or subsequent use should be a half of that paid in the first instance. It is usually the full amount. Presuming that you have granted the right to reproduce for one issue only, the paper has no right whatever to make further use of the portrait.

**Intensifier for Platinotype Negatives.**—May I ask if you can kindly recommend a good intensifier, suitable for negatives that have to be used in platinotype printing? The few negatives that I have found it necessary to intensify, using mercury, I have found give prints of a greyer tone than those from unintensified, and I find that varnishing the plate does not tend to mend matters. Perhaps you would kindly give me particulars of a suitable one for negatives for platinum work.—W. G. B.

The chromium intensifier, used twice in succession if necessary, should answer your purpose. See formulæ and directions on page 744 of the "Almanac."

**Repeating Back.**—I have a half-plate camera, and I should like to know, through the "B.J." (to which I am a subscriber), where I could obtain a repeating back for same that I could use for taking four midgets on a quarter-plate? When taking a number of midgets on one plate, please describe how they are printed one dozen in a strip. Has the negative to be cut and each one printed from separately? Where could I obtain a printing machine suitable for this work?—Not a Professional.

State your requirements to Jonathan Fallowfield, 146, Charing Cross Road, London, W.C., or to J. Billcliff, Richmond Street, Manchester, S.W. Either can supply the repeating back and printing frame for use with it.

**Studio Acetylene Light.**—I am shortly erecting a photographic studio. Could you tell me if it is possible to take photographs by acetylene light in same? I can get a supply of gas from a fifteen-light plant direct to the studio? If so, could you inform me of the best arrangement of burners?—Devonis.

A battery of acetylene burners will answer fairly well for single portraits. Its drawback is that it gives out a great deal of heat. If you have gas, we should think you would do better with a battery of inverted mantles, such as that just introduced by Howellite Burners, Ltd., Farringdon Avenue, E.C. But if you require an acetylene outfit, write to R. J. Moss, 98, Snow Hill, Birmingham.

**Flattening Celluloids.**—I bought some years ago some holders for 5 x 7 plates from the Kodak Company, which had celluloid shutters. These have unfortunately warped very badly, so that the centre came outward or inward, as the case may be, and the edges fitted, or, rather, fit now, very loosely in the grooves around, and let light filter on the plates on the corners, extending sometimes all along the side or bottom. Do you know of a way to flatten these celluloids once more? And how is it done?—A. Levy.

We have often put such shutters right by simply warming them, then laying them on a flat surface and passing a roller over them. A roller squeegee will serve, and you must keep on warming and rolling in all directions, and on both sides, until the flatness is restored.

**Various.**—(1) Is there any way of mounting a print on anything so that it could be copied without showing grain? Sometimes I like to get a little handwork put on, which I don't think is so well done on a glazed print. (2) I have about twelve prints, 30 by 6 inches, which I would like to mount as nicely as possible. Do you know anyone that would prepare a few mounts with, say, a plate-mark on them? (3) Do you know anyone in London who would re-paint a background?—Via.

(1) If the nature of the handwork permits, you can mount in contact with glass as when glazing, but we think your best plan would be to use a semi-matt paper, which will take working up better, and is even more suitable than a glossy paper for copying. (2) Better ask Messrs. Butcher, Camera House, Farringdon Avenue, London, E.C. (3) F. E. Jones and Co., 22, Gray's Inn Road, or the Tress Company, 4, Rathbone Place, London, W.C.

**Studio.**—I have a room offered me for a studio, 35ft. long by 14ft. wide, with a large window 18ft. by 6ft. high, and about 3ft. from floor. The window faces south. Could good pictures be produced in such a studio, with suitable reflectors on shadow side? What kind of curtains would be best? Would the sun in summer be insurmountable?—Doubtful.

We think that you should be able to do good work in the room you describe, although the light is hardly high enough for standing figures and groups. We should recommend very thin white jaconet or nainsook blinds or curtains, which could be drawn entirely over the glass when the sun was on the window, with a set of dark green blinds on spring rollers, to pull upwards, so that any portion could be obscured. With these and a good head screen you would have the light under control. At the same time we would strongly recommend you to install an electric arc lamp, when you will be as well off as with the best daylight, which, of course, you would use for economy's sake whenever possible.

**Prices for Outdoor Work.**—I was requested to attend and photograph, seven miles from my premises. There were several different subjects to take, and in all about thirty negatives were made, size 8½ x 6½, and smaller. Proofs were submitted and prints ordered from fourteen negatives, and the number of prints were twenty-seven in all. My charges are based on the following:—

| | | | |
|---|---|---|---|
| For the first nine prints, 8½ x 6½, from nine different negatives, at 10s. 6d. | £4 | 14 | 6 |
| Eleven reprints, at 3s. 6d. | 1 | 18 | 6 |
| For first five prints from five different negatives, 5½ x 3½ | 1 | 5 | 0 |
| For one reprint, 5½ x 3½, one reprint, 3½ x 2½ | 0 | 2 | 6 |
| Travelling expenses, actual outlay | 0 | 15 | 0 |
| | £8 | 15 | 6 |

Do you consider the charge unreasonable? I was about five hours away from business. These are my usual charges, and I do not wish to take this matter to the County Court. If you consider it high I should be much obliged for your reply.—Inquirer.

The prices are reasonable for such outdoor work, presuming the work is good and the subjects of the fourteen negatives all different.

**Cleaning Lens Mount.**—I have a large portrait lens, brasswork of which has become rather rusty. What do you think of applying "Galvanit," either tin or silver, to it, and how could I remove all lacquer in order to do so? Or could you recommend a better way to improve its appearance?—Veteran.

To get off the lacquer, dissolve some caustic soda or potash in methylated spirit, and apply with a brush to the lens mount, scrubbing hard and rinsing under the tap. Then clean well with leather and some polishing powder, whiting, or fine knife polish. Globe polish will serve well, but afterwards the mount must be well cleaned with soap and water to remove all grease. You can then either use "Galvanit" or re-lacquer with shellac solution. In the latter case, make up a solution of shellac in methylated spirit and apply with a brush afterwards, heating to clear the varnish. Ordinary negative varnish will serve very well. If you use "Galvanit," we should recommend tin; you can then finish with nickel if you like. Tin alone will, however, make a very good finish, and it goes on very rapidly, and soon produces a thick coating, that will stand a lot of wear and looks well. Silver and nickel both go on slowly, and it takes some time and many repetitions to get a good coating. The nickel finally wants polishing with rouge.

**Studio.**—A studio is shortly to be built for me with a direct north light. Length, about 26 ft., by about 14 ft. wide. To the centre of roof, what height do you advise? Also the length and width of top and side light, and depth of side light and blank space to the floor? Further, what kind of material for curtains for top and side light? And in fixing same, would you have them to run across the width of studio, or to run along the length of studio, say, in about 2 yards by 1 yard wide?—Curious.

For a studio of the dimensions you give, we think that a height of 12 ft. to the ridge and 7 ft. or 8 ft. to the eaves will be found most useful. The side light may commence anywhere above 2 ft. from the floor: about 4 ft. at each end of the studio should be opaque, and all the remainder glazed. This may seem an unnecessary amount of light, but it is easily shut out when not required. Two sets of spring roller blinds, dark blue and white, are usually fitted, so that any part of the light may be wholly or partially obscured, the top blinds running from the ridge to the eaves and the side ones running upwards from the bottom of the side windows. The blinds should not be too wide, or it will be difficult to secure exactly the desired lighting; 40 in. to 44 in. will be ample. A simpler system of controlling the light consists of having, say, three pairs of wires stretched from end to end of the studio and hanging loose curtains festoon-wise upon them, two sets of dark green sateen and white nainsook being fitted on the same wires, the white being in the centre. These are easily manipulated, with the help of a long bamboo, by the operator, and give more control of the lighting with less trouble than roller blinds. They can also be removed and replaced very easily when they require cleaning. The side blinds should be on brass rods, in two sections, one rod being about 4 ft. from the floor, and the other at the eaves. Care must be taken that all the blinds, whichever system is adopted, have plenty of overlap, or much trouble will be given in blocking out undesired streaks of light.

**Postcards.**—(1) By what method is design produced on enclosed postcard, and can the tone be matched in the sulphide bath? Please give details. (2) How is the small lettering done on postcards, say the name of places, etc., which seems as if it had been transferred from letterpress printed matter? Is there some way or other of transferring as mentioned? (3) Are there any firms who make designs for wholesale postcard houses? If so, please name. (4) Do the large producers of postcards print same singly or are they done, say, in strips or lengths, and then cut up? Will you please give names of makers of machines? (5) Is there any mechanical appliance on the market for developing and washing postcards rapidly, or are they done by hand? Please give me an idea as to working methods for rapid production.—Postcard Machine.

(1) The design is prepared by arranging artificial (or natural) flowers around the photograph of the animals, the white scroll being first put in on the latter. The scroll work above is affixed and photographed at the same time, as may also be the lettering below, although this latter may be put in on the negative. The card you send is the ordinary toned bromide, done, we should say, by the hypo-alum process, though similar results are obtainable by the two-bath sulphide method. (2) Yes, the lettering is set up in type, a negative made on a photo-mechanical plate, and the piece of this latter transferred by stripping to the landscape negative, a portion of the film of the latter being, if necessary, cut away to receive it. (3) The only advertised offer of such work that we can recollect seeing is that of Messrs. Hood, Ltd., page 335 of the "Almanac." (4) The cards are printed from twelve or twenty negatives at a time on the uncut roll of sensitive bromide. The negatives are evened up with tissue paper, etc., so as to print equally. One maker of machines is Ellis Graber, Tunbridge Wells. You will see his announcement on page 1282 of the "Almanac." The larger installations are supplied by engineers such as Scott and Co., 3, Pancras Lane, Cheapside, London, and Aug. Koebig, Radebeul, Dresden, Germany. (5) The makers named under (4) supply plant for production on the largest scale: for more moderate editions (printing from one, or at most four, negatives at a time), you can choose between a large number of printing machines. For these we can best refer you to our issue of February 11, 1910, in which every appliance then on the market is described.

◆

**Edinburgh Photographic Society.**—The annual open exhibition of the above society will be held, from February 25 to March 11, in the society's hall, 38, Castle Street, Edinburgh. The judges will be Messrs. Hippolyte J. Blanc, R.S.A., W. Marshall Brown, A.R.S.A., and Arch. Cochrane, and the society medal will be placed at their disposal for award. One of the four classes will be set apart for photographs in colour by any process. The latest date for receiving entries is February 16, on or before which date forms, duly filled in, and accompanied by the necessary entrance fees, must reach the hon. secretary, Mr. J. C. McKechnie, 31a, Castle Street, Edinburgh, from whom also the entry forms and full particulars may be obtained.

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The British Journal of Photography.

*The Oldest Photographic Journal in the World.*

ESTABLISHED 1851. PUBLISHED EVERY FRIDAY. PRICE TWOPENCE.

TERMS OF SUBSCRIPTION, Post Free

(United Kingdom and the Channel Isles).

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THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2650. Vol. LVIII. FRIDAY, FEBRUARY 17, 1911. Price Twopence.

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## SUMMARY.

The fourth annual Colonial and Foreign issue of the "B.J." will be published on March 31. Attention is directed to the particulars given on Supplement pages 4 and 5 of the advertisement portion of this week's number.

The London Secession, a newly formed body of "pictorial photographers," will hold its first exhibition on May 10 next. (P. 131.)

At the annual general meeting of the R.P.S. on Tuesday last Lord Redesdale was elected to the presidency for the second year. The names of the other officers for 1911 will be found on page 128.

Some of the directions in which the craft of photography may provide interesting exhibits in Section II. of the forthcoming R.P.S. exhibition are mentioned in an article on page 115.

In a recent address before an American college Mr. G. W. Harris, president of the P.A. of America, described in detail a system of analysing the business of a studio in such a way as to bring out clearly the state of work in hand at a given time and the directions in which the business of the studio might be improved or extended. (P. 116.)

The supply of a complete framed portrait of tasteful appearance is one which professional photographers might consider with profit. (P. 113.)

A time-saving device in indexing and storing negatives is the subject of a note on page 114.

An interesting account of the visit of Messrs. William Crooke and H. Walter Barnett to the studio of Mr. J. C. Strauss, of St. Louis, appears on page 121.

Mr. C. H. Claudy, in a recent paper in the "Bulletin of Photography," states some pros and cons of Sunday opening of photographic studios. (P. 120.)

Further letters on Sunday work in studios appear on page 130.

In a further article on scum-like markings on plates, Mr. F. F. Renwick qualifies and extends the explanation given in last week's "Journal." (P. 115.)

Stale developer is indited as a further variable factor in tank development by a correspondent of the "Amateur Photographer." (P. 126.)

Details of a method of preparing relief and intaglio printing plates figure, with other matters, under "Photo-Mechanical Notes." (P. 122.)

An adjustable repeating-back and a method of mounting on transparent supports are the subject of "Patents of the Week." (P. 124.)

## EX CATHEDRA.

**The "B.J." Colonial Issue—No. 4.** On March 31 will be published the fourth special Colonial and Foreign issue of "The British Journal of Photography." The number will contain a variety of additional features, among them reviews of new introductions upon the photographic market in the way of materials and apparatus. As already intimated by our publishers, this special issue will be posted direct to photographers, photographic dealers, and photo-engravers in all parts of the world, but chiefly in the British colonies and dependencies. This important body of buyers is thus brought into direct relation with manufacturers and factors at home, and the attention of advertisers is directed to the fact that the recently revised list of addresses to which this special issue will be sent reaches a total of close on 5,000. Thus, in addition to the regular world-wide circulation of the "British Journal," the Colonial Issue provides an unequalled opportunity to photographic firms of enlarging their circles of customers. If proof of the trade-bringing merits of this special issue were wanted, it would only be necessary to point to the three preceding numbers, each of which has carried a record volume of advertising and in regard to each of which manufacturers have expressed their great satisfaction with the commercial results which have followed from their announcements. We are glad to find that since its establishment in 1908 the Colonial Issue of the "B.J." has speedily become recognised as a most valuable channel of communication between British houses and customers abroad, a position which the staff at Wellington Street has spared no pains to maintain in their labours of extending and revising the address list from which the extra edition is mailed.

* * *

**Framed Portraits.** In the early days of collodion positives, photographers did very good business in framed portraits, the glass plate being fitted into a more or less elaborate passe-partout (not a piece of nature paper and a lantern binder) and finished off with an English gold frame. It was obviously impossible to give a sitter a piece of glass with rough edges, so that the photographer had perforce to provide a setting, and he did so, with more or less satisfactory results. When the carte mania set in it crippled the framed portrait trade as far as the ordinary photographer was concerned, but now that there is a growing tendency to order smaller numbers of better-class pictures, it is worth while considering whether it would not be practicable to introduce single pictures of moderate size framed complete and ready for display. The photographer loses a great deal of business which he might retain by failing to impress upon his patrons that his work is not complete until it is properly framed, and that it is easy to spoil the effect of the best print by putting it in incongruous surroundings. Who has not experienced the horror of a sepia platinotype or carbon in a scarlet morocco frame; or even worse, a coloured picture of an officer, framed in the same way simply because the drapers' salesman suggested that red was appropriate to the subject? The surest way to raise the status of the photograph is to make every print precious, and after everything possible has been done to ensure this end, an appropriate frame gives a distinctive note that can be obtained in no other way. It is impossible to recommend, or even to indicate, suitable styles; if the photographer is sufficiently artistic to make a good picture he should be able to choose a frame. A word of warning is, however, necessary. It is to avoid ready-made frames and mouldings; nothing is more annoying to a patron who has paid a good price for a picture to find that frames almost exactly similar can be bought at the stores for one and elevenpence.

* * *

**Development Shown by Cinematograph.** One hears (writes a correspondent) a great deal about the educational value of the cinematograph, but little, if anything, has, to my knowledge, been done in the way of illustrating the actual photographic operations for the benefit of amateur or professional photographers. There is, however, now being shown at some of the many "picture palaces" a film which illustrates its great possibilities in the way of showing the public how photographs are produced. The film is of the "Ambrosio" brand and its title, "Tweedledum and Frothy want to get Married"; the story is of the comic type, showing how one gentleman photographed the other with a lady on his knee. The story and the bulk of the film may or may not interest photographers, but what is interesting is a scene in a dark room in which the amateur develops his plate. The film is stained red, and the cinematograph was placed quite close to the dish and one sees the actual development of the plate and the appearance of the image. It is most interesting, and it is to be hoped that much more will be done in this direction.

* * *

**Indexing and Storing Negatives.** Although negatives are not so valuable nowadays as they were five-and-twenty years ago, they are still worth preserving, and that with more care than is used in many establishments. Indeed, the fact that repeat orders are fewer in number and less in amount is a reason why a more rigid system of storage should be adopted. To find that the one negative from which a repeat order has been booked is badly damaged is annoying. Some workers number the negatives with strips of gummed paper, while others place them in envelopes with the name written on the flap. The gummed strip is apt to come off, and once the negative is removed from the envelope there is no means of identification. The best plan is to write on the very edge of the film side of the negative with a hard steel pen the name and register number, using a good black writing ink. The order book contains the sitter's name and address, the size of the negatives, and so on, so that all negatives of whatever size may be numbered consecutively. Empty plate-boxes serve admirably for storing, and may be set on stout shelves like rows of books, the numbers being clearly marked on the outside edge of the box. The method of storing is roughly as follows:—Let us say $\frac{1}{4}$ plate, $\frac{1}{2}$ plate, and 12 x 10 negatives are standing on the finished order shelf, in separate piles. We take the last quarter plate box in which negatives have been stored and find its numbering to be, say, 1,754-1,810. It will contain about sixteen negatives, and the remaining forty are, of course, half-plates or 12 x 10. We number an empty box 1,811, and go on storing quarter-plates, following on from that number until the box is full. The number of the last negative is then marked, 1,811-1,879. In exactly the same way the half-plates and 12 x 10s are dealt with. A half-plate box may happen to be numbered 1,827-1,835, but in seeking a negative no confusion arises, for the quarter-plates are not sought in half-plate boxes, and the order book and negative register combined gives us the size of the required negative.

* * *

**Art and the Cinematograph.** We believe that we have previously suggested that cinematograph shows are worth a little consideration from the pictorial worker, and since we ventured to make that suggestion we have become more and more fully convinced that it is a good one and worth emphasis. In the architectural world there is a saying that no man can even begin to understand the meaning of the mere word "architecture" until he has studied the subject itself for ten years. We do not know how long it takes a painter to understand the meaning of the word "picture," but we feel quite certain that it takes him a very long time; while we know for a fact that the average pictorial photographer is only in the position of the art student who talks glibly of "picture" and "composition" without having any clear idea of the facts that either word should imply. We believe that there are few more difficult tasks than that of making a student understand the difference between good and bad design, or that between good and bad composition, but it has been very forcibly impressed upon us at various times that the cinematograph offers unequalled opportunities for driving such instruction well home. It must, of course, be admitted that many utterly banal and artistically worthless films are to be seen, but if we confine our attention to the best of the London "picture palaces" we are pretty sure to see one or two films that are really worth attention from the purely artistic point of view. Some of the best we have seen are the work of an Italian firm, who evidently employ a genuine artist as stage manager, and with such films we frequently see what really amounts to the genesis of a fine pictorial composition. We will give an instance. The subject is a classic interior with two figures well posed and grouped on one side but very imperfectly balanced on the other side. The picture is most obviously imperfect in this respect, but a third figure enters, and as it approaches we can actually see the picture rapidly developing to the condition of a perfect composition. For one brief moment, when the newcomer reaches the right position, the picture is perfect as regards composition, grouping, and balance, and then it is rapidly destroyed by the group dispersing. We could hardly imagine a better object lesson than this in the real meaning of good pictorial composition, for the same information could not be conveyed to a pupil in such a rapid and complete manner by any method that we are acquainted with. We will take another illustration from a different and far simpler subject, this time the film being by an American firm. In this case we begin with what is simply a photograph of a very beautiful river scene. In the distance a canoe with an Indian girl paddling appears and draws rapidly nearer. As it approaches the scene seems in some way to improve, and quite suddenly at one particular moment we realise that the canoe is filling a vacancy that we had not appreciated before, and that the composition is just perfect. The next moment this effect is gone, for we now find that the canoe is too near and the composition is spoilt. Here again we have a splendid object lesson in not merely the importance that a figure may have in a landscape but in the supreme importance of its being in just one precise spot and nowhere else.

Try to convince a student verbally that such minute adjustment of composition is essential and he will not believe you, but show him the film and he must be convinced at once. It is, of course, a fact that pictorial composition is one of the numerous matters to which the stage manager has to give very careful attention. If a true artist, his compositions are in every way as well worth study as those of the painter, and when reduced to monochrome in the cinematograph they are eminently suited to the instruction of the would-be artist in monochrome. The fact that they are really moving pictures is of material advantage, inasmuch as the evolution of the perfect result and its subsequent decline are as visible as the perfect picture itself.

## JUST PHOTOGRAPHS.

We are glad to find that a large number of readers are well pleased with the decision of the Royal Photographic Society to give some encouragement to those photographers who do not claim to be either scientists or artists but only conscientious craftsmen. One of them says: "Your correspondent, Mr. F. C. Tilney, seems to think it not quite right that our leading photographic society should recognise photographic excellence pure and simple, and sneers at the prospect of an exhibition of photographs whose claim to notice lies in their perfection as illustrations of certain methods of working. This is, indeed, ungrateful, besides being ungracious, for had it not been for the purely technical worker with his strivings after mechanical perfection the artistic ones would find their means of realising their noble conceptions very limited in comparison with those which they now enjoy." There is much solid truth in these remarks, and we are certain that the forthcoming exhibition will not only gain in interest as far as the general public is concerned, but that the Society will have gained a stronger hold on the sympathies of the great body of workers, both professional and amateur, than it has had for the past few years. Times out of number we have remarked on the absence of their work and have been met with the reply that "photographs were not wanted now. It was no good sending anything unless it was either a freak or depended upon the interest of the subject." In the old days we found representative work from nearly all the leading photographers in all branches of the art, and year by year the child portraits of Faulkner, the landscapes of Bedford and Payne, Jennings and the genre of Robinson, Adam Diston, and others, were eagerly anticipated by the regular visitors, many of whom were zealous disciples of their favourite masters, and the result of this is seen to-day in the perfect technique which Mr. Tilney thinks is so easily acquired. The commercial photographer, who has to work under almost impossible conditions, deserves a pat on the back sometimes, but he does not often get it. A well known American writer, C. H. Claudy, says: "The commercial man must be able to go anywhere any time with any apparatus and get results. He must be able to jump from an interior with his lens facing a row of windows to an exterior in the rain and get results. He must be able to take out a focal-plane shutter and a Sigma plate and make a thousandths-of-a-second picture of racehorses and get results, and be able to carry round a 14 x 17 view box, and make a copy of a painting under the stairs with no light to speak of and get results. He must know how to flashlight a dinner-party without exploding himself or his apparatus and get results. He must fully understand the photography of machinery *in situ*, of books in a library, of pictures on the wall, of houses, of people, of animals, of children, of boats and trains, and fires and battle, murder, and sudden death, and get results. And, above all things, he must get results every time, first crack, no take-overs and in a hurry." For the first time for years our friend will have his chance in May next, and we hope and believe that at the forthcoming exhibition the British public will be able to see what can be done with a camera in the first year of King George V. There is room for all, be they pictorialists or just plain photographers. There is no need to decry the productions of either, but it is certainly time that one section of photographic work should cease to be considered representative of the latest achievements of the art.

# SCUM-LIKE MARKINGS ON PLATES.

Since writing the account of my earlier experiments on the peculiar scum-like markings which have been obtained by a number of independent workers (B.J., February 10th, pp. 96-97), further study of the conditions under which they occur has made it possible for me to establish conclusively their true cause. Although the explanation is simpler than I was led at first to think possible, the pronounced effects produced by so slight a cause are not only highly interesting, but of no little importance to many practical photographers.

In studying the phenomenon I was puzzled to account for the apparently haphazard variations in the number and strength of the markings, but when it was found that certain of our tanks appeared to give them more readily than others, I began to suspect the presence of a trace of active foreign matter.

It was then found that, provided the plates were exposed to the light of the dark room lamp, either during or previous to development, the markings could be obtained when the plates were first wetted in the tanks *in darkness*, while if, as I mentioned in my first communication, they were also developed in darkness, no markings were obtainable.

This strongly suggested that in some way the plates had become locally red-sensitive where the markings occurred, and further experiments with lights of various colours showed that such was the case.

Contamination of the tanks with a powerful red sensitizer seemed the only possible explanation of these results, and in the light of our final series of tests this proves to be the true one.

Prior to these experiments, and in the course of them, our tanks had been washed out thoroughly scores of times, and until the suspicion of contamination with the sensitizer arose, the fact that these tanks had been used some time previously for bathing a few plates in "pinacyanol" did not appear to offer any help; but when it was found that thorough scouring of the tanks, with strong acids and alcohol alternately, rendered it impossible to get the markings under any conditions, the conclusion was forced upon me that one or two pale blue stains, due to pinacyanol, which had not been completely removed before starting the experiments, must be the cause.

The matter was finally settled by determining the effect of adding traces of pinacyanol to the water or developer poured on to the plates in either a tank or dish, and exposing them to the dark-room lamp before or during development. The results are simply astounding. A solution of pinacyanol containing *one part of the dye in ten thousand million parts of water* (1 in 10,000,000,000) produces results quite equal to the bad cases given in illustration last week, while even one part in a billion of water (1,000,000,000,000) can be detected in this way. Such figures as these convey very little to the mind, so that it may be worth mentioning that if one ounce of pinacyanol were uniformly dissolved in a lake 10 feet deep and 1,000 feet long and 1,000 feet broad, and developing solutions made up with it every plate on which such developers were used would be ruined by scum-markings if the plates were developed before the dark-room lamp. Pinaverdol and pinachrome also produce similar effects, but their activity is somewhat lower, about 1-10th that of pinacyanol.

It is obvious now why process workers, who not infrequently employ pinacyanol and similar dyes for bathing plates, have been troubled with the markings, and I trust that these results will be of service to them.

The character of the patterns produced will probably be of considerable interest to scientific workers engaged in investigating the flow of liquids, while the fact that such very dilute solutions of these dyes do not act upon the entire surface of the plate, as one might expect, but in streaks and patches, is a point of no little interest to the chemist as demonstrating the very irregular distribution of the dye in the solvent, and showing that they are in suspension rather than in true solution.

F. F. Renwick.

# SYSTEM IN THE STUDIO THE SECRET OF SUCCESS.

[Of late years the advice and help which have been most usefully offered the photographer have concerned the supervision of the business rather than the technical side of his profession, and this particularly in the systemising of the orders which come into the establishment, in order to obtain readily the means of judging how these latter can be increased or rendered more profitable. A recent lecture by Mr. George W. Harris, President of the Photographers' Association of America, delivered before the Illinois College of Photography, describes so clearly the system found efficient by the author that we reprint the text of the address from the current issue of "American Photography." In smaller studios a less elaborate scheme may be found sufficient, and reference may therefore be made here to papers and articles on the same theme which have appeared in our pages during the past year or two, particularly to those in the "B.J." for Jan. 29 and July 2, 1909, and Nov. 27, 1908, and that by Mr. Pirie Macdonald in our issue of Aug. 16, 1907.—Eds. "B.J."]

Andrew Carnegie once said that his success came in knowing how to direct the efforts of other people. Hence he created an organisation and got results out of people under him because he knew exactly what they were doing every minute of the time.

Organisation in the large or small studio is impossible without information, and you cannot get information without keeping a record of your daily work in a systematic way. The only way to get results out of your staff and yourself is to keep a record of what every person in the studio does. In this way you organise facts and create a record of information that will place at your disposal everything that happens in the different parts of your studio. The smallest photographer with only one assistant needs this record system to make money, to know that which pays and does not pay, and to save a little of what comes in, as much as the man who employs a dozen or more people. The man who has no organised system of recording his daily work is trying to carry his business in his head, and by the end of the month has forgotten what has happened in that past thirty days. The man who has a good record system is really a powerful organisation, and he who has not this record system forgets what has transpired.

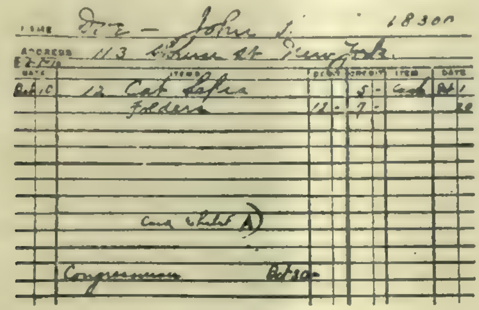
The facts that should be recorded are those that tell how much money you spend for salary, for stock, and for general expenses. On the other side should be the amount of money that comes in and how it comes in, under such heads as original orders, duplicates, enlargements, frames, &c.; in other words, who your customers are, where they live, and what they buy. It will show you how many of your sittings do not come back, and suggest how to bring them back. In this way you are enabled to know and compare your studio work each month in the different departments with the same months of previous years. It will also show you which of the sales are falling back and which are going ahead, and why. Arrange your record system in such a way that you can go after all your new and regular business systematically. Keep it before you in black and white and it will soon give you a bird's-eye view of your whole business scheme.

This you will find easy to do if you will use the records that you have taken carefully each day; it will work out the right answer to build up your sales, and it will show the expense that you can save. A perfect condition of your records will do this easily, not to say a word about the prospects that will show up in your business territory, and that you can go after systematically.

If you divide your business work into two complete halves, you could give one half to the advancement of business and business system and the other to the advancement of art and photography. There is no doubt in my mind but that the average photographer has developed the art and photographic side far in advance of the system and business side, and I would suggest to you that you spend one half of your time in the developing of the card index or system side. I will make a statement here which can be proved very easily; it is that you only do the amount of business that you really want to do and no more. No man can do any more business than the amount that his organisation can easily handle; in other words, if your organisation and system is arranged thoroughly and well, you can take care of the increase of business that should come to you each year.

One of the things that I notice in nearly every studio that I visit is the fact that so many of the proprietors are so busy doing the little things around the place that they have no time to think of the business in the aggregate. Take the man who owns a studio, who is worth from $25 per week up, and we find him putting in time at things that a $5 a week girl can and should do, and this is the cause of so many studio owners finding their business running them and not the business being run by the owners. There is not a business on earth that a man can be successful in if he hires a $100 man for a $20 job, and why should a photographer do it? While I am on this subject I also want to add that another reason for lack of success of photographic studios has been through the fact that the proprietor, who does his own operating, who would be worth at any time from $100 to $150 every month as an operator, will hire a saleswoman to sell his work on an average of $40 per month. That is not fair to the business.

If I had $200 a month allowed me as a manager for the reception and operating rooms, I would pay $75 for the operator and $125 for the saleswoman. The biggest investment that every photographer in this country could make would be to find the saleswoman who is as good and successful in her line as the operator is in his; and until you adopt this method in your organisation you will not be making the success you ought to in the sales department. And, by the way, I will say here that since you will not work for anyone else without a salary, either as manager or operator, you should pay yourself and charge it on your books, the legitimate salary that you can make if you work for another firm, for that salary is not an earning or profit of your business, but a legitimate expense, and then we as photographers will soon see that there is not 50 per cent. profit in our business, as some of us now think.



NAME Doe — John H. 18300

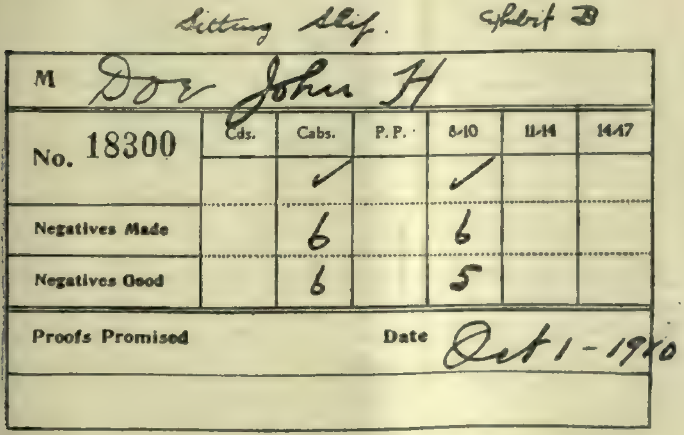
ADDRESS 113 Spruce St New York

| DATE | ITEMS | DEBIT | CREDIT | ITEM | DATE |
|---|---|---|---|---|---|
| Oct 10 | 12 Cab Sepia | | 5 - | Cash | Oct 1 |
| | Folders | 12 - | 7 - | | 20 |
| | Card Exhibit A) | | | | |
| | [illegible] Oct 20 | | | | |

Exhibit A.

Have you ever thought along the line that photography is not competitive, but co-operative? And that if we stand together on some good scheme of advertising, and get twice as many people to be photographed each year, that we would all do twice as much business?

Statistics show that in this country we photograph everybody once in twenty years. I don't know how correct this is, but if we get everyone to be photographed once in every ten years, you can see that all of us would double our business.



Sitting Slip. Exhibit B

M Doe John H

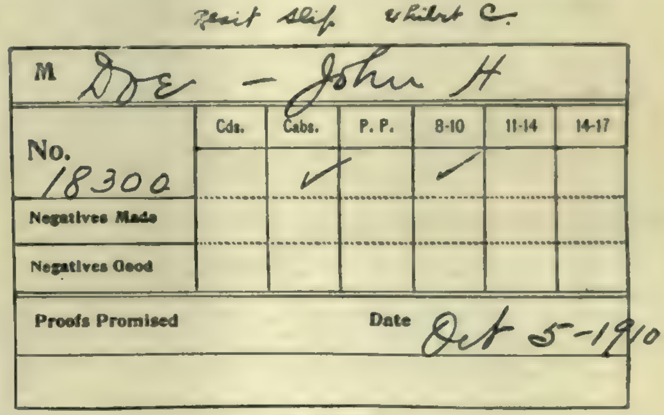
| | | | | | | |
|---|---|---|---|---|---|---|
| No. 18300 | Cds. | Cabs. | P. P. | 8-10 | 11-14 | 14-17 |
| | | ✓ | | ✓ | | |
| Negatives Made | | 6 | | 6 | | |
| Negatives Good | | 6 | | 5 | | |

Proofs Promised Date Oct 1-1910

Exhibit B.

Now, with organisation and record system I am sure you can prove to yourself that this forms the foundation of all successful business and brings about the desired results. Of course, it takes a little bookkeeping, but not much. It is the statement, that is made once each month with its averages, that gives you the comparison to know how you stand with the year before, and how to increase in the years to come. I think you can carry this comparison even in a personal way. Compare the way you live, your honesty, truthfulness, and morality with those who are best in the business world around you, affiliate yourself with your Board of Trade and like progressive organisations, and compare your work with the best in the country. For the only way to raise the standard of anything is by comparisons that are honestly made.

Now, to give you a practical lesson in system, let us carry the customer right through our studio, and, by the way, let me say here, we have tried many plans, but through elimination we have reached the conclusion that the way I now show you is the best end for quick and complete results. When the customer comes in and after finding out what he wants, we take the name and address and put it on the ledger card; we also date this card. I have marked it Exhibit "A." This card is the stock card, called form B, of the Yawman and Erbe Co., Rochester, N.Y.



Resit slip Exhibit C.

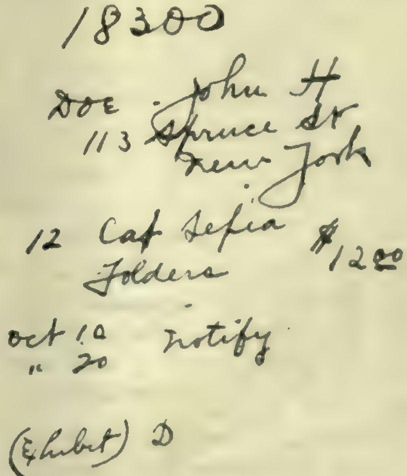
M Doe — John H

| | | | | | | |
|---|---|---|---|---|---|---|
| No. 18300 | Cds. | Cabs. | P. P. | 8-10 | 11-14 | 14-17 |
| | | ✓ | | ✓ | | |
| Negatives Made | | | | | | |
| Negatives Good | | | | | | |

Proofs Promised Date Oct 5-1910

Exhibit C.

Now, I shall try and tell you what we do with this ledger card before I go to any other branch of the system. We place a number on this card, which is the number our customer is known by throughout the system. All the negatives, of course, are given the same number. This number is got from the printed sitting slip, which I shall tell you about later. After your ledger card is numbered, it is then registered in your registration book, which no doubt we all have, for we need a register to find numbers for duplicates, resittings, &c. The card is then placed in a drawer marked "Sittings," which is one of a case of four drawers, and left in there until the proof has been returned for an order. When this proof is returned we get this card out, mark the order on it, with the amount due, and place it in the next drawer, which is marked "Orders." We also place in the lower corner of the card the date when the order is promised. These



18300

Doe - John H
113 Spruce St
New York

12 Cab Sepia $12.00
Folders

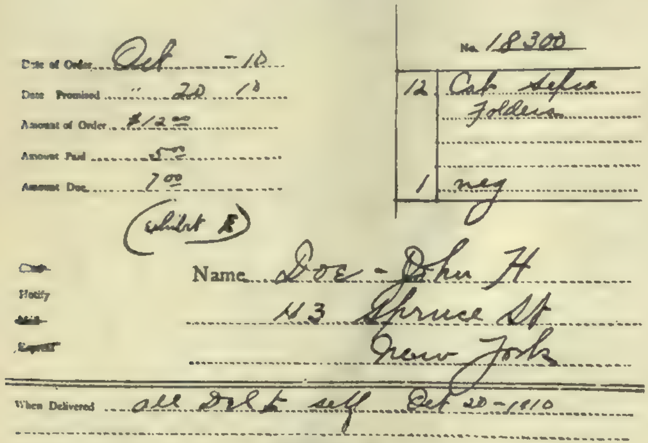
oct 10 Notify
" 20

(Exhibit) D

Exhibit D.

cards are all left in this drawer in alphabetical order until paid. When the amount has been paid in full, the card is taken out of the order box, credit given for the amount paid, red lined and placed in one of the other drawers, one marked men and the other marked women.

I am sure you will readily see the wonderful advantage in this system, for by the process of elimination you know at once by looking over your drawer marked "Sittings" the names and addresses of all your customers who have not returned their proofs; for if they had returned them the cards would be in the order box, and in your order box you know by the cards what money is due you; for if all these orders were paid the card would have been withdrawn, credit given, red lined and placed in one of the other boxes, consequently the money due is in such concise shape that it is no trouble once a month to go after each person who has not returned his proofs or not paid you. And by keeping on these cards the date of the time the order is promised you have all data convenient should a customer call.



No. 18300

Date of Order Oct -10

Date Promised " 20 10

Amount of Order $12.00

Amount Paid 5.00

Amount Due 7.00

| | |
|---|---|
| 12 | Cab Sepia Folders |
| 1 | neg |

(Exhibit E)

Notify

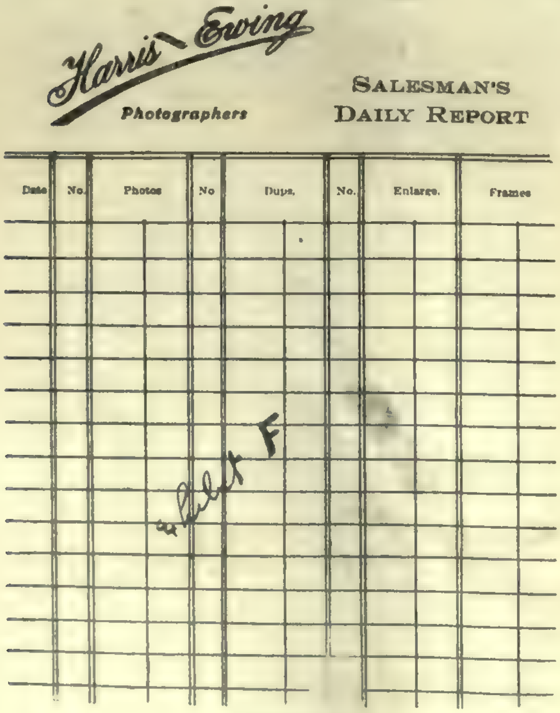
Name Doe - John H

43 Spruce St

New York

When Delivered all Del'd self Oct 20-1910

Exhibit E.



Harris & Ewing Photographers

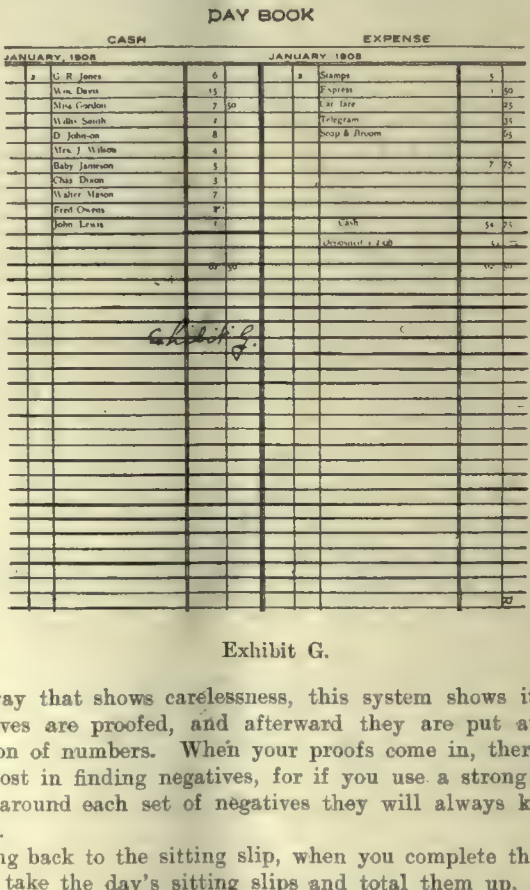
SALESMAN'S DAILY REPORT

| Date | No. | Photos | No | Dups. | No. | Enlargs. | Frames |
|---|---|---|---|---|---|---|---|

Exhibit F

Exhibit F.

At the same time we take the ledger card we take what we call a sitting slip, Exhibit B. There we also put the name, date, and we place a check under the sizes that the receptionist wants the operator to make. This sitting slip is sent with the sitter or otherwise to the operator, and he knows without asking any questions what the sitter's name is and the size to make; and when he has made his sittings he marks between the lines marked "Negatives Made" the number of plates exposed in the different sizes. This slip is then placed on one of the plate holders, holding plate exposed on this sitter, and put aside in the dark room. When the holder is emptied, the number that is on this sitting slip is placed on the exposed plate. These numbers are printed on your sitting slip by the printer when printing the slip, and run consecutively, beginning with any number that you choose. Next morning, when the plates are all developed and just before proofing, every plate that belongs to this sitting is identified with this sitting slip, through one of the plates being numbered. Then they are all numbered in some fashion, pen and ink being the easiest way. Now place on your sitting slips the number of negatives that you find good in the space opposite "Negatives Good." If any exposed plates have been destroyed by dropping out of holder, moved, scratched, or broken, or injured in any way that shows carelessness, this system shows it. The negatives are proofed, and afterward they are put away in rotation of numbers. When your proofs come in, there is no time lost in finding negatives, for if you use a strong rubber band around each set of negatives they will always keep together.



DAY BOOK

CASH — JANUARY, 1908

| | | | |
|---|---|---|---|
| 2 | C. R. Jones | 6 | |
| | Wm. Davis | 15 | |
| | Miss Gordon | 7 | 50 |
| | Wallis Smith | 7 | |
| | D. Johnson | 8 | |
| | Mrs. J. Wilson | 4 | |
| | Baby Jameson | 5 | |
| | Chas. Dixon | 3 | |
| | Walter Mason | 7 | |
| | Fred Owens | [illegible] | |
| | John Lewis | [illegible] | |
| | | [illegible] | 50 |

EXPENSE — JANUARY 1908

| | | | |
|---|---|---|---|
| 2 | Stamps | 5 | |
| | Express | 1 | 50 |
| | Car fare | | 25 |
| | Telegram | | 35 |
| | Soap & Broom | | 65 |
| | | 7 | 75 |
| | Cash | 54 | 75 |
| | [illegible] | [illegible] | [illegible] |
| | | [illegible] | 50 |

Exhibit G.

Exhibit G.

Going back to the sitting slip, when you complete the day's work, take the day's sitting slips and total them up, and by using a little book you can place opposite each day of the month the total of your sittings for that date. Your re-sitting slips are always of another colour from your original sittings, and you will notice by looking at Exhibit C that there is no number printed on this slip; for a re-sitting, of course, you would always use the first and original number, which will have to be looked up on your card system or negative register. These re-sitting slips are totalled and put in your book under the head of re-sits. Then you count up all the plates exposed which you get from all these slips and put them in your book under "Plates Exposed" or "Negatives Made," and under the heading "Negatives Good" put the number of plates good, that you also get from the sitting slip.

The original slips are then filed in rotation of numbers, fastened in some way for future reference. One illustration I shall give you: if a proof is returned with a number on it, you can easily locate the negative, for when you make your proofs you put the number on it which corresponds with the number of the negative you are proofing, and when this proof comes in without a name on it you can readily look on your sitting slips and find the name. The re-sit slips we have found of no value for keeping.

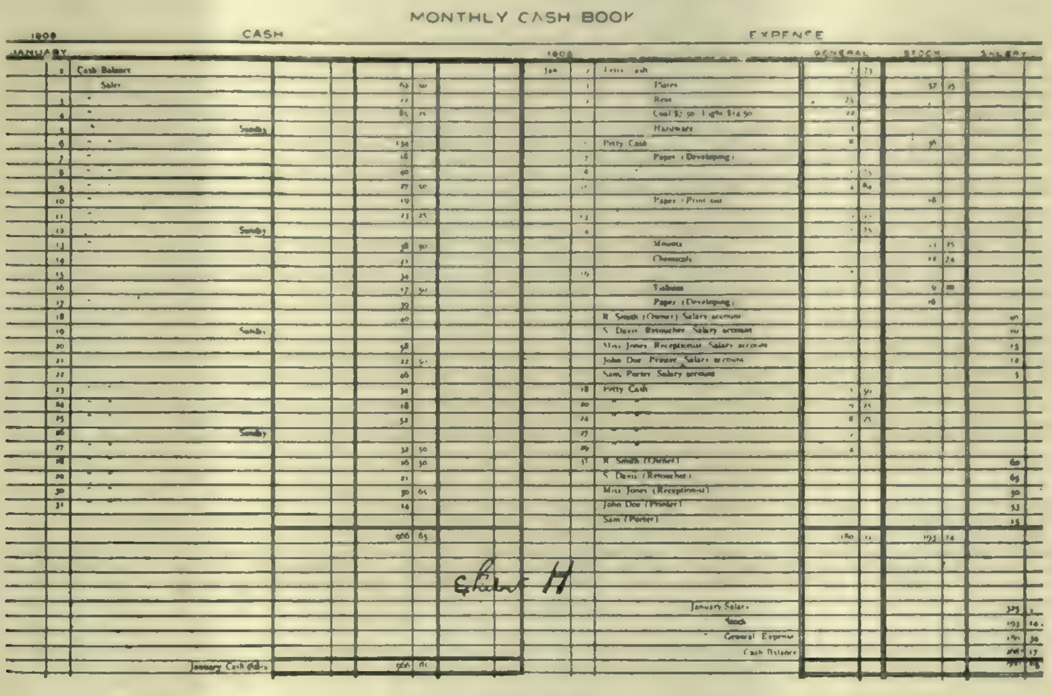
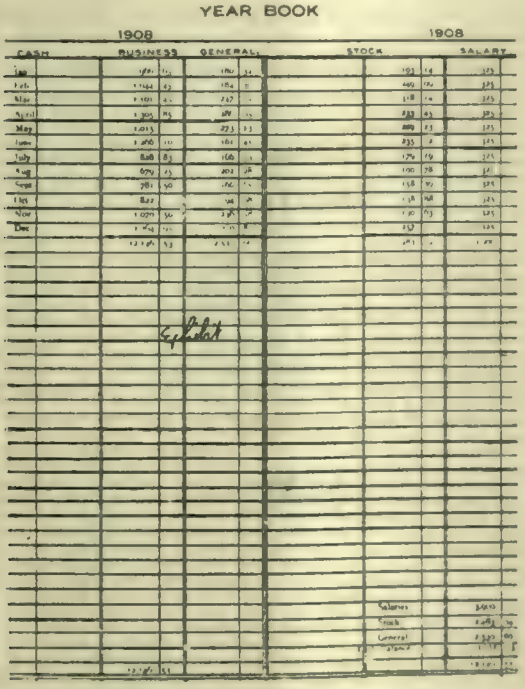

MONTHLY CASH BOOK

Exhibit H

Exhibit H.


YEAR BOOK

Exhibit

Exhibit I.

Now, if you will go back with me to the proofing of your negatives, you will remember that the negatives had been numbered. Place that number on every proof as you place the proof paper in the frame.

Always insist on your proofs being returned. Use the front of the proof to mark any changes by retouching and etching, and use the back of proofs for the order. Put on it the name of your customer, the address, the number of prints wanted, the kind, the finish, the kind of mounts, when the order was taken and when promised, and the amount that this order will cost. I have marked this proof Exhibit D. These proofs are thrown into a drawer by the receptionist, and when she has time she takes what we call an order envelope and writes this order on it. You will see what I mean by looking at Exhibit E. The reason for this envelope is first that all workmen watch the date promised, so that there is no reasonable

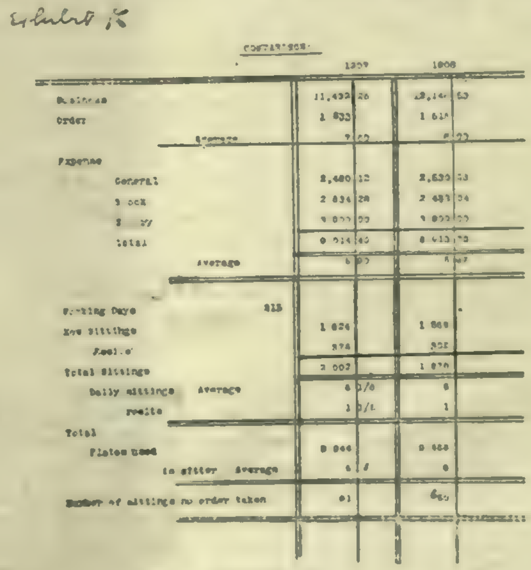


Exhibit K

Exhibit K.

excuse for customers being disappointed. The rest of the data on this envelope is made so that no one need ask questions, for it is complete itself. This envelope goes with the negatives until the printing room is reached, and then it goes with the prints to the finishing room for the finishers' benefit, and when it is returned to the receptionist she marks the amount due, or delivers them as she finds instructions on this envelope, and places the record down in the lower part of the envelope, when delivered, and to whom. This envelope is then filed according to number and proof held for duplicates.

In order that we can keep a line on our receptionist, we keep a salesman's daily record that I have marked Exhibit F. On this record under each day we total the number of orders taken and the amount of money, and place under the different heads on the sheet. All new orders of photographs go under the head of photographs, all duplicates go under that head, all enlargements and frames under their different heads. At the end of the month these are all totalled and an average made. The three items especially that are kept account of are the number of orders the receptionist takes during the month, the total amount of business and her average.

I think if you will study Exhibit G for a minute you can readily see the system of daily expense and cash. Exhibit H clearly shows the keeping of that cash by the month, and Exhibit I the keeping of your total business by the year.

Now I have come to the last and final analyses of our business, the comparison sheet. This is Exhibit K. By taking your business each month of each year (the one I am using is by the year), you will see that by referring to Exhibit F you will get your total business for the year, and also your orders. That, of course, will give you your average. By referring to Exhibit G you get your expense, and your expense is readily kept separate under three distinct heads, stock, salary, and general expense. We average this expense. We then take the number of working days in each year and place it next on our comparison sheet. By totalling your sittings and re-sits, you get your averages of sittings and re-sittings. Next we watch our plates used, and finally, by taking the number of orders made each year from the total number of sittings each year, we find the number of sittings we have taken new orders from.

In conclusion I wish to say that if this comparison sheet is kept honestly and accurately it will not be long before avenues of new business will be opened up to you, and you will see things to do that you never thought of before.

GEORGE W. HARRIS.

# SOME PROS AND CONS OF SUNDAY OPENING.

[Appropriately to the discussion on Sunday trading in photographic studios which is just now occupying a number of our correspondents, there appears in the current issue of the "Bulletin of Photography" the following article by Mr. C. H. Claudy, which we take the opportunity of reprinting, since it raises one or two points which have not been brought up by the writers in our own pages. We would say that in these days of cheap arc-light studio installations we do not ourselves attach great weight to the argument that a strictly week-day opening prevents a photographer from securing all the available business from the operative class of sitters.—EDS. B.J.]

ONE of you came to see me the other day. We talked of many things, and, among others, was the question of keeping open on Sunday. My visitor explained that he had a studio in a town of seven thousand people, with two competitors, and that one of these made a practice of keeping open a half a day on Sunday, and asked me if I thought he should do the same. I told him he had come to a poor place for advice on such a subject, because I didn't know his local conditions. But he insisted on having some sort of an answer, so we went into the question according to the only guide I had—plain, ordinary common sense. And, it seems to me, that must be your guide in determining your own policy towards the vexed question.

Leaving entirely out of the question any religious scruples, which will definitely answer the question in the negative for many, it seems to me that it is entirely a matter of (1) class of trade, (2) daily occupations of your customers, and (3) proportion of population to number of photographers operating in any given locality.

### Classes of Customers.

For instance, if you are in a large city, where there is an ample number of people to keep you busy, if you can only get hold of them, and you are able to keep running pretty well during the week, you may well find it pays dividends to keep closed on Sunday, in giving you and your staff a rest. But, even under such conditions, if your clientele is composed largely of those who find difficulty in getting off from work during the week, Sunday may be the very best day you have for sittings.

The higher the prices you charge and receive, I think, the less necessity you have for keeping open on Sunday. If your trade is among business men and their wives and families, professional people—lawyers, doctors, etc.—you will have no difficulty in getting a week-day sitting if you can get it at all; such people, those who pay from ten to fifty dollars a dozen for pictures, are just as able to come Monday as Sunday.

But if your trade is of the two- three- or five-dollar-a-dozen variety, or less, you will unquestionably have among your possible customers a great many who work in mills, factories and offices, as clerks.

### The Alleged Sunday Opportunity.

These people, as a general rule, are docked in their wages if they lose time during working hours, so that Maud, a factory operative, who wants some pictures for her family and friends, must pay for them, not only your charge, but an amount equal to her wages per hour multiplied by the number of hours she takes "off" to go home, get dressed, come to you for a sitting and return. Therefore, Maud is much more likely to patronise the man who keeps open on Sunday than she is to patronise you, because, admitting your prices and his are the same, she saves, in buying of him, the money the mill or factory would take from her wages for her absence while having her picture made by you.

Now, Maud's money is just as good as the money of Maud's employer's wife, as far as buying bread and shoes for your family is concerned. So that, if your local conditions are such that competition is keen, and there are mills, factories, or other commercial enterprises which employ a large number of operatives near you, and you depend on them for your custom, it would certainly seem that in failing to make Sunday appointments you are losing a valuable chance to increase your income.

### Sunday Extra Expenses.

Of course, no one can lose sight of the fact that you will have to pay your operator extra for Sunday work. But you do not have to maintain your entire staff for the Sunday sittings. You do not need either printer or receptionist, if you are willing to work yourself. But as between paying your operator an extra dollar or so, and getting anywhere from twenty to a hundred dollars worth of business on Sunday, and keeping the extra wages and losing the Sunday orders, it is obvious that there can be no choice, as far as the bank account is concerned.

But there is another side to the question which you cannot afford to overlook, and that is the moral effect of keeping open on Sunday on the rest of your patrons.

### Lost Business from Sunday Opening.

For instance, some churches are violently opposed to Sunday work of any kind. If you are a member of such a church, you will probably hurt your business a great deal more with those who should be your natural customers, if you keep open on Sunday, than you will help it with those who otherwise would go to your competitors. For, note well, there is a distinct difference between losing custom because you don't afford that custom an opportunity to buy from you, and losing custom by offending it and driving it elsewhere. The first doesn't bear you any ill-will or advertise you in a poor light to its friends. The second regards you, perhaps, as irreligious, and will say so, emphatically, to others.

One man I know tried to manage to please both classes of people by making only "special appointments" for Sunday work. That is, he did not "keep open" on Sunday for chance trade, but he made it a point to let people know that if they so desired he would make a special appointment for Sunday sittings. Of course, almost any of you will do that, if you are asked to do so—the difference here was that this photographer was not willing to do it if he was asked to do it, but that he asked his customers if they wanted him to do it.

### The Personal Factor.

And the final consideration is one not to be expressed in terms of either business or religion, but is one for each man to settle for himself—it involves a consideration of quality of work, and the settling of the question as to whether or not he cannot do so much better work by resting a day in every seven, that he really owes it to his customers to refrain from work on Sunday. There are some who are so worn out by Saturday night that to keep open Sunday, too, would mean a breakdown in a short while, for which no extra increment for Sunday business could pay them. There are others who believe that the day in the country, or with their families, is worth more than any money they might gain by Sunday work. And there are others who look first to the dollar, and whose constitution will stand continuous work and be unaffected by Sunday work at all.

So that the question, when you settle it, must be decided after all is said and done, and the common-sense angle well worked out, very largely by your own feelings, health and strength.

And this, substantially, is what I told my visitor, when he insisted that I should hand him a ready-made opinion.

C. H. Claudy.

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Assistants Fifty Years Ago.—A correspondent writes:—"Photographic assistants of to-day may be interested in the following advertisement which I came across in going through a file of a daily paper, published in 1858: 'Wanted, in a West End photographic workshop, an experienced workman. He is expected to manufacture the articles in greatest vogue, such as portraits of all sorts and sizes, landscapes, architectural pieces, etc., etc. For this purpose he should possess a knowledge of the fundamental principles of art, as composition, chiaroscuro, etc.; must have a competent knowledge of chemistry, and it is desirable that he should be of cultivated taste and intellect and gentlemanly deportment. Apply to A. B. C., etc.' A professional photographer's advertisement in the same paper says, 'Children's portraits cannot be taken between the 10th and 15th days of each month.'"

## BRITISH PHOTOGRAPHERS IN AMERICA.

As recently noted in these columns, Mr. William Crooke, of Edinburgh, and Mr. H. Walter Barnett, of London, have recently been enjoying the hospitality of Mr. J. C. Strauss, of St. Louis, a collection of their portraits being arranged in the Strauss galleries. The "St. Louis Star" prints an account of the event, illustrating its notes with two full pages of illustrations, mostly portraits taken at the Strauss Studio by the photographers assembled there to meet Messrs. Barnett and Crooke:—

"'The thing which impresses me most forcibly about the American women,' said William Crooke, probably the foremost photographer of Scotland, and one of the deans of the art photographic, 'is their magnificent carriage. They are beautifully set up, and their gait is wonderful—so much more graceful than that of our women, who are inclined to be slovenly in this respect.'

"The expression came in answer to a question asked of the great Scotch photographer, an exhibit of whose work, together with that of his equally famous London contemporary, H. Walter Barnett, of London, was on display at the Strauss Studio in St. Louis a short time ago. 'Leaving aside any flattery that you might feel inclined as the country's guest to offer, how would you say the American women compared with those of Europe, or your own country, as to beauty?' was the question.

"'They are very superior in beauty of face, figure, and carriage. Next to their carriage and gait, I would class their figures, on the average, as being very good, and far superior to those of European women. Your women not only have good figures, but they wear their clothes close to them, in a manner which brings out the perfection of lines to the best advantage. They do not bedeck themselves with a lot of the unnecessary ribbons, frills, and fol-de-rols. In this respect, also, our women are somewhat behind those of your country.'

"'As to beauty of face, conditions in your country have developed a type of beauty distinctly different from any of the older countries, but it is what is known as a composite type.'

"'Some years ago students of sociology in several of the larger universities of your country made what they termed "compositype" pictures, which were declared to be an average towards which the American type was approaching. These pictures were secured by combining the characteristic features of several thousand young women and young men.

"'I find that the average to-day is approaching very close to this type. Your women are regular of feature, and the lines of the face approach more nearly the classical features of the ancient Greeks, who still remain the models of female beauty. I believe that your country can boast of more beautiful women than any other I know.

"'I do not necessarily mean to imply, however, that I find your women any more fascinating than those of my country. Our women are more irregular of feature, but that very fact gives a new interest, and a new subject for study, in every fresh face.'

"Both Messrs. Crooke and Barnett were surprised at the number of photographic studios to be found in every American city. 'I think that your people must be fonder of being photographed than ours,' said Crooke. 'In Princes Street, the principal thoroughfare in Edinburgh, where my studio is located, there are perhaps five or six studios, whereas in Fifth Avenue, New York, there are perhaps fifty or sixty.'

"'How do our homes appeal to you?' was asked. 'We have sometimes been criticised on the conglomeration of types—the soft and the severe set side by side.'

"'In motoring about the city, it struck me as being truly a "city of beautiful homes." To my mind the varieties of styles are not inartistic. In fact, each serves to set off its neighbour, and bring out the stronger, by contrast, each point.'

"The exhibit of the work of Crooke and Barnett was made the occasion of the gathering, at the Strauss Studio, of some of the foremost photographers of the country, and Europe. The list included Henry Havelock Pierce, of New York and Boston; Eugene Schwartzwald, of Berlin, Germany; Fred. Feldman, El Paso, Texas; S. L. Stein, Milwaukee; William Doty, Battle Creek, Michigan; and Frank Rheinhart, Baltimore.

"Among the plans for the entertainment of his guests, J. C. Strauss devised a contest, and sought about for a subject. Miss Maude Hellman, of 4,954, McPherson Avenue, happened to be in the studio, and was displaying much interest in the exhibit. She was asked to pose for the photographers, and graciously consented to do her part to make the meeting a success.

"Each photographer was allowed the use of the model for ten minutes. If the costume in which she appeared did not suit, part of the time was consumed in changing it. This necessitated very rapid work.

"'What impressed you most, in the experience?' was asked of Miss Hellman.

"'The most lasting impression that I gained was that each and every one of the men for whom I posed was an artist. The way in which they worked showed it in every movement. There was no laboured attempt to fix and fuss with their subject. They merely told me what position they wanted me to assume, and let me take it in my own natural way.

"'The work of some of the men was wonderful. Pierce had me change my costume twice in the ten minutes, and yet managed to take ten pictures. His hands fairly flew, and his instructions were terse and full of meaning. On the other hand, one of the other men took but three pictures in the ten minutes, although none of his time was taken up in costume changes.'

"After all the photographers had photographed Miss Hellman, bringing out their ideas, she asked to be allowed to assume a pose which would bring out her own idea of beauty in pose, and after much good-natured raillery, she was pictured in a pose of her own choice. The entire company agreed that her idea, although differing from that of any of theirs, was good."

## Photo-Mechanical Notes.

### The New Printing Journal.

The first issue of the new American monthly, "The Graphic Arts," is now before us, and fully justifies the promise of its promoters. The whole arrangement is in admirable taste. The cover design is superior to the one that was issued with the prospectus, and all the text is printed in Caslon original old style type. This looks excellent, and should be a revelation to some of our own technical magazine printers as to the possibility of combining both beauty and readableness. There is surely no reason that because a piece of printing is technical or commercial, it should therefore not make any pretence to tasteful production. Even the advertisements, as far as possible, are set in the same type; those, in fact, that are evidently printed from electrotypes supplied, look inferior by the contrast.

The most interesting features from the photo-engraver's point of view are the two examples of colour half-tones printed on rough paper by the offset method. These are what we have not yet seen in England, viz., examples of colour work that is really pleasant, and not so painfully crude and garish as the specimens we have hitherto had the misfortune to see. There are, of course, many other photo-mechanical illustrations, direct three-colour from nature, and half-tones on dull-finish paper, as well as ordinary half-tones.

The articles are interesting. All more or less advocate efficiency, and the improvement of quality in printing and illustrative matter. We should think that everyone who wishes to keep informed of what is being done in high-class commercial printing and illustration will desire to have regularly "The Graphic Arts." The foreign subscription price is $4 per annum. The publishers are the National Arts Publishing Co., New England Building, 200, Summer Street, Boston, Mass.

### Soar's Method of Making Relief and Intaglio Printing Plates.

For relief plates, an ordinary sensitised metal plate is printed behind a reversed photographic positive or transparency. After printing, the plate is developed by certain salts, whereby chemical action is set up between the chemicals and the metal of the plate corresponding to the light action on the bichromated particles held in the emulsion. The working, briefly, is as follows:—Coat, say, a zinc plate with bichromated fish-glue emulsion. A good working proportion is 6 to 8 per cent. of the bichromate of ammonium to the glue in sufficient water to allow easy flowing of the plate. Whirl, dry, and print the plate by light behind a plucky reversed positive or transparency. Then develop in the following bath:—

| | |
|---|---|
| Saturated solution of copper sulphate ............ | 2 ozs. |
| Saturated solution of ammonium chloride......... | 1 oz. |
| Saturated solution of ammonium bichromate ... | 1 oz. |
| Chromic acid crystals ...................................... | 10 grs. |
| Methylated spirit ............................................. | ½ oz. |
| Water ................................................................ | 4 ozs. |

The precise strength will vary according to the exposure, the thickness and nature of the emulsion and to other factors.

The ammonium chloride acts as an accelerator. The bichromate hardens the glue unacted upon by light.

On flooding the plate a chemical action is at once set up with the metal, a granulated deposit being formed on such parts of the plate where the emulsion has been acted upon by light and proportionate thereto.

When the picture shows in a black deposit corresponding to the high-lights and blending through the intermediate tones to clear shadows, development is complete and the plate is ready to be burnt in and etched, a weak etching bath being preferable, say, 1 part nitric acid to 80 parts water. In a correctly etched plate the high-lights of the original will be etched away with only a few surface dots, the tones being discriminated in spots more or less close together with the deep shadows held up entirely. The whole forming a cliché, from which ink prints can be pulled in the press similar in light and shade to a photographic print obtained direct from the negative.

For intaglio plates, the metal print is made from a negative without reversal, all the manipulations being the same as in the relief etching just described, the surface spots in the shadows and tones supplying the ink-holding recesses necessary for the successful printing of photogravure plates.

Such plates will be found exceptionally useful for three-colour printing, as nothing is lost in the tones, whilst the high-lights are perfectly clear, for by these processes every gradation in the original is absolutely rendered. Other metals with other formulæ are available.

In some cases etching right out without burning-in can be successfully accomplished. For this purpose ammonium sulphocyanide with the copper sulphate and ammonium bichromate is adaptable.

Another method is to mix, into a thin paste, plaster of Paris with the bath solution first described. This is poured on to the emulsion-printed metal plate. When dry, the decomposed portions of the emulsion will leave the plate with the hardened cement. The plaster of Paris cast forms a mould for making a stereo or for electrotyping, whilst the metal plate can be etched. Here we have a relief and an intaglio plate made from the one print.

The sensitised metal plates, after being developed and burnt-in, will yield prints by simple contact with certain metallic salts held on paper or other support. For instance, a piece of P.O.P. slightly damped with weak ammoniated water, or even plain water, and pressed into contact with the metal plate which has been carried up to the point ready for etching, will give a deep black print, sharp as copper-plate work. Such prints can be toned by well-known methods to other colours.

Further, these contact prints, as well as ordinary P.O.P. prints from negatives, can be passed through the first-mentioned bath—reduced some ten times in strength—which induces them to have affinity for fatty inks, somewhat on similar lines to bromoil work. Such can be utilised for the making of ink transfers, their sharpness being especially favourable for this purpose. A method of collotype also suggests itself. The process indeed opens out many possibilities as to its usefulness. The elements of the process and some side issues are here described. On such foundations much may be formed, more than I feel able to carry out on my own initiative, hence my submitting it for the benefit of others.

Henry Soar.

[We should be pleased to see any results of the process described above, if the inventor will kindly send them, or to have the experience of any of our readers who may be tempted to try the method.

We must confess that our own first attempt has not proved successful.—Eds. "B.J."]

### The Advantages and Disadvantages of Offset Printing.

"Swain's Quarterly," No. 23, has an admirably sane summary of the arguments for and against offset work from the photo-engraver's point of view, in which it is conceded that this method is extremely useful, inasmuch as it enables glazed-surface papers to be avoided and rougher, lighter papers, pleasanter to the eye, and more economical both to purchase and send through the post, to be used. On the other hand, letterpress methods are not likely to be displaced when very sharp, brilliant results are required, as, for example, in catalogue illustrations of machinery and other objects in which the delineation of detail is of the utmost importance.

### PHOTO-MECHANICAL PATENTS.

The following patent has been applied for:—

Colour Printing.—No. 2,533. Multiplication of intaglios for photographic colour-printing by rollers. Charles William Saalburg.

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# Exhibitions.

## GLASGOW AND WEST OF SCOTLAND AMATEUR PHOTOGRAPHIC ASSOCIATION.

The Association ushered in their annual exhibition of members' work by the annual dinner, when Mr. Thomas Calder presided. The prize for the best picture in the exhibition was gained by "The Exchange Arch—Night," by John McClure, one of the pictures in the class for "Pictures in the City"—a class that proved that the G. and W. of S. members are not unobservant of the beauties of Glasgow. A new class, reserved for members who had gained the Association award for prints, contained much good work, and we were pleased to see a plaque awarded to "A Castle of Romance," by James McKissack, a picture that was much admired at the Salon as a praiseworthy rendering of the real, idealistically treated. Mr. McKissack had also a non-competitive exhibit of seven pictures.

The full prize list is as follows:—

Champion Picture.—"The Exchange Arch—Night," John McClure.

Class I. (open only to members who have gained the Association award for prints).—Plaques: "The Firs" (2), John Currie; "A Castle of Romance" (8), James McKissack; "The Willows" (16), Harry Thomson; "The Fruit Seller" (19), John Currie. Honourable mention: John Currie, James McKissack.

Class II. (open to all members).—Plaques: "Outward Bound" (22), Harold J. Black; "Industry" (24), Alex. G. Watson; "Market Day" (46), John Currie; "The Church on the Hill" (47), Charles J. Bryden; "Early Morning, Whitby" (54), John Martin; "Jim" (93), James Hamilton. Honourable mention: D. Longmuir, Peter W. Gibb, H. J. Henry, John Currie.

Class III. (open to members who have never gained an award).—Plaques: "Pine and Bracken" (134), David L. Taylor; "In Old St. Ives" (144), W. R. Muir; "In the Shade" (149), David L. Taylor; "Dumfries Bridge" (164), R. G. McInnes, Jun. Honourable mention: B. Yamashita, R. G. McInnes, Jun., James Dunn.

Class IV. (Pictures in the City).—Plaques: "A Place of Rest" (176), John A. Stewart; "Evening on the Clyde" (187), Robert Ure; "The Exchange Arch—Night" (192), John McClure; "Spring in Kelvingrove" (196), John A. Stewart. Honourable mention: James McArthur, John A. Stewart.

Class V. (Autochromes).—Plaque: "Woodland" (204), John Sawers. Honourable mention: John Sawers.

Class VI. (lantern slides).—Plaques. "Falls of Pissevache" (223a), Thomas Calder; "In a Light Breeze" (230d), W. H. Wilson; "A Norwegian Waterfall" (235c), Robert Ure. Honourable mention: W. H. Wilson, James Baillie, Thomas Calder.

## QUEEN'S PARK (GLASGOW) AMATEUR PHOTOGRAPHIC ASSOCIATION.

The Queen's Park Association are holding their fifth annual exhibition, February 8-18. The championship for the best picture was gained by "The Race" (69), by Charles Heath. Mr. Arch. Cochrane judged. A high level of excellence is attained, with the landscape class in the ascendancy; so much was the judge impressed with this class that he gave five medals in it. There were four classes for prints and two for lantern slides.

The prize list is:—

Class A.—Bronze medals: H. G. Black, A. G. Watson, Charles Heath, John Baird, Eric Mackay. Honourable mention: John Cuthbertson, Chas. C. Graham.

Class B.—Silver medal: Charles Heath. Bronze medal: John Cuthbertson. Honourable mention: A. G. Watson

Class C.—Bronze medal: R. Armour. Honourable mention; John Thomson.

Class E.—Silver medal: H. J. Black.

Class F (lantern slides.—Bronze medals: John Baird, H. W. Wilson. Honourable mention: John Cuthbertson.

Class G (novice—slides).—Bronze medal: W. Stanley Boyle. Honourable mention: John Cuthbertson.

In the Invitation Class, pictures were forward from Messrs. Bertram Park, Frank H. Read, and J. C. Warburg, London.

The evening's entertainments consisted of lantern lectures, the Federation and competitive lantern slides.

## GLASGOW EASTERN CO-OPERATIVE CAMERA CLUB.

The Glasgow Eastern Co-operative Camera Club held their annual exhibition in their rooms, 2, Sword Street. Considering that most of the members are beginners, the work shown gave much promise for the future, in addition to achievement in the present. Mr. W. J. Hart judged, and awarded the silver medal for the best picture in the exhibition to "A Pastorale," by John Hepburn. The Scottish Federation Folio on show during the exhibition was a decided acquisition.

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## FORTHCOMING EXHIBITIONS.

**February 11 to 18.**—Aberdeen Photographic Association. Sec., J. A. Brodie, 48a, Union Street, Aberdeen.

**February 25 to March 11.**—Birmingham Photographic Society. Sec., T. Matthews, 60, Newhall Street, Birmingham.

**February 25 to March 11.**—Edinburgh Photographic Society. Entries close February 16. Sec., J. C. McKechnie, 31a, Castle Street, Edinburgh.

**March 3 to 18.**—Northern Photographic Exhibition (Liverpool). Entries close February 17. Sec., C. F. Inston, 25, South John Street, Liverpool.

**March 6 to 9.**—Worthing Camera Club. Entries close February 24. Sec., E. F. H. Crouch, 11, South Street, Worthing.

**March 11 to April 8.**—South London Photographic Society. Entries close February 18. Sec., Horace Wright, 180, Friern Road, East Dulwich, London, S.E.

**March 15 to 16.**—Bedford Camera Club. Entries close March 3. Sec., C. E. Craddock, 194, Castle Road, Bedford.

**March 20 to 21.**—Folkestone and District Camera Club. Entries close March 9. Sec., Hamilton Smith, 20, Radnor Park Crescent. Folkestone.

**March 23 to 25.**—Beith and District Arts and Crafts Club. Sec., J. Peat Millar, 40, King's Road, Beith.

**March 25 to April 1.**—Sunderland Photographic Association. Sec., Wm. E. Kieffer, Stirling Road, Sunderland.

**March 28 to April 1.**—Sheffield Photographic Society. Sec., C. H. Parker, 67, Wadbrough Road, Sheffield.

**March 29 to April 1.**—Bolton Camera Club. Sec., J. E. Button, 491, St. Helens Road, Bolton.

**May 8 to 31.**—Royal Photographic Society. Latest date, carrier, April 24; hand, April 25. Sec., J. McIntosh, 35, Russell Square, London, W.C.

**May 12 to 20.**—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 25, Harp Alley, Farringdon Street, London, E.C.

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Enlarged Negatives by Reversal.—We must correct two errors in the translation of the article by M. Ch. Jung on this subject which appeared on page 98 of our issue of last week. In the amidol developer (par. 5), the quantity of water should be 100 ccs; and in the last line of par. 5 the time of exposure to light should be 45 to 60 *seconds*.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between January 30 and February 4 :—

DARK-SLIDE.—No. 2,426. Carrying and exposing in the camera sensitive photographic dry plates or films. Frederick MacKenzie and Agnes Wishart.

LENSES.—No. 2,619. Lenses for projection and photography. Conrad Beck and Horace Courthope Beck.

SENSITIVE PAPER.—No. 2,364. Paper or other material having a surface sensitive to light or chemical action. Joseph Samuel Beeman.

CAMERAS.—No. 2,854. Photographic cameras. William Arthur Steward, for Charles Kenrick Steward, Canada.

SECURING PHOTOGRAPHS TO BOXES.—No. 2,693. Means for securing photographs, pictures, monograms, and the like to boxes and cases. Charles H. Pugh, Ltd., and George Frederick Bull.

X-RAY MIRROR.—No. 2,279. Plane mirror at the surface of an X-ray picture to determine the direction of any part depicted. William Cotton.

CINEMATOGRAPHS.—No. 2,444. Cinematograph apparatus. Arthur Hibbert Diggle.

CINEMATOGRAPH.—No. 2,500. Cinematographic films with central coating of emulsion. Compagnie Générale de Phonographes, Cinématographes et Appareils de Precision.

CINEMATOGRAPHS.—No. 2,723. Cinematograph apparatus, magic-lanterns, and the like. Hyman Cohen.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

MOUNTING ON TRANSPARENT SUPPORTS.—No. 16,560, 1910 (October 11, 1909). The invention has reference to a process for transferring all kinds of coloured and black prints on to any kinds of supports, and more particularly transparent supports, such as celluloid, gelatine, transparent cellulose, glass, mica, etc. It has already been proposed to effect such transference to celluloid by coating this support with one of its known solvents, and then pressing the material (paper), carrying the picture on to the same, the paper being subsequently withdrawn. As compared with this known process the present invention permits of transferring, not only to celluloid, but to any hard substance, such as glass, mica, by coating the same with a solution of celluoid, the design to be transferred being applied thereto and placed in a heated press. When the sheet is firmly stuck to the support the whole is withdrawn and allowed to cool and then plunged into a special bath for ten to twenty minutes, after which the paper can be withdrawn, leaving the design transferred to the other support.

As an example, this process will now be described as applied to a transference made on a sheet of white transparent celluloid. The sheet of celluloid having been cleaned, it is coated with a layer formed by a solution of celluloid in a mixture of acetone and alcohol, or with any other suitable solution of the same. The picture that it is desired to transfer is then spread on the surface thus prepared, and the whole is then submitted to the action of a press heated to a temperature of 70-80 degrees C.

When the sticking of a sheet of paper provided with the impression is obtained, the whole is withdrawn from the press and allowed to cool.

After cooling, the sheet of celluloid, thus stuck to the printed sheet, is placed in a bath composed as follows :—

| | |
|---|---|
| Rain water or boiled water | 1,000 ccs. |
| Carbonate of potash | 100 ccs. |
| Arsenious acid | 10 ccs. |
| Hydroquinone | 15 ccs. |

After an immersion of 10-20 minutes, according to the thickness of the paper on which the print has been made, the paper will easily be unstuck. The sheet of celluloid, together with the paper print, is removed from the bath, and the sheet of paper completely separated from the celluloid sheet, and a perfect picture is obtained on the sheet of celluloid. The latter is then washed in running water and dried. The picture thus obtained is very permanent, and can be subsequently washed without any danger.

This transference may then be coated with a layer of white transparent varnish of a layer of colour, mixed with a solution of gum lac or the like. When this varnish is a colour varnish a coloured ground can be obtained.

Other constituents may be employed in composing the above bath, due regard being paid to their proportions; the carbonate of potash may be replaced by carbonate of soda, hydroquinone may be replaced by almost any of the substances employed in photography for developing; but the composition given above is that which has given the best results.

In order to obtain certain effects the picture may be transferred on to transparent celluloid of any desired colour instead of on to white transparent celluloid. When it is desired to transfer the picture to glass, transparent cellulose, mica, etc., it is necessary to coat the surface of these materials with a solution formed preferably by dissolving celluloid in acetone, mixed with alcohol, the other operations being exactly the same.

When it is desired to transfer a picture on to a sheet of white or coloured transparent gelatine, the latter will be previously immersed in a tanning bath, such as a bath of formaline, for the purpose of rendering this gelatine insoluble in water and unaffected by heat, and thus the sheet of gelatine may be exposed to all the operations above described.

Instead of employing coloured supports, when it is necessary to transfer to supports which have a ground colour, white supports may be taken and the celluloid solution may be coloured to the tone desired. If desired, a portion of the support may be coated with a celluloid solution, coloured in one tone, and the rest of the surface of this support may be coated with a celluloid solution, coloured in another tone, and thus very various ground effects may be obtained by coating various portions of the support with different coloured solutions.

The transparent paper or paper made transparent may also be utilised as support, celluloid dissolved in acetone mixed with alcohol being spread over it, and the same operations are carried out as those above described. This paper can subsequently be varnished on one or both surfaces with a layer of white or coloured transparent varnish. Thus by means of this process any black or coloured impression, printing type, lithographs, architectural drawings may be transferred. Charles Rosier, 128, Route d'Orleans, Montrouge, Seine, France.

ADJUSTABLE REPEATING BACK.—No. 3,557, 1910 (February 14, 1910) The invention relates to repeating backs of cameras provided with an aperture the full size of the plate, which aperture can b reduced in size, from the full size of the plate or film to any siz or shape (upright, oblong. or square) down to half an inch square if desired. These reductions and alterations of size an shape are accomplished by two simple movements.

A movable dark-slide carrier and ground glass focussing scree are also provided. The dark-slide carrier is arranged to tak the three-coloured light-filters used for three-colour photography The object of the present invention is to dispense with all loos parts and make the apparatus entirely self-contained.

A represents the back or base board. B denotes the apertur the full size of the sensitive plate cut out of the centre of bas board. C denotes two side guide frames screwed on the face c the base board, the full length of the board and flush with th edges. These guides have a narrow groove in one edge runnin the full length in which two thin metal plates or slides D work These plates meet in the centre of the aperture cut in the bas board and slide outwards until the whole length of the apertur is open.

The metal plates D are operated by two racks E and one pinio F. One rack is fixed to each plate with the pinion workin between them. The racks and pinion are sunk into the edge c one of the guide frames. The pinion coming up through the frame has a milled head G fixed on the top.

The turning of the milled head works the metal plates out and in, thus an aperture can be formed any size and always central.

In each of the guide frames C a groove is cut the full length of the aperture in the base board.

In these grooves a small spiral spring roller H works. On each of the rollers is fixed one edge of a piece of closely woven fabric I, and on the other edge of the two pieces of fabric is fixed a piece of thin metal J. On one end of each piece of metal a staple is fixed, having screwed holes in staple $K^1$ to receive a thin screwed rod L, and plain holes in staple $K^2$ in which one end of the rod revolves without moving this staple along the rod.

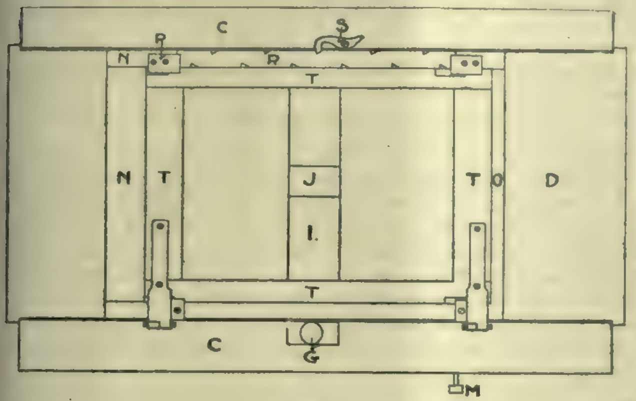

Fig. 1.

The other end of the rod projects through one of the guide frames and has a milled head M fixed on the end.

On turning the rod by means of the milled head, the screwed staple $K^1$ with its thin metal edge and fabric is moved along the rod, making the aperture between the two metal edges any size required, but instead of being always central as is the case with the metal plates D this aperture can be moved to any position across the base board by pulling the rod out or in, according to the position the aperture is required to occupy on the sensitive plate. The spring rollers take up the fabric and let it out by winding and unwinding as the aperture is moved across the base board.

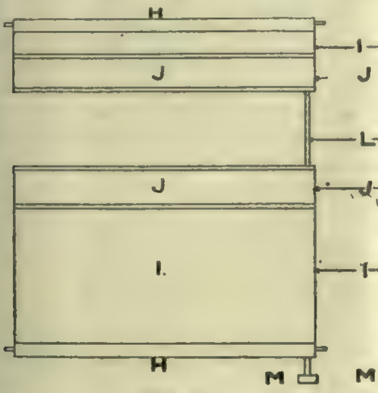

Fig. 2.

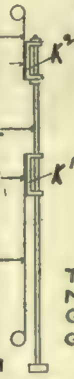

Fig. 3.

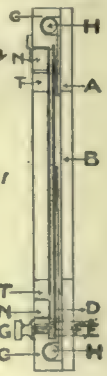

Fig. 4.

The dark-slide carrier-frame N slides between the guide frames C by tongue and groove arrangements. It has two sides and one end only—the other end being open to allow the dark-slide shutter to be drawn out, for exposures.

The slide-carrier has a double bottom $X^1$ and $X^2$ Figure 6, with an aperture cut in both, the full size of the sensitive plate. There is a space U between the bottoms, sufficient to allow the three coloured light filters, used in three-colour photography, to be slipped in.

T represents the frame of the ground glass focussing screen, which may be hinged either to the side or end frame of the slide-carrier N.

On the top side of the slide carrier two metal keepers P are fixed, into which a notched bar R is dropped. A clutch S is screwed on to the guide frame C and drops into the notches as required.

There would be a number of these bars required with notches at different distances apart on each bar to correspond with the different sizes of photographs, but in order to make the apparatus entirely self-contained the bars are dispensed with and one single brass tube with a number of rows of small holes (instead of the notches in the bars) substituted, a suitable clutch S dropping into the holes. The brass tube is fixed in position on an axle-pin at each end, and is rotated until the required row of holes comes in line with the point of the clutch.

The manner of operating the apparatus is as follows:—Place it in the camera in the same way as the ordinary back. When any of the smaller sizes of photographs are to be taken (say, ¾ inch wide and 1 inch deep) turn the milled head G until the aperture formed by the metal plates D is ¾ inch wide. Rotate the brass tube R until the row of holes ¾ inch apart comes in line with the point of the clutch S. Then turn the milled head M until shape $K^1$ with its metal edge and fabric is one inch from staple $K^2$. This makes the aperture 1 inch by ¾ inch, through which the light passes to the sensitive plate. Focus in the usual way, slide the carrier N until the clutch is in the first hole in the tube R. Insert the dark slide and make the exposure. Lift the clutch and slide the carrier to the second hole for the second exposure, and so on until the row is finished. Then for the next row shift the position of the aperture by drawing out the screwed rod L by means of the milled head M and repeat the above operations until the plate is filled, when there will be thirty-two separate exposures on one half-plate. The same operations apply to every other size or shape. John Lambie, Hamilton Cottage, Troon, Ayr, Scotland.

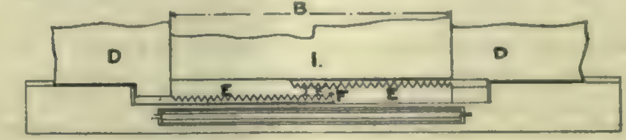

Fig. 5.

## New Trade Names.

Knipsi.—No. 329,303. Photographic apparatus included in class 8. Knipsi Manufacturing Co., Ltd., 3, Budge Row, London, E.C., manufacturers of photographic apparatus. December 14, 1910.

Zoëscope.—No. 329,734. Portrait cinematograph apparatus included in Class 8. Brewer and Hargrave, 16, Henry Street, Dublin, photographers. January 2, 1911.

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## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Photographing Machinery in Position.

The "pose" of a piece of machinery (writes Mr. C. E. Goodchild in "Photography and Focus" for February 14) may seem a strange expression, yet this is a subject which must have very careful attention if the photograph is to show it at its best. Reciprocating parts should not be shown at the end of their travel; their function and form are much easier seen, as a rule, if they are in some intermediate, but not exactly intermediate, position. Even such a detail as a row of lubricators, or of cocks or switches, looks better if they are all arranged in the same position.

As far as the surroundings of the machines are concerned, in my own case there has been little trouble. They are generally erected in a building with limewashed walls, without other mechanism intruding upon them, and when the walls have been dark in colour a bucket of whitewash has made all the difference. When this was impossible I have got a similar result by covering the walls with newspaper. The floor can be left as it is, or, if a light floor is wanted to show the boundaries of the apparatus it may be lightly sanded. A banner, made by gumming together a number of newspapers and mounting them on a light framework, is sometimes very useful. It may be carried by a couple of labourers, who are instructed to keep moving it about during the exposure. It will then show no irregularities or printing, but will appear as a plain light grey background.

Although daylight is generally available, it often simplifies the work considerably if it is not used. In most cases the daylight comes from the only direction in which the camera can be placed, and this gives a flat lighting. Moreover, if the camera has to be in an open doorway, or even out-of-doors, looking into a dark building, an exposure long enough to show the machinery will nearly always be found to give a foggy negative, presumably from light reflected from the lens mount, flare, etc. In such a case I prefer to get all ready by daylight, and then to wait until dark, when the work can be photographed by magnesium ribbon.

### Two Difficulties in Time Development.

We have the assurance of those who ought to know (writes Mr. E. H. Binney in the "Amateur Photographer and Photographic News" for February 14) that the best way of developing a negative is to put it for a definite time in a definite developer at a definite temperature; and this is undoubtedly true. If, however, a different brand of plate or a different developer is being used, or the temperature cannot be controlled, variations will be introduced, which can be allowed for, but none the less complicate matters.

There is another cause of error, which I do not remember seeing mentioned—stale solutions. I have found that either a pyro-soda or a metol-hydroquinone developer that has been kept for many weeks cannot be depended upon to work at the same speed as one freshly mixed, though it will develop the plate well enough if it is allowed time—I am speaking of a developer that is not so stale as to have become noticeably discoloured. I suppose the reason is in the decomposition of the sodium sulphite contained in it, as the use of a new solution containing that substance removed the difficulty.

It is easy to say: never develop in a very cold dark-room, but sometimes one cannot wait; or to say: never use a stale developer; sometimes one must use what is ready. The fact is that the average amateur, who develops plates at irregular times, cannot always secure good conditions, and it is better to remind him that the system of time development, excellent as it is, is not one that can be followed blindly.

### Cleaning Conical Measures.

The following useful hint is given in the "Photographic Times" for February:—"Doubtless many photographers have experienced the exasperating difficulty of cleaning the bottoms of those glass measures of the conical shape. Dirt settles down at the bottom, and, by reason of its being very difficult to reach, is often allowed to collect, and in time this sticks to the glass and becomes very difficult to remove at all. Often nothing short of hydrochloric acid will get rid of it. This trouble may easily be avoided by inserting a pair of glove stretchers, over the points of which has been placed a finger-stall cut from an old white kid—or, better, chamois-leather—glove. If this is done regularly it will prevent all possibility of impure solutions with a minimum of trouble."

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The Fallowfield Smoker.—The annual smoking concert of the firm of Jonathan Fallowfield's staff and trade friends was held last Friday, February 10, in the Queen's Hall of the London Tavern, Mr. F. W. Hindley in the chair. There were nearly 300 present, including Messrs. J. B. B. Wellington and H. W. Hall (Wellington and Ward), J. Hill (Imperial Dry Plate Co.), F. E. Greenwood (Elliott and Sons, Ltd.), S. H. Fry, and A. Mackie. An excellent programme arranged by Mr. Finlay Dunn kept the company admirably entertained until a late hour.

In reply to the toast of "The Chairman," proposed by Mr. H. W. Fellows, and accorded with musical honours, Mr. F. W. Hindley expressed his great gratification at again meeting all the members of his staff and so many trade friends, and thanked the company for their decision to send a special message of best wishes to his son, Mr. Duncan Hindley, whose absence in Malay they all regretted.

# New Books.

The Inventor's Adviser on Patents.—An eighth edition of this well-known manual by Mr. Reginald Haddan has just been issued by Messrs. Harrison and Sons, 45, Pall Mall, S.W. The author has thoroughly revised his text as necessitated by the Patents Act of 1905, but the general arrangement is retained, and we can speak from long past experience in consulting the pages of previous editions as to the convenience and reliability of the information concerning the technicalities of patent law and trade mark registration. Unlike many other works on patents, the manual gives the official particulars as to the actual fees and formalities of the patent offices of foreign countries, a section of particular usefulness to the British inventor considering whether or not to spend money on protection in other countries than Great Britain. Price 5s.

Merck's Index.—A third edition of this valuable reference work concerning the fine chemicals manufactured by the renowned Darmstadt firm reaches our table from the London house of Messrs. Merck, 16, Jewry Street, E.C., by whom it is published, price 6s. 6d. net. Although issued in German, the volume brings together such a mass of condensed information on chemical substances that as a reference book for those engaged in photographic chemical work it is nevertheless a most valuable publication, the particulars referring to the substances as manufactured in a state of high purity in the Merck laboratories.

"Agenda du Photographie" (Paris, Charles Mendel; price 1 fr.).—The seventeenth annual issue of this publication, issued primarily for the French amateur photographer, contains, as before, a diary, with space for fifteen entries for each day of the year, articles on practical and scientific topics, together with formulary and tables for the chief photographic processes. It includes also a directory of amateur photographers in France, her colonies, and neighbouring countries, as well as a list of hotels in France possessing a dark-room. A useful publication to those travelling or holiday-making in France.

# New Materials, &c.

The Gardiner Album.—A welcome novelty in albums has just been introduced by Messrs. J. P. Chapman, Ltd., Albert Square, Manchester, under this title. It is devised for the holding of prints which would otherwise be carried loose in the pocket or pocket-book, and thus become damaged. In the Gardiner album a series of linen hinges (gummed) is provided between a pair of light but stiff linen covers. The edge of the print is simply moistened and placed in position on the hinge. Each album is provided with hinges for twenty-four prints. The prices are, quarter-plate, 10d.; half-plate, 1s. 3d. The album is also made in other sizes, that for postcard naturally allowing of either side of the card being seen. The collector of postcards should therefore appreciate this new design, which is in every way a neater and more permanent method of preserving these souvenirs of travel than is the ordinary slip-in postcard album.

Criterion "Non-Stress Silky" Bromide and Gaslight Papers.—The Birmingham Photographic Co., Ltd., have now commenced to manufacture their "Silky" or semi-glossy bromide and gaslight papers in the "Non-Stress" quality, which has deservedly attained a widespread popularity on account of the fact, which we have ourselves repeatedly confirmed, of its freedom from stress marks. In the new varieties of papers we have been gratified in observing a like immunity from the annoying stress markings. Wilful attempts to produce the marks, by rubbing the paper over the negative and in contact with other hard surfaces, failed to yield any indications of the treatment in the prints. In other respects the papers retain the consistent high quality of the Criterion manufactures: they develop smoothly, giving prints of great brilliance and purity in the whites, whilst the surface, free from any positive suggestion of either mattness or glossiness, is one which qualifies the series of papers for a great variety of uses.

BARNET "VIGOROUS ART" GASLIGHT PAPER.—Messrs. Elliott and Sons, Ltd., Barnet, Herts, have just introduced a new grade of gaslight paper, which, as its name indicates, yields prints of a full degree of contrast from negatives of average character, namely, those which yield a good print on P.O.P. The paper is of the semi-glossy variety, having an agreeable sheen which allows of full intensity being obtained in the shadows together with ample detail throughout the whole scale of gradation. We have found it to yield excellent prints, perfectly pure in the high-lights and developing rapidly, but not instantaneously, to a fine black colour. In these respects, as well as in its perfect freedom from mechanical defects, the paper maintains the high reputation of the Barnet products for first-rate quality. It is a gaslight paper for all-round use, both for professional portraits, for amateur work, and for photographs to be reproduced in half-tone, the surface being a particularly good one for this class of reproduction. The prices are uniform with those of the other Barnet gaslight papers.

THE VISICK METOL-HYDROQUINONE DEVELOPER.—A concentrated single-solution developer, prepared from metol and hydroquinone, has been placed upon the market by Mr. P. F. Visick, 50, Stanbury Road, Peckham, S.E. The developer is one for universal use—for plates, films, bromide and gaslight papers, and lantern-slides—being mixed with five times its bulk of water to make up the working solution. In practice we have found it a most efficient and reliable preparation, the colour of prints on a variety of bromide and gaslight papers being a fine black, whilst for negative work it yields all necessary density within a short time of development without tendency to fog or veiling. The stock solution is obtainable from photographic dealers, price 1s. per bottle of 8 oz., making 48 oz. of working developer. Where there is any difficulty in obtaining the preparation locally, the developer is supplied by Mr. Visick, post free 1s. 3d.

PHOTOGRAPHERS' PRINTING.—A portfolio of half-tone and typographic printing reaches us from Messrs. Walter Pearce and Co., St. George's Press, Brentford, all the specimens being "overs" from actual orders entrusted to Messrs. Pearce. The portfolio includes examples of line colour work and three-colour block printing, in addition to half-tone work and imitation photogravure. It demonstrates Messrs. Pearce's capacity to turn out high-class printing, such as photographers now require for stationery, booklets, and for the purposes of view publishing. A postcard to Messrs. Pearce from any bonâ-fide reader of the "B.J." will bring a copy of the portfolio.

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## CATALOGUES AND TRADE NOTICES.

HAUFF'S PHOTO. HANDBOOK.—A new edition, the fifth, of the most useful handbook of formulæ, etc., issued by the well-known firm of J. Hauff and Co., has just been published by the British agents, Messrs. Fuerst Bros., 17, Philpot Lane, E.C. In its formulary for developers, fixing baths, intensifiers, etc., it is even more complete than before, and is a photographic manual which every worker, amateur or professional, should have upon his shelf. Messrs. Fuerst offer it on receipt of one penny stamp for postage.

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THE MONTREAL AMATEUR ATHLETIC ASSOCIATION CAMERA CLUB are holding their fifth annual exhibition April 17 to 22, which promises to be the most successful that has ever been held. A number of new classes have been added and more prizes are offered. There will be five different classes, with either one or two prizes, consisting of silver and bronze plaques for each.

Class A for figure studies and Class B for all other subjects are open to all amateur photographers. Hand camera class open to all members of the M.A.A.A. Club class and Green class open only to M.A.A.A. Camera Club members.

Pictures must be delivered not later than April 7. No entrance fee will be charged.

Entry forms may be had from the secretary, H. C. Stone, Camera Club, 250, Peel Street, Montreal, Quebec.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

FRIDAY, FEBRUARY 17.

Colne Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

MONDAY, FEBRUARY 20.

Southampton Camera Club. "Night Photography."
Bournemouth and District Camera Club. "Romantic in Landscape."
Catford and Forest Hill Photographic Society. Print and Lantern Slide Competitions.
Scarborough and District Photographic Society. Y.P.U. Slides.
Cleveland Camera Club. "English Gothic Architecture."
Kidderminster and District Photographic Society. Midland Photographic Federation Slides.
Leek Photographic Society. "How and Why in Photography." Burroughs Wellcome.
Stafford Photographic Society. "Single Trans'er Carbon Printing." Sydney. T. Davies.
Lancaster Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

TUESDAY, FEBRUARY 21.

Royal Photographic Society. Opening of House Exhibition of prints by Members of Affiliated Societies. Critical notes by W. J. Morgan, R.B.A.
Rotherham Photographic Society. "Amateur Photographer and Photographic News," 1910 Prize Slides.
Halifax Camera Club. "How and Why in Photography." Burroughs Wellcome.
St. Helens Camera Club. "Pictorial Advertising." J. Collins.
Leeds Photographic Society. "Mr. Whistler's Ten o'Clock." Harold A. Crawford.
Hackney Photographic Society. "Ten Days in Norway." G. H. Capper.
Worthing Camera Club. R.P.S. 1910 Affiliation, Prize Slides.
Sheffield Photographic Society. "The Story of Fountains Abbey." Thos. W. Thornton.
Keighley and District Photographic Association. "Oberammergau and the Country of the Passion Play." W. H. Houghton.
tton Photographic Club. "Rambles with the Camera." Members of the Sutton Photographic Club.
Nelson Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

WEDNESDAY, FEBRUARY 22.

Croydon Camera Club. "Reduction of Negatives." W. Wood.
West Surrey Photographic Society. "Derbyshire." Mr. Butterworth.
South Essex Camera Club. "The Italian State Railways." A. Woolford.
Borough Polytechnic Photographic Society. "The Ozobrome Process." F. C. Boyes.
Sale Photographic Society. "Light Filters." H. Lowe.
Coventry Photographic Club. "Gum Bichromate or Oil." J. Cawlwood.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. "Mounting Prints." F. Collins.
Partick Camera Club. Monthly Lantern Slide Competition.
Leeds Photographic Society. Members' Evening.
South Suburban Photographic Society. "Flower Photography by Artificial Light." E. Seymour.
Balham Camera Club. "Enlarged Negatives." J. S. Child.
Blackpool and Fylde Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

THURSDAY, FEBRUARY 23.

Handsworth Photographic Society. Lantern Slide Exhibition.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Post Card Suggestions." J. Lax.
Hackney Photographic Society. Annual Concert.
Leek Photographic Society. "Lantern Slide Making." J. C. Miller.
Oldham Photographic Society. Monthly Meeting and Members' Slides.
Maidstone and Institute Camera Club. Members' Night. Carbon Printing, &c.
Camera Club. Demonstration of Pianola-playing. F. H. Evans.
Liverpool Amateur Photographic Association. "Days in Merrie Sherwood, with Glimpses of Ivanhoe Land." Dr. J. W. Ellis.
Preston Scientific Society. "Tramps Abroad with a Kodak." W. F. Slater.
Batley and District Photographic Society. Members' Slides.

## ROYAL PHOTOGRAPHIC SOCIETY.

THE annual general meeting of the Society was held on Tuesday evening last, February 14, the president, Lord Redesdale, in the chair.

The report of the Council for the year 1910, which had been placed in the hands of members some days previously, was, as in previous years, the subject of discussion, following the proposal by the President of its adoption.

In regard to the membership, Mr. Bale Rider enquired the reason for the resignation of a life member.

The Secretary replied that the life member in question resided in India, and for many years past had ceased to take any interest in photography, and had, therefore, withdrawn from the Society, feeling that the expense in sending "Journals," etc., to him was a needless waste of the Society's funds.

Mr. C. P. Butler said that he considered the number of resignations during the past few years as quite abnormal compared with the average a few years ago. He was frequently approached by members asking whether they should continue their membership, and he felt that some policy should be adopted which would not give cause for such a high proportion of resignations. Pressed for the reason of the resignation of members within his circle of acquaintances, Mr. Butler used the phrase "dissatisfaction with the general management of the Society."

In reference to the use of the studio, Mr. Butler asked on what number of occasions it was used and by how many different members. The Secretary replied, thirteen or fourteen times in all, and, speaking from memory, not more than three times by one member.

After some further desultory discussion, it was proposed by Mr. Bale Rider, as an amendment to the proposition of the Council, not to print the annual report in the "Journal," that means be taken to remedy the omission of the annual report and balance-sheet for 1909 from the "Journal" and to print the balance-sheet for 1910 in the March number of the "Photographic Journal."

The Secretary having explained that the omission of the 1909 report from the "Journal" of that year was accidental, Dr. Mees proposed as a second amendment that the reference to the 1909 report should be deleted from Mr. Rider's amendment.

On the second amendment being put to the meeting it was lost, the first amendment being subsequently carried.

Mr. Douglas English, in a lengthy address to the meeting, then proposed :—"That it is desirable that the members of Council appointed to committees under Article 30 of the Articles of Association should not exceed five in number on any one committee."

The Chairman interposed that, while this motion was quite in order as a recommendation to the Council, it could not be taken as a substantive proposition affecting the constitution of the Society.

Mr. English then proceeded to quote figures from past official records of the Society showing a synchronism between a small representation of the Council on the General Purposes and Exhibition Committees and a satisfactory financial condition of the Society's accounts and those of the annual exhibition, respectively. He declared that the result of years in which these committees contained five or less members of Council was satisfactory, whereas in those where the committees contained eight or more members of Council the financial results were unsatisfactory. He alleged that the effect of a committee containing eight members of Council was that the recommendation of such committees were bound to secure a majority on the Council, and that from this condition of things the important business of the Society was placed in the hands of a few members constituting the two chief committees. He criticised at considerable length the 1910 exhibition and the proposed arrangements for the exhibition to be held at the Prince's Skating Club in the present year.

Mr. Bale Rider seconded the proposition.

The Chairman, in opening discussion on the motion, said they were glad to hear Mr. English's criticisms of the management of the Society. They would equally have been glad to have heard them on the Council; but for that, two things, it seemed to him, were essential: first, that Mr. English should be present, and secondly, that he should speak. He found that in the past five years during which Mr. English had been a member of the Council, he had attended eleven meetings out of a total of fifty-seven, and at a recent meeting, when the arrangements for the 1911 exhibition were before the Council, he had abstained from comment upon them.

Dr. Mees pointed out that Mr. English, in advocating a maximum of five members of Council on the committees, showed himself in favour of a destructive policy towards the Society and its exhibitions. He, Mr. English, had declared that the 1910 exhibition was a mistake, but he (Dr. Mees) considered that the Society was pledged to its members to hold an annual exhibition, and had done so in 1910 in a way which was the best possible under the circumstances. In regard to the 1911 exhibition, Mr. English told them that their pictorial section could not have any value, that their section II. was useless, that their scientific sections would be unsatisfactory, and that they were wrong in encouraging a trade section. If all that were true, what was there left of the exhibition? He was convinced that the duty of the Society was to organise an exhibition representative of all classes of photography, and he hoped that the members would loyally support the Council in that policy. After further discussion, in which Messrs. Welborne Piper, G. E. Brown, J. C. S. Mummery, F. T. Beeson, and others, took part, Mr. English's motion was put to the vote, but was lost by a considerable majority against it.

The report of the scrutineers of the ballot was then presented, and showed the following officers and Council to have been elected for the present year:—

President: Lord Redesdale.

Vice-Presidents:
W. B. Ferguson, K.C., M.A.
Chapman Jones, F.I.C., F.C.S.

Honorary Treasurer: Leslie E. Clift.

Ordinary Members of Council:

A. W. W. Bartlett.
F. C. Boyes.
Douglas English, B.A.
A. R. F. Evershed, M.R.C.S., L.R.C.P.
T. E. Freshwater, F.R.M.S.
John H. Gear.
E. T. Holding.
Chas. F. Inston.
Rev. F. C. Lambert, M.A.
Furley Lewis.
Ernest Marriage.
F. Martin-Duncan.
C. E. Kenneth Mees, D.Sc., F.C.S.
A. J. Newton.
Chas. H. Oakden.
C. Welborne Piper.
E. Sanger Shepherd.
James A. Sinclair.

At a late hour the proceedings terminated with votes of thanks to the officers of the Society.

## THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A MEETING of the General Committee was held at the Royal Photographic Society, 35, Russell Square, on Friday, 10th inst. Present: Messrs. H. Gordon Chase, S. H. Fry, Wm. Gill, Alfred Ellis, E. O. Hoppé, W. Illingworth, A. Mackie, Lang Sims, and H. C. Spink. Mr. W. Gill, President, in the chair. After receiving and dealing with several communications from members, the meeting was devoted to the consideration of matters concerning the organisation of the Congress to be held in May in connection with the Photographic Arts and Crafts Exhibition.

CATFORD AND FOREST HILL PHOTOGRAPHIC SOCIETY. — On Monday, February 6, Mr. Dawson and his brother, on behalf of the Thames Colour Plate, Limited, explained the composition of the company's material by means of coloured diagrams projected upon the screen, followed by the development of a plate in a light-tight box in support of the explanation. The "separate" method was strongly recommended as being the most suitable, in that duplicates can be easily made, and the cost of failure minimised as under- or over-exposure or other failures resulted in the negative plate only becoming spoilt; the coloured screen being useful for exposing subsequent plates on for registration. The "separate" method is therefore cheaper than the "combined," where both plate and screen are as one, as the name indicates. Rodinal 1 in 18 was recommended for developing the "separate" method, though other developing agents need not be ignored. Hydroquinone proved very suitable for the other method. Several beautiful slides were shown, and the registration of screen and plate cleverly demonstrated by turning one upon the other in the carrier stage of the lantern. The ease with which the complementary colours presented themselves while aiming at the true effect was clearly shown (the true effect being comparatively difficult) and the transparency of the plates is remarkable. The lantern need not be unpleasantly close to the screen to give brilliant pictures, a fact by no means to be despised. The firm emphasise the desirability of standing by the published instructions to minimise failure, at least until the process is well in hand or the experimental stage reached. It may be urged that the process is by no means crude, as was witnessed by slides of the more delicate floral subjects, including the tea rose. The reference to crude results was undoubtedly due to the fact that the beginner is tempted to try his hand with bright and strong coloured objects in the belief that there is nothing beautiful or extraordinary in Nature's delicate tints.

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CHARGES FOR WATER SUPPLY.—A correspondent writes:—"I am on a meter rate here, paying 4s. per quarter meter rent and 1s. per 1,000 gallons for water, and I find on looking through my water accounts for two years past a noticeable regularity in the quantities consumed—for five quarters out of the eight we are charged for 11,000 gallons, one works out at 10,000, one at 12,000, and the other at 15,000."

# Commercial & Legal Intelligence.

Canvassing Frauds in Cornwall.—At the St. Ives Police Court last week, William Ward, alias William Wilson, of no fixed abode, photographer, was charged with obtaining credit by fraud of Mrs. Warnes, of St. Ives, between January 9 and 14, to the amount of 6s. 6d. There were also similar charges in respect of Mr. Charles Condon, of Somersham, and Miss Cooling, of Hemingford Abbotts.

Florence Cooling, cook at the Rectory, Hemingford Abbotts, said on January 7 prisoner came to the rectory, and asked witness to allow him to take her photograph. Witness and four other servants at the rectory agreed to have their photographs taken in a group. They were going to have a dozen of the group, and three of them were separately taken, and they ordered six of each. Prisoner went through the usual performance of taking the photographs, and they paid 5s. 9d. each. She paid 5s. 9d. herself. They all thought they were photographed properly. Prisoner showed samples of his work. They were to receive the photographs on the following Thursday morning. Witness had not received the photographs. She wrote to an address at Kimbolton on the following Tuesday, which was on the receipt, and it was returned "not known."

Inspector Gale here stated that on January 26, after prisoner had been remanded, he showed prisoner a bunch of receipts produced, eleven in number, and said: "You have been in every village in this district, and from what has come to my knowledge you have not taken any photographs." Prisoner replied, "No, I have not taken a photograph for four months. I have been a travelling photographer for some years, but trade has got so bad that I was forced to resort to this sort of thing. I used to be honest, and people had their photographs. I have not taken any lately, but only pretended, and people have not had them. I am very sorry, and I hope all cases will be presented with this one. I cannot deny any of them."

Prisoner pleaded guilty to all the charges, and elected to be dealt with summarily. He asked for leniency as he had been out of work a long time, and could not get a situation.

The Bench said they considered prisoner had acted very dishonestly indeed, for he had not even taken the photographs he had pretended to take. They should sentence him to three months' hard labour.

Canvassing Frauds in Yorkshire.—At the Otley Police Court last week, Israel Reuben Israeli, alias Stanley Norton, a Leeds Jew, was charged in nine instances with obtaining money by false pretences from various persons in Guiseley, Pool, and Menston. Only three of the cases were proceeded with, and Superintendent Strain pointed out that the prisoner had represented himself to be a canvasser for a fictitious company, which he styled "The John Bull Fine Art Company," with its head offices in London, and with branches at Nottingham, Dublin, Norwich, and all over the kingdom. Prisoner added that the company was connected with the "John Bull" newspaper, and that he was authorised to receive orders for enlargements of photographs and also for photograph frames. In all he had obtained sums amounting to £4 18s. 6d., for all of which he had given receipts on notes headed with the name of the alleged company. No orders had been executed, there was no such company as the John Bull Fine Art Company, nor was the prisoner connected with the "John Bull" newspaper. In each of the three cases prisoner was committed for two months, or six months in all.

Eastman Kodak Company of New Jersey.—In addition to the usual quarterly dividends payable on April 1, the Directors of the Eastman Kodak Company of New Jersey have declared an extra dividend of 5 per cent. upon the Common stock, also payable on April 1 to stockholders of record on February 28.

Legal Notices.—A receiving order has been made in the case of William Henry Dee, photographer, Moorlight, Tilehurst, Berks, lately carrying on business at 4, Cross Street, Reading.

## NEW COMPANIES REGISTERED.

Aeroscope, Co., Ltd.—This company was registered with a capital of £2,000 in £1 shares. Objects, to acquire and turn to account any inventions relating to photography, printing, moving pictures, and the production and enlargement thereof, etc. First directors, G. M. Bishop, E. H. Bishop, R. Collier, and W. E. L. Day. Qualification, £25 each per annum. Registered office, 19, Cecil Court, Charing Cross Road, W.C. Private company.

# News and Notes.

Messrs. H. J. Whitlock and Sons, New Street, Birmingham, have received a Royal Warrant of Appointment as photographers to his Majesty King George V. It is interesting to note that the conferment of this honour comes in the jubilee year of the business, which was started in 1861 by Mr. H. J. Whitlock, the present chairman of the firm. He was appointed photographer to the late Queen Victoria in 1870, to the Prince of Wales in 1876, and to King Edward in 1901. Mr. Whitlock took many photographs for the late Queen Victoria, and about the year 1869 was in residence at Balmoral for a month for that purpose.

Folkestone and District Camera Club.—In the forthcoming exhibition of this society, to be held on March 20 and 21, there will be two classes open to all photographers, in addition to those reserved for members of the society only. The awards, which will be placed at the disposal of the judges, Messrs. J. B. B. Wellington and A. D. Godbold, will take the form of one gold, thirteen silver, and five bronze plaques, and one silver challenge cup. Full particulars and entry forms may be obtained from the hon. secretary, Mr. Hamilton Smith, 20, Radnor Park Crescent, Folkestone, to whom they must be returned, duly filled in, or or before March 9.

Russian Colour-Photography.—According to the correspondent of the "Standard," among the matters discussed at the last meeting of the Council of Ministers was the petition of a Russian amateur, who claims to have spent his whole fortune in experiments in colour-photography. This gentleman, M. Prokudin-Gorsky, declares he has invented a perfected form of colour-photography by which he has taken some 2,000 colour-pictures. His petition was to the effect that these productions should be purchased for several thousand pounds for a public museum. The Council of Ministers signified approval by ordering the matter to be referred to the Duma in the next year's estimates.

"Kinemacolor" to the Scala.—We are officially informed that Mr. Charles Urban, joint inventor of kinematography in the actual tints of nature, has finally leased from Dr. E. Distin Maddick that beautiful theatre, the Scala, in Charlotte Street, W., and will there produce "Kinemacolor" in all its miscellaneous varieties, approximately about the first week in April. "Kinemacolor," it will be remembered, was for nearly two years one of the principal attractions at the Palace Theatre (as "Urbanora" had been for eight years previously at the Alhambra); but its rapid growth and development demanded a programme to itself, a stage of its own whereon to unfold the wealth of its gleanings in the widely diversified fields of history, travel, zoology, botany, pageantry, sport, science, and the drama; and the Scala is structurally the very house for the purpose. Special features will be made of a full orchestra under the direction of a prominent leader, which will accompany the pictures, and also play selections; and the fortunate possession of the Lord Chamberlain's licence will be taken advantage of, not only to produce from time to time the best dramatic work in short plays of the foremost British authors, but to introduce translations (not adaptations) of the most interesting foreign plays and any remarkable novelties from abroad which may seem attractive to the London public. Nor will the fact that "Kinemacolor"—lending every semblance of life in the veritable tones of nature—multiplies infinitely the value of cinematography as a force in education be lost sight of; at every demonstration will be given a brief but highly instructive Urban science lecturette, illustrated either by "Kinemacolor" or monotone pictures, and chosen with a view to entertain as well as instruct. There will be two performances daily, in the afternoon and evening respectively, and it is believed that many ladies and children will be attracted to these matinées.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SUNDAY WORK IN PHOTOGRAPHIC STUDIOS.

To the Editors.

Gentlemen,—Re the last letter from the pen of H. Roe McMahon, first of all I beg to assure him I am not by any stretch of imagination a Puritan. Old Sol can shine on—in fact, he can put in some overtime; personally, I shall not object. "Hard work never killed anyone" is even a common saying in England, but the sequel thereto is this: hard work has even been known to wear out horses.

Why, twelve hours a day operating, etc., is simply a mere pinprick. Even I, an Englishman, have worked the same amount of hours; in fact, I used to rise from my hammock a few hours before the twenty-four started. How pleasant for one's wife and one's children practically to have to live in solitude for the whole of the 365 days!

According to H. Roe McMahon's letter, the various correspondents have failed to make out a good case.

I may say I have been operator-manager to the largest firm of photographers in the world. They never resorted to Sunday work or cut prices, and I was for years pioneer operator and manager to another very large multiple firm (of a cheap order) who never thought of working their assistants on Sundays. Yet both are in existence to-day, and can claim more than a fair share of business. The people to a great extent who have been the cause of the downfall of photography (how pitiable!) are the laymen who have grown into the business.

In fact, I fully agree with Lord Avebury's latest suggestion—revive the old system of apprenticeship, let every man show his indentures and prove his validity, and let every would-be professional be examined as to his abilities before he is allowed to start in business. This would eliminate the very cheap and nasty man, who has been solely and wholly the cause of bad trade—fortunately it has recoiled on his own head.

I may also enlighten Mr. McMahon by telling him I have had 27 years' varied experience in photography (both at home and abroad), and was never weaned on P.O.P. or tank development, having gone through the wet-plate process and the salting, albuminising and sensitising of paper, and can show my indentures to-day. What a treat to be pitted with Mr. McMahon at the London Polytechnic! In conclusion, how paltry or *infra dig* for a West End photographer to try and obtain business by the aid of coupons or some other incentive. Photography is not an everyday commodity. People of to-day have enough leisure without employees in a fancy business (as photography undoubtedly is) giving up the whole of their time to its practice.

Enforce every assistant and employer to be first-class in his particular branch; hence a better class of work generally, a more artistic result for the sitter, the final downfall of the slographer (copyright applied for), consequently the disappearance of Sunday opening.—Yours truly,

NIMROD.

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To the Editors.

Gentlemen,—I have followed with interest the discussion re Sunday trading, and read with keen satisfaction the letter from your correspondent, "F. J. S.," which should give Mr. Roe McMahon and his like their quietus. Permit me, as one on the spot, to put a few facts before your readers concerning Sunday opening and Sunday photographers as applied to Dublin.

In the first place, anyone walking through our streets on Sundays will notice that the oldest-established and best photographers (we have a few left here) are closed. Now, on the other hand, we have, grown up in our midst, the cheap-jacks, the postcard stickyback, and 1s. 11d. enlargement branch of photographers abusing each other with sandwich men for all they are worth in the choicest American vulgarisms. Some of those people, to my knowledge, employ young girls from about 10 o'clock until 7 or 8 o'clock on Sundays.

Which of the two classes of photographers, I wonder, does Mr. McMahon desire to champion?

I am no Sabbatarian, and believe thoroughly in the disciplined enjoyment of life's pleasures; but it seems to me—and I venture to say that every thinking man and woman will agree—that there is no excuse to open on Sunday to supply what can easily be obtained throughout the week.

This much-debated question of Sunday opening not only affects our own profession, but many others, and in my humble opinion it will have to be settled ultimately by common-sense legislation.

Trusting that in our only and leading journal you may consent to review this correspondence and give your readers your own opinion as it affects the photographic profession.—Yours faithfully,

JAMES J. HONOHAN.

113, Stephens Green, Dublin.

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## MODELS AND COSTUMES.

To the Editors.

Gentlemen,—I read with interest Mr. Drinkwater Butt's comment upon your answer to a correspondent who wanted some models and costumes, but much more might be said upon the subject. There appears to be among professional photographers an idea that if they could only obtain the services of models—say, pretty girls—and costumes, they could do good and saleable work, but the idea as to the latter is, in my humble opinion, erroneous, and I could give several instances of how some well-known workers, who have been fortunate enough to secure models and costumes, have produced excellent studies of costumed models and have been quite unable to "place" them. The fact of the matter is, the "pretty girl picture" craze is dead; both editors and advertisers—let alone the public—are sick of them. It may be, of course, that the correspondent who asked the question may have other ideas to work out, and may know where to place them when he has secured them. If so, I congratulate him.

My idea in penning this note, however, is not to deal with the sales question, but rather that of obtaining models and costumes, as they are subjects which at all times interest professional photographers, and before doing so I may say that during the last year or two I have made seven hundred and fifty negatives of professional models, with more or less "costume" upon them. I do not mean to say that I have photographed that number of models, because I have seventy negatives of one sitter, fifty-five of another, forty of another, and so on.

I know nothing of the firm named by Mr. Butt. I get my costumes—fancy dress ball costumes really—from Clarkson, or one of the other firms that let such things out on hire. The average charge is 10s. 6d. per day, but as one day is allowed for fetching them and another to take them back, it is often possible to get more than one day's work out of them, and I have frequently obtained a few negatives on the morning of the "taking back" day. Visitors to fancy dress balls, I suppose (I have never been to one), take the best part of the following day to get over it; the owners of the clothes probably know this, and, therefore, do not seem to mind what time the clothes get back. If it were known that the clothes were for photographic purposes, the conditions might possibly be different.

The question of models is a difficult one. The journal named by Mr. Butt keeps a list, as do other art journals and most dealers in artists' materials, but it is very doubtful if they would allow a photographer to see them. The lists are for the use of artists of the brush, pen, and pencil, and not photographic artists, so called. There is a great gulf between the two; some workers, unfortunately, cannot see it, but others can, and the person who can see it plainest of all is the model. There are scores of models who are only too anxious to sit to painters, but who look upon photography as a bastard art, and would not face a camera for the biggest fee they are likely to get from any photographer. They say, and rightly too, I think, that if artists can buy their pictures part of their living will be gone; and this, of course, applies to pretty and old and wrinkled faces more than to poses and costumes, for which an artist can employ a lay figure. It is mostly the face that an artist of the brush wants, and it pays a girl, or any other model, much better to give an artist a dozen sittings than it does to give a photographer one, which is often as many as he wants.

I personally know nearly all the artists' models in London, because of my being a member of the art clubs, and, of course, handy with the brush as well as the camera, and I do not know of even half a dozen who will willingly face the camera for a series of pictures. Their best customers—the artists—do not care to see the photographs of their models about, and I know of a few who have lost many weeks'—possibly months'—work, through giving a photographer a sitting. There is much more to be said about the professional models and their objections, and the difficulty of getting them, but I think I have said enough to prepare any photographer for disappointment.

Many photographers in search of models have to fall back upon theatricals, some of the second and third-rate Thespians being only too anxious to face the camera. As a rule, they may be made passably pretty by a large amount of retouching, but for really good work such sitters are far from satisfactory.—Yours faithfully,

London, N. AN ARTIST-PHOTOGRAPHER.

## THE LONDON SECESSION.

To the Editors.

Gentlemen,—I beg to inform you that a society has been formed under the above title, for the purpose of holding periodical displays of the most interesting, original, and progressive examples of pictorial photography.

The first Spring Exhibition will be opened to the public on May 10, at the Newman Art Gallery, 29, Newman Street, W.

The present members of the society are as follows:—J. Craig Annan, Malcolm Arbuthnot, Walter Benington, Eustace Calland, A. L. Coburn, A. Cochrane, George Davison, J. D. Johnston, Baron A. de Meyer, Frank H. Read.

In addition to the above, the following American and Continental workers have been invited to send representative examples of their work:—Frank Eugene, Heinrich Kuhn, George Seeley, Eduard Steichen, Alfred Stieglitz, Clarence H. White.—I am, dear Sirs, yours faithfully, M. ARBUTHNOT,

Hon. Secretary.

Winchester House, Old Broad Street, London, E.C.,

February 8, 1911.

## MARKINGS IN TANK DEVELOPMENT.

To the Editors.

Gentlemen,—In regard to markings in tank development, I think Mr. F. F. Renwick tries to prove something which is not on the print referred to by Mr. Gordon Chase. I had those markings once, but they were different from those of Mr. Renwick, and similar to those of Mr. Chase. Mr. Renwick's are manufactured, and those of Mr. Chase's are chance happenings, as were mine. Mr. Renwick's are on unexposed plates, and due, he says, to reflected light: the others on exposed plates. Mr. Renwick speaks of the developer poured in the tank. In my case the developer was first in the tank, and the plates immersed in it after having been thoroughly wetted first. If the marks are due to light, how about the very distinct inger marks? Some of the plates I developed (years ago) had these inger marks nearly all over the plates. I returned the plates to the party I got them from for an explanation, and that was the last I heard of it. I never had another one like it; however, I continue using the same brand.—Yours very truly, A. LEVY.

Asnières, Seine, France,

February 11, 1911.

To the Editors.

Gentlemen,—In making use of tank development I have experienced nother source of irregular markings liable to occur with *new* metallic anks. Such tanks are always more or less greasy, and the traces f grease may adhere to the plates when the tank is filled and artially prevent development, producing very strong markings. Markings due to this cause are characteristic in that they show strong egative relief.—Yours, etc., ANDRÉ CALLIER.

Ghent, Belgium, February 12, 1911.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to Advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**PHOTOGRAPHS REGISTERED:**

E. A. Kime, 116, St. James' Street, Newport, Isle of Wight. *Two Photographs of the Mayor of Newport, I.W., Francis Templeman Mew Esq.*

F. Bailey, Castle Studio, Castle Street, Canterbury. *Photograph of Francis Bennett Goldney Esq., Mayor and M.P. for Canterbury.*

G. J. Hughes, 8, The Mall, Waterford, Ireland. *Three Photographs of the Rev. Canon W. Hay M. H. Aitken, M.A.*

WM. A. HEYDECKER.—We are very much obliged to you for your note of the mistranslation, the substance of which you will see we are using.

FRAMER.—Frost and Reed, Ltd., Clare Street, Bristol; Rowley, Church Street, Kensington, W.; Rogers and Webster, High Holborn, W.C. See also names on page 1342 of the "Almanac."

REFERENDUM.—We think the openings are very few in number. Your best course would be to look up the directories of Cairo and Alexandria, which you could see, doubtless, at the London office, 26, New Broad Street, E.C., of the "Egyptian Gazette."

STATUS.—It is the law of the land that the copyright shall remain the property of the person giving the order, and to us that seems perfectly just. The proposed Copyright Bill which has been drafted by Mr. Buxton does not seek to alter this state of things. The grievance of copying discussed in your letter has been considered over and over again, but without a satisfactory remedy proving forthcoming.

EDUARDO BRANDAO (OPORTO).—A bleach-out paper (par decoloration) is not at present on the market. The present processes for colour photography on paper are carbon and pinatype. Materials for the former from the Rotary Photographic Co., Ropemaker Street, London, E.C., and the Autotype Co., 74, New Oxford Street, London, W.C.; for pinatype, Fuerst Bros., 17, Philpot Lane, London, E.C. Screen plates for colour transparencies are supplied by Lumière, Jougla, Guillimenot, Boespflug and Co., and the Thames Colour-Plate Co., Ltd.

INSURANCE.—Can you kindly inform me of any society or office where a photographic assistant can insure himself against out of employment and sickness?—PADDINGTON.

Insurance against sickness can be effected with many offices, and the fact that you are a photographic operator should not matter in the least. We, however, think that you could get all the advantages you wish by joining one of the big benefit societies, such as the Hearts of Oak Society, Euston Road. We should advise you to write the secretary for particulars.

DRY-MOUNTING WITH GELATINE.—Can you oblige a constant reader of your valuable "Journal" with any information as to the use of gelatine when mounting by a dry method? I am familiar with the shellac dry-mounting process, but have not heard that gelatine can be used in this way.—ESS ESS.

Nor can it. Gelatine may be used for mounting by hot pressure, but it is necessary to have a fair amount of moisture present—that is to say, the mount requires to be damped with water until somewhat limp. You will find a description of the process on page 597 of the 1911 "Almanac."

HALATION.—I have seen it stated that halation (e.g., round and over windows in interiors) can be entirely cured by bleaching and rehalogenising. Will you kindly tell me how best to accomplish this?—Halated.

The process is simple, but risky. Bleach the negative in a solution made by mixing equal parts of 5 per cent. potassium bichromate solution and 10 per cent. hydrochloric acid. Wash well, and then redevelop, stopping development just before the effect has got through to the glass in the high-lights. Then fix. Be careful not to stop development too soon, or else the high-lights will be far too thin, and the negative will be spoilt. It is as well to use a strong developer that will act quickly—hydroquinone and caustic soda is very suitable.

**Natural Backgrounds.**—Some time ago I noticed in the "B. J." an article on natural backgrounds, but fail to remember particulars of the process. As far as I can remember, the subject had to be blocked out and then a P.O.P. print taken from same, which would leave a white background. The subject was then gone over with some kind of paint or medium which does not affect the P.O.P., and when dry the natural background is printed in. What I fail to remember is the name of the paint or medium which is used. I shall esteem it a great favour if you would kindly inform me through the usual column of this week's "B. J."—E. Smart.

Ordinary water-colour gamboge is used, but on a collodio-chloride or albumen paper, as a gelatine paper retains the colour. You will find the article in our issue of June 4, 1909.

**Iris Diaphragm.**—I have a half-plate "Beck symmetrical lens" on my camera, and, not having been used very much lately, the "iris diaphragm" has got jammed by some way or other—dampness, I thought, and to make matters worse it is a little out of shape. Kindly advise me as to what could be done, and would it be better to send the lens to Messrs. Beck in preference to a local camera maker; if so, kindly state lens maker's address, also probable cost.—Leonard S. Price.

It would seem from your description that one of the leaves of the iris has slipped off the pin, or possibly a pin has dropped out. It should not be difficult to put this right, and any camera maker should be able to do it; but if you prefer to send to Messrs. Beck, their address is 68, Cornhill, E.C. We cannot give you any cost, but it should not be much.

**Australia.**—I write to inquire if you could give me any information regarding New Zealand or Australia. I have an assistant who wishes to go to either of those two colonies, and wishes to know whether your "Journal" reaches photographers out there, or whether the supply is drawn from local sources. Any information that would help in his attaining his object that you could supply me with I shall be thankful to receive.—F. W. S.

We can only say that conditions as regards photography are very much as here. Prices are cut, but it would appear that the condition of assistants is better than here. Naturally, assistants are largely drawn from those out there, but your assistant could address practically every professional photographer in the countries by taking advantage of our Colonial issue. See notice at head of "Situations Vacant."

**Intensifier.**—1. I shall be so much obliged if you can tell me the name of the intensifier that turns the negative white and then brings it back with ammonia, and what quantities to use? 2. Also, do you know of a self-toning paper with a sepia platinum colour and surface that is satisfactory to use?—Ignorant.

1. Dissolve about 1 oz. mercuric chloride (highly poisonous) in hot water (16 oz.), allow to cool, and pour off any crystals which separate. Add 30 minims hydrochloric acid. This is the bleaching solution. Immerse the well-soaked negative in it until it acts through to the back, wash for half an hour, and darken in:—Ammonia (.880), 20 drops; water, 1 oz. 2. The results with "cream crayon" Seltona answer fairly closely to your requirements. Other self-toning papers give similar results.

**Surplus Negatives.**—I should like your advice regarding a dispute which I have at present with a customer. He is a prominent Wesleyan minister, who in the ordinary way came last month to be photographed. Being anxious to make a specially good portrait, I secured seven negatives and submitted proofs of them all to the reverend gentleman. He chose two, and ordered a dozen cabinet prints from each of these, returning proofs of the other five with a pencil note written on each: "No good." Many of his flock, however, who have seen these proofs, have thought that one or two of them are even better than those chosen by the reverend gentleman, and so yesterday I exhibited enlargements from three of these in my window, naturally supposing that I might obtain a few orders from friends of the sitter. To my surprise, this morning I have received a letter stating that I must withdraw the enlargements from the window, and if I do not that means will be taken to compel me. I consider this very high-handed, considering that the Rev. —— has not paid a penny for these negatives. I have written to him to point this out, but meanwhile should be glad to hear what is your view of the right of the case.—Saxmundham.

We must tell you that you are entirely in the wrong. It has been held long ago in the courts that when a sitter pays to be photographed he pays for the whole work of the artist, and though he may order only from certain negatives he has just the same right over all which were taken as if he had ordered prints from all. The best thing you can do is to confess yourself in error and comply with the request made to you.

**Various.**—1. Is there a crystal or powder form of spirit of salt? 2. When sulphuretting the bleached print with sodium sulphide, there is a bad odour remains on the print. Is this smell necessary to remove? If so, is there any good formula you could recommend me to use? 3. Does potass. chloroplatinite not deteriorate in the light, and will it keep well in 1 per cent. solution (using distilled water)? 4. I have often heard people say "carbon," and would like to know whether carbon is developed in the same way as bromide, and using the same developer? 5. If a photographer will sell me negatives, have I the perfect right to have them enlarged, or do what I please with them? Am I liable to any action at law (in a place such as Java)? 6. Does sodium sulphide cryst. lose its strength when it melts?—From Java.

1. No. 2. We have never found that the prints retain any odour if washed for a few minutes after sulphiding. At any rate, a momentary immersion in a faintly pink solution of potass. permanganate will at once remove the smell. 3. It is liable to deteriorate if dust or organic matter is present: dissolved in distilled water, with, preferably, the addition of a drop or two of pure hydrochloric acid, it will keep indefinitely, if well stoppered, even in moderate (indoor) light. 4. It is a totally distinct process. The "tissue" is sensitised in a solution of potass. bichromate, exposed to daylight under the negative, and "developed" in water. The result is a print in pigment. You had better get a shilling manual of the process, one or the other of those mentioned on page 856 of the "Almanac." 5. As Holland grants no copyright protection, you (or anybody else) can do as you like with the negatives, or with prints therefrom by way of copying. In a British possession it would be necessary to register the transfer of the copyrights in order to retain the latter when purchasing the negatives. 6. It can be melted (fused) without losing strength, but, on the contrary, gaining by loss of water. Dissolved to a strong solution, *e.g.*, in three or four times its weight of water, it retains its strength for a fairly long time, but in weaker solution it rapidly loses strength.

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THE BRITISH

# JOURNAL OF PHOTOGRAPHY.

No. 2651. Vol. LVIII. FRIDAY, FEBRUARY 24, 1911. Price Twopence.

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## SUMMARY.

A studio accessory readily made from a couple of boxes can serve a variety of useful purposes. It is described in a note on page 134.

Some hints on the making of photographs, for production in Court as evidence, occur in a note on page 134.

Mr. Claudy, in an article in an American contemporary, lays down the law as to the kind of photograph which should appear in a photographer's showcase. (P. 140.)

Sunday photography, past and present conditions in professional portraiture, are among the subjects discussed by correspondents. (P. 149.)

On the professional use of self-toning paper. (P. 133.)

In a paper on the shape of trays for flashlight, Mr. D. Berlin shows the relative values of different forms of flashlight pan. (P. 137.)

MM. Lumière and Seyewetz, in a recent paper before the French Photographic Society, have given formulæ for developers of plates where a high temperature of the working solution is unavoidable. They find ammonium sulphate to work well with diamidophenol, whilst for other developers, metol-hydroquinone, pyro, etc., they find that an extra proportion of soda sulphite prevents softening of the gelatine film. (P. 136.)

Some further notes by Mr. R. E. Blake Smith on single-solution sulphide-toning appear as an article on page 139.

The latest instructions for the working of the Paynetype process of preparing photo-engraved zincos direct in the camera are given as a photo-mechanical note on page 141.

Colour screen-plates, developing apparatus, and colour cinematography figure among "Patents of the Week." (P. 143.)

In an editorial note we further emphasise the value of the lens-hood. (P. 134.)

Some considerations on the elements of photographic perspective are the subject of an article on page 135.

The colour photographs of wild flowers by Mr. H. E. Corke have been published as a book by Messrs. Cassell. (P. 147.)

Some precautions in testing the register of dark-slides are mentioned on page 134.

## EX CATHEDRA.

**The "B.J." Colonial Number.** In reference to the forthcoming special issue of the "B.J." for March 31, manufacturing and other firms have already been advised by ourselves that in that number we shall allot space for the review of new introductions in the way of apparatus and materials. We would ask any makers who by chance have not been approached directly, but are issuing goods with distinct claims to novelty, to place themselves in communication with us. As already intimated, this Colonial and Foreign number will be posted direct by our publishers to photographic firms throughout the Colonies and British possessions to a number of close on 5,000. The value of this extra circulation to advertisers has in the past received the most emphatic endorsement from the photographic trade, for it will be remembered that last year's issue, the third of the series, carried a greater amount of advertising than any single issue of any journal in the history of photography, and we have since heard on every hand of the satisfactory results, as regards sales to buyers in all parts of the world, which resulted from it. At the present time, with trade throughout the world on the upward grade, the return from announcements in the forthcoming issue should be still better, and our publishers, in anticipation of issuing an even bulkier number, beg the kind assistance of advertisers to supply them with "copy" at as early a date as convenient.

* * *

**Self-Toning Paper.** Very few professional photographers seem to have discovered self-toning paper, and are therefore missing a great time-saver for odd jobs. It frequently happens that a single print is required for a copy or repeat order of a particular tone or surface, and no solutions happen to be ready, so that the execution of the order is unreasonably delayed. This is easily got over by using a good self-toning paper, and if one with a collodion surface be chosen there is the additional advantage that a minimum of washing is required and that heat may be used to hasten the drying. A word of caution is, however, necessary to those who are unaccustomed to using these papers; it is to adhere strictly to the directions issued by the makers. For example, if a warm tone is required and a solution of hypo, 2ozs. to the pint, is prescribed, it will not do to use a 4oz. hypo bath, and especially one that has been used for other purposes. We recently heard a photographer complaining because he got muddy prints on self-toning paper, and found that he was fixing them in the acid fixer which he used for his gaslight prints! Some excellent results may be obtained on the rough-surfaced cream papers, and with the addition of the platinum toning no photographer need lack variety in his show case. For large consumers the separate toning and fixing will undoubtedly prove the more economical, but for the single-handed worker, self-toning paper would probably save money by economising valuable time.

* * *

**A Home-made "Throne."** In a recent visit to a very modest studio we saw an appliance which was extremely simple in construction and as useful as it was simple. It was nothing more than two boxes made of light wood, measuring about three feet long by twenty inches wide and a foot deep. They were lidless and were covered with a sage-green serge. On enquiring their use the owner astonished us by showing how a Protean accessory was available by their judicious use. In the first place, put side by side, they formed the platform well known to painters and sculptors as a "throne," so that, if desired, the sitter could be taken from the elevation from which he is usually painted. But probably the more useful application for photographic work was for the posing of children at a more convenient height than on the floor. The next use illustrated was as a seat for a group; turned on edge they formed two benches which could be placed at a slight angle to accommodate a row of persons at about normal height. Laid flat, end to end, they served as a low seat in front of a row of chairs, while on end, and covered with a drapery, they afforded an excellent substitute for the vanished balustrade. Another service they often rendered was to provide a background and base for commercial work, one box being placed flat and the other stood on end upon it, so that a clock, race-cup, or what not could be photographed with a plain background and support. When out of use they were placed on edge against the side light and formed a handy shelf for articles required near to hand when operating.

* * *

**Photographic Evidence.** Despite the fact that judges and juries are becoming aware that photographic evidence is as capable of sophistication as is the oral variety, there is a steadily growing use of photography in the Law Courts. In many cases, indeed, the existence of reliable photographic records has prevented legal action being taken, or, when commenced, has stopped it at a comparatively inexpensive stage. It need hardly be pointed out that it is to the interest of the photographer that he should make himself acquainted with the necessary conditions which make his work of the greatest value to his clients—a point he is too likely to overlook. For example, the fullest details as to date, time of day, lens used, distance between camera and building, and, if possible, a positive identification of the position in which the camera was placed. In important cases it would be desirable to embody this information in the form of an affidavit, which should be made at the earliest possible moment after the proofs are printed, and to which they can be attached. Another point is that the prints should be of considerable size, and to this end it is better to take the originals of a small size and to make enlargements at least of 18 by 16 inches. These should be rough mounted with not more than an inch of margin, and, in most cases, are better if mounted on linen so that they can be rolled up with other documents. A platino matt surface is the best for this class of work, as it is easily written upon, while outlines or washes of colour can be put upon it. That this branch of work is worth cultivating is proved by the fact that contracts running into four figures have been given out in connection with some of the tube railways, the constructors of which have had every building under which the tunnel was to pass photographed so as to show its condition, especially where any visible cracks or settlements existed. An expenditure of a couple of thousand pounds on photography has saved many times that amount in compensation claims. The photographer is usually called to prove the taking of the photograph, and, of course, has to submit to cross-examination, and it may here be in order to warn him against volunteering any statement which he has not previously submitted to his customers' solicitors. Questions should be answered as directly and briefly as possible, and no dubious replies made, a frank avowal of inability to answer being the safer course. Work of this character has often to be done in a bad light, but the photographer should not apologise for this in court, as it may afford the opposing counsel an opportunity for casting a doubt on the reliability of the picture by asserting that details existing in the original are therefore not visible in the photograph. Regarding the photography of documents little need be said, except that a careful note of the time at which the work was done should be taken. In a recent divorce case a whole series of letters was intercepted, photographed, and delivered to the addressee without her knowledge, the photographer being able to prove that they were in existence on a certain date.

* * *

**Dark Slides Out of Register.** There are a number of reasons why a negative may be unsharp, apart, of course, from the elementary one that focussing has not been carefully done. One of the first things to examine is the register of the dark slides, and it is astonishing that such variations are permitted to pass the makers' testing departments. Only the other day we tested a set of a dozen slides and found three distinct registers. As the negatives were being taken for the express purpose of lantern-slide production, the errors were a serious matter. With book-form slides, particularly when the metal division is loose, it is an easy matter to focus on the ground-glass and then to test by means of another sheet of ground-glass placed in the dark slide instead of a plate. The modern slide, however, is frequently of solid form, and the separating division a fixture. With such slides the method of straight-edge and wooden wedge may be resorted to, and indeed is most satisfactory with any form of slide. The reversing back should be removed from the camera, and the slides tested in their place in it. The straight-edge is laid with its edge across the back and a small wooden wedge slipped between the surface of the ground-glass or a waste-plate in the slide, as the case may be. Where the wedge is just touching the edge of the straight-edge a fine pencil mark is made, and this will enable the worker to see whether it passes under the straight-edge to just the same point with the focussing screen and each of the slides. The wedge may be cut from a bit of yellow pine, or from the end of a cigar-box, but, as in all such matters, the accuracy of the test depends on careful making of the wedge and careful use of the method.

* * *

**Lens Hoods, and the Rising Front.** In the excellent little monthly issued by the Sinclair firm from 54, Haymarket, under the title of "The Sinclair Signpost," is an article pointing out the great advantage, if not the absolute necessity, of some effective form of lens hood. Such a lens hood in square collapsible form is, of course, much more effective than the old lens hood, which was a part of every landscape or rapid symmetrical lens; more effective, that is, because, being square and projecting further forward, it will cut off almost all the light except that from the objects actually being photographed. But by now almost all workers know how great is the covering power of modern flat field lenses, and are quite accustomed to using a rise of an inch or even an inch and a half with a hand camera. It is when the front is raised in this way that the hood becomes a source of danger, for if it is adjusted to the position of maximum effectiveness when the lens is opposite the centre of the plate it will cut off a considerable strip of the picture as soon as the front is raised, such strip, in fact, being roughly equal in width to the amount of rise in use. The hood should therefore be adjusted afresh when the front is raised, and this is generally possible by reason of its being collapsible. When focussing on the screen there is little risk, unless, of course, in dark interior work, and in hand-camera work the extension of the hood may be marked in conjunction with, say, each half inch of rising front.

## PERSPECTIVE AND PHOTOGRAPHY.

One of the very simplest scientific studies is that of perspective, yet for some strange reason it is a subject that very few understand. We have met with scientific men whose minds are an absolute blank on all matters of perspective, even though many of them make daily application of its principles and its facts are continually before everyone who has eyes. The lack of general knowledge of the subject can only be attributed to want of observation on the part of individuals, and this lack of observation adds greatly to the difficulty of explaining matters.

Photographers need not go very far into the subject, for they have no use for the details that the perspective draughtsman must master, but it is essential that they should know when perspective is correct and when it is faulty, and when it is the latter they should be able to trace the cause of the fault. They are therefore concerned mainly with the elements of the subject, and the first thing they have to learn is that "perspective" is, after all, only a name applied to facts with which they are, or should be, perfectly familiar. We will deal first with a very common effect of perspective. Suppose we have a small vertical screen standing in front of a much larger one, also vertical. When seen from the front the small screen will hide a certain proportion of the larger one, say one quarter of it. If we move nearer the amount hidden becomes greater, and we may approach so near that the large screen becomes completely hidden from view. As we draw near the relative sizes of the two screens appear to vary, the small screen seems to grow bigger and the large one relatively smaller. These effects are all effects of perspective, but the photographer does not usually recognise them as such. He calls them wide angle effects, and seeing them in his photographs is very apt to attribute them to some fault of the lens.

Let us consider another perspective fact. Stand on a straight railway line or in the centre of a long, straight, continuous road. The road appears to narrow as the distance increases until finally the two sides seem to meet in a point at an extreme distance. All parallel lines do this, and the fact that they do so is evident all around us in all circumstances if we only take the trouble to observe, yet ninety-nine people out of a hundred have never noticed the fact. The condition applies to short lines as well as to long ones, and if we lay down two walking sticks parallel to a straight railway line, and any distance from it, those two sticks will appear to point directly towards the same distant point as the rails, yet probably nine hundred and ninety-nine people out of a thousand will not be acquainted with this fact. This apparent convergence of parallel lines is perhaps the most important fundamental fact of perspective, for the whole art of correct drawing depends upon it. Ignorance of it is often shown in photographs in which by a process of faking the author has attempted to introduce a footpath. Almost invariably that path is incorrect; its parallel sides do not lead to a distant point, while if the conditions are complicated by curves in the path the final result is usually even more "out of perspective."

There is yet another fact of perspective that concerns photographers even more intimately. Perspective is not confined to the direction of lines, it also covers tones, which grow lighter as the distance increases. This is another readily observed fact, yet one that is almost universally unobserved; hence photographers often pass photographs in which the perspective of the tones is actually the reverse of what it should be. Photography readily errs in this respect, therefore photographers are easily trapped into the production of quite impossible effects.

The points to which parallel lines appear to converge are termed "vanishing points," and the science of perspective is very largely concerned with methods by which a draughtsman can determine the exact apparent positions of these points on his drawing paper. This is not a matter that concerns the photographer, because his lens automatically fixes such points for him and always puts them in the right place from the scientific point of view. It does not, however, of necessity, always put them in the right place from the pictorial point of view; this is left to the photographer, who, not knowing what a vanishing point is, generally ignores the matter altogether. The placing of these points is a matter that requires careful consideration. When they all fall outside the picture the result is usually a failure, while too many inside the picture produce a failure of a different kind. A study of successful pictures will show that as a general rule the points are few in number, while the principal one—that is, the one upon which the principal lines converge—is well within the picture. When one point is of predominant importance and well within the picture the perspective is described as strong. In stereoscopic work the importance of strength of perspective is very readily realised, but its equal importance in ordinary single pictures is sometimes overlooked. When different vanishing points compete with each other as regards interest—that is, when there is no predominant vanishing point—the picture loses the effect of concentration, while if all important points are outside the picture not only is the perspective weak but the picture becomes uninteresting. One of the first things to do in composing a picture is to look for the principal vanishing point and fix its best position, and to do this we must know enough of perspective to realise that such a point exists, and to comprehend its importance. It must not be thought from what we have said that the actual point itself should be visible; on the contrary, if it is visible, it is often wise to cover it with a near figure or some other object. Indeed, the best place for it is usually behind the principal object of the picture. Whether seen or not, the position of the point should be quite well marked by the lines which fix it, and it is not necessary that these lines should actually meet one another.

It must also be remembered that the predominant lines of a picture need not be continuous actual lines. They may be, and very often are, simply suggested by a series of points. Thus, in a body of troops marching, the files and the ranks invariably suggest two sets of parallel lines crossing one another at right angles, and these lines will converge on to vanishing points in just as obvious and marked a fashion as will the actual lines to be seen in, say, a building.

There is yet one more perspective fact that deserves mention and it is somewhat important to notice it, inasmuch as it is one that is not quite so apparent as the others should be. This fact is the rule which governs the position of the horizon. This is always on a level with the eye of the observer, whatever his height may be, and if he is standing on a level ground the eyes of all other erect persons of about his height will also be on the same level. In a photograph the horizon is fixed by the height of the camera lens, hence if this is held low down the heads of any persons standing in the field of view will be above the horizon, and the effect is that of a view obtained by someone in a sitting position. If, on the other hand, the camera is held above the head the horizon will be above the heads of all standing persons, and the effect will be that of a view obtained from an elevated position. In printing in figures in a landscape it is very easy to make a mistake in the level of the horizon, and by simply inserting the figure too high up or too low down it may be made to appear either much too tall or much too short. In composing a picture the painter makes use of the line of the horizon as a datum line by which he arranges the apparent height and scale of all the details composing the picture, and in a composite photograph it is essential to use the same datum to preserve truth of effect. It can generally be found very easily, for all receding horizontal lines below it run up to a vanishing point, while all those above it run down. In a photograph of a building, for example, it will be found that one course of bricks is actually horizontal in the photograph, and this course will mark the real horizon on a level with the camera lens. If the camera was held at eye level then any printed in adult figure must be arranged with the eyes practically on a level with the horizontal line, whereas if the camera was held at waist level the line must intersect any printed in figure also at the waist level. Due allowance must, of course, be made for children and for animals whose heights differ from that of the operator.

# DIAMIDOPHENOL AS A DEVELOPER IN TROPICAL COUNTRIES.

[In the following paper, read before the French Photographic Society on January 20 last, and published in the current issue of the Society's "Bulletin," MM. Lumière and Seyewetz discover a fresh virtue in sulphite of soda in the developer—namely, the property of preventing the gelatine film from melting in developing solutions of the high temperature which obtains when working in tropical countries. While they find the recent recommendation of M. Bunel to use sulphate of soda or ammonia to be of service as applied to diamidophenol, yet for metoquinone, metol-hydroquinone, or pyro, their experiments point to the advantage of using an extra proportion of soda sulphite for the purpose of preventing softening of the film.—Eds. "B.J."]

The difficulties of obtaining the developing solution at a proper low temperature when working in tropical countries have led to many experiments in the direction of providing developers capable of being used at a high temperature without causing alteration or softening of the gelatine film, and without leading to fogging of the plates.

Among the various means suggested hitherto for this purpose, the addition of substances capable of hardening the gelatine, such as the salts of chromium or aluminium, has not been capable of adoption even with developers in which alkali is not used, in consequence of the fairly rapid precipitation of chromium or aluminium hydroxide. This latter is immediately precipitated when a free alkali forms a constituent of the developer, such action destroying the effect of the hardening body.

M. Bunel, in a recent paper,* has advised the addition to the metol-hydroquinone developer of alkaline sulphates. These do not render the gelatine insoluble, but they prevent it from swelling in the warm developing solution.

M. Bunel has particularly specified the use of potass sulphate and borax in a metol-hydroquinone developer made up without bromide, and using acetone in place of the alkali.

We have found that this developer serves well without producing softening of the film at a temperature of 95 deg. to 104 deg. F., but it acts much too rapidly at this temperature, and likewise leads to considerable fog. Moreover, the use of acetone appears to us to be unadvisable at a temperature so high as 100 to 104 F., on account of the volatile nature of this material.

In the present series of experiments we have endeavoured to ascertain the best developing formula, both with and without alkali, in order to be able to work at temperatures of from 100 deg. to 104 deg. F., for a normal time of development and while obtaining a good result.

### Diamidophenol.

We first subjected this developer to a systematic examination, using with it substances which render the gelatine insoluble, as well as those which prevent it melting, or softening, in warm water, without actually rendering it insoluble. The first class of substances possess the drawback already mentioned—namely, of precipitating the hydroxide of chromium or aluminium—and thus, in seeking to obtain a working formula, we have succeeded only with the second class of substances, belonging to which we have noticed not only the alkaline sulphates, but also the sulphites. With these substances used in sufficient quantity the gelatine film remains unaffected, even at a temperature of 113 F.

In order to avoid introducing a new substance into the developer, we first attempted to employ sulphite of soda in preference to the alkaline sulphates, but when using diamidophenol we were unable to introduce the quantity of sulphite necessary for the prevention of softening of the gelatine without the plates suffering from considerable fog, even when a large excess of bromide was employed.

On the other hand, the alkaline sulphates, and especially ammonium sulphate, have given us good results.

In the case of diamidophenol developer there is no reason to fear the dichroic fog which is mentioned by Bunel as liable to occur when ammonium sulphate is used with an alkaline developer, for this fog is due to the presence of free ammonia which is not displaced by the sulphite of the developer.

In order to obtain a negative free from fog at a temperature of from 100 deg. to 104 deg. F., it is necessary to add to the bath a considerable quantity of bromide.

The following is the formula for the developer which has given us the best results:—

| | | |
|---|---|---|
| Diamidophenol ........................ | 5 gms. | 44 grs. |
| Soda sulphite (anhydrous) ......... | 30 gms. | 260 grs. |
| Ammonium sulphate cryst. ......... | 250 gms. | 5 ozs. |
| Potass. bromide ........................ | 3 gms. | 27 grs. |
| Water ........................................ | 1,000 ccs. | 20 ozs. |

In place of the 250 gms. of ammonium sulphate, 150 (3 ozs.) of anhydrous soda sulphate may be used.

This developer, used at a temperature of 100 deg. to 104 deg. F., gives excellent negatives in about three minutes' time of development.

---

* "B.J.," May 27, 1910, p. 399. "B.J.A.," 1911, p. 539.

### Metoquinone.

As regards the use of metoquinone, one does not find the same drawbacks as with diamidophenol in respect to the use of an excess of sulphite. We have been able to work out a good developing formula for metoquinone, containing sufficient excess of sulphite to keep the gelatine film from softening at 104 deg. F. We have thus succeeded in obtaining good negatives, free from dichroic fog, with a time of development of about three minutes, a result which we have not been able to reach by using alkaline sulphates, either in the presence or absence of alkalies. The following is the formula of the metoquinone developer:—

| | | |
|---|---|---|
| Metoquinone | 5 gms. | 44 grs. |
| Soda sulphite (anhydrous) | 200 gms. | 4 ozs. |
| Potass. bromide | 2.5 gms. | 22 grs. |
| Water | 1,000 ccs. | 20 ozs. |

### Metol-Hydroquinone.

Taking metol-hydroquinone as a type of an alkaline developer, we were able to work out with this latter. just as with metoquinone, a formula containing a sufficient excess of sulphite to prevent melting of the gelatine film at 104 deg. F.

The formula allows of the production of negatives comparable with those obtained with metoquinone within a time of development of about three minutes. We were unsuccessful in obtaining so good a result by substituting sulphates for the soda sulphite. The formula which gave the best results was the following:—

| | | |
|---|---|---|
| Metol | 1.5 gm. | 13 grs. |
| Hydroquinone | 1.5 gm. | 13 grs. |
| Soda sulphite (anhydrous) | 200 gms. | 4 ozs. |
| Soda carbonate (anhydrous) | 10 gms. | 88 grs. |
| Potass. bromide | 2.5 gms. | 22 grs. |
| Water | 1,000 ccs. | 20 ozs. |

### Pyro.

Within our experiments pyrogallic acid can be employed as developer in tropical countries without any addition beyond that of sulphite or sulphate. In fact, it is easy, by a slight modification of the customary formulæ, to prepare a developer which gives only a slight fog at a temperature of 104 deg. F. The following is the formula of the bath which allows of this result being produced:—

| | | |
|---|---|---|
| Pyro | 10 gms. | 88 grs. |
| Soda sulphite (anhydrous) | 25 gms. | ½ oz. |
| Soda carbonate (anhydrous) | 50 gms. | 1 oz. |
| Potass. bromide, 10 p.c. solution | 30 ccs. | 5 drams. |
| Water | 1,000 ccs. | 20 ozs. |

This developer will not keep very long, and rapidly discolours during development. For a formula which can be kept at hand for use the following two solutions should be used:—

| | | |
|---|---|---|
| A.—Pyro | 30 gms. | 260 grs. |
| Soda sulphite liquor | 10 ccs. | 1½ drams. |
| Water | 1,000 ccs. | 20 ozs. |
| B.—Soda carbonate (anhydrous) | 75 gms. | 1½ ozs. |
| Soda sulphite (anhydrous) | 37 gms. | 160 grs. |
| Potass. bromide, 10 p.c. solution | 45 ccs. | 7½ drams. |
| Water | 1,000 ccs. | 20 ozs. |

To prepare the working developer, 1 part of A is mixed with 2 parts of B.

Summing up the foregoing experiments. the diamidophenol formula is the only one which gives a developer yielding negatives free from fog at a temperature of 104 deg. F. This developer, therefore, should be employed by preference whenever a solution of great keeping powers is not an essential. As is well known, the keeping powers of this developer are limited. On the other hand, if the worker requires a solution which can be kept a long time without alteration, his best choice will be metoquinone, or metol-hydroquinone, or, lastly, pyro, all of which, employed as directed above, will give only a small amount of fog.

A. AND L. LUMIÈRE.
A. SEYEWETZ.

# FURTHER EXPERIMENTS ON THE SHAPE OF TRAYS FOR FLASHLIGHT.

WHEN writing my previous article on a similar subject December 17, 1909), although realising the importance of such ests, I did not expect that they would interest the profession generally, but since the animated correspondence between Mr. Hood, of Middlesbrough, and "Darge," a Colonial photographer, introducing a discussion as to the respective merits f their particular flash-pans, I thought it would be useful to nake practical tests of those and other shapes of pan in general se by professional photographers.

Of course, it was hardly practicable to make the various trays f the sizes stated in the letters, or to use several ounces of owder for each test exposure, but by working on a small scale he results would be (within limits which are mentioned later) ufficiently accurate for practical purposes.

Some pieces of sheet-iron were cut to six inches by three, nd bent into various shapes; the six photographs being those hich showed distinct differences, as slight alterations in the an were found to be negligible.

The powder used was "Agfa," and one gramme was measured or each exposure.

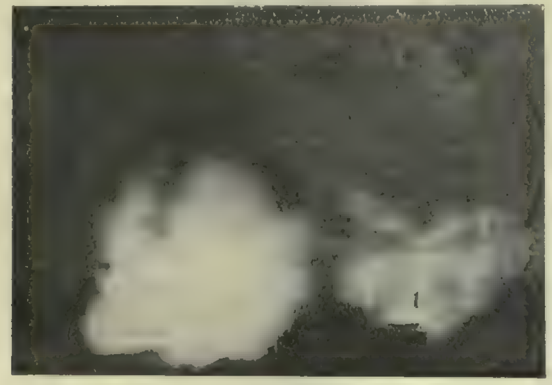
The camera was placed opposite a table, around two sides of hich was a black screen, and on which was placed a box to upport the various trays; and a large mirror at an angle to he box, so as to give an end view of the trays, and, therefore, f the flames, in the camera. Thus a front and end view of each flame were obtained simultaneously on one plate. This will account for the end view in each case appearing slightly shorter than the front view, but the error is proportionate throughout, and does not make any difference as regards the tests.

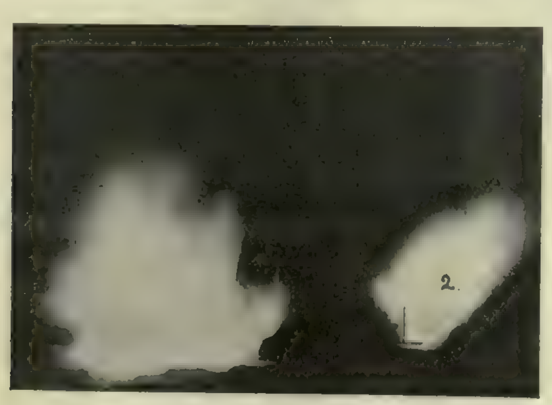
It will be noticed that there is but little difference between the areas of the flames in any two consecutive photographs; they are numbered in order of increasing effectiveness and not in the order in which they were made, and it might be thought that the slight differences were due merely to inaccurate measuring of powder, or similar accidental cause. But that this is not the case is appreciated immediately one notices the gradual evolution of the tray, and, at the same time, of the flame.

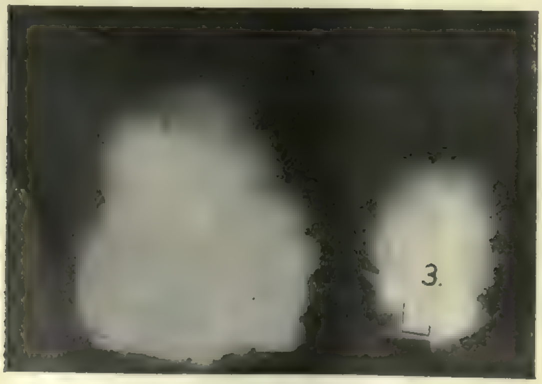
No. 1 is a perfectly flat tray with the powder laid in a thin trail along the six inches. An exposure made with the powder in a little heap gave an almost identical negative. The flame here is scattered, and is the least efficient of all.

No. 2 has an upright wall behind, as used by "Darge," and the powder was laid in the angle as described by him. This is shown to throw the flame forward in a compact mass, and will therefore give more light (in the required direction) than No. 1; but "Darge" seems to think that because the flame given by this pan is a slanting one, it will be nearer in effect to studio lighting. I cannot see that this proposition will hold good, because the subject is not in the same relation to the size of the flame as to a sky-light.

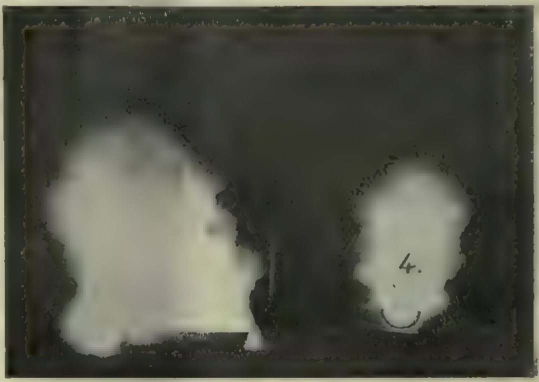
Taking this test exposure, with one gramme of powder the flame is only about eight inches high, and the top of it leans forward about five or six inches towards the subject, which in the case of a small quantity like this would be, say, eight or nine feet away. In the case of the larger subjects and quantities of powder mentioned in "Darge's" letter, the flame would probably not exceed three feet in height—certainly not four feet—and if the angle of the flame remained the same the top of the flame would be tilted only three feet or so nearer to the subject. The few inches' slope of the small flame for a subject nine feet distant, or the yard or so in the case of a large hall, can hardly be said to represent studio conditions, where the area of light is usually larger than the subject, and proportionately much nearer to it.



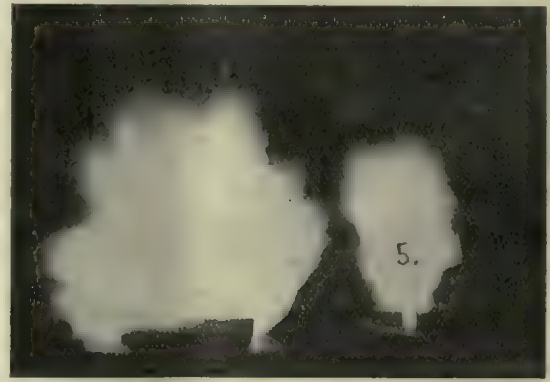


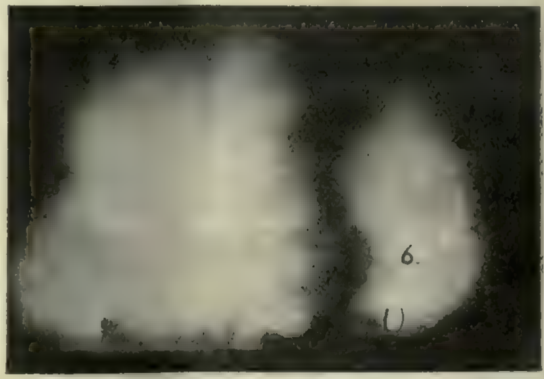


Moreover, I am of opinion that in the case of a large quantity of powder, the flame would not be projected in a straight line, but that the shape of the pan would lose its control beyond a certain distance, and that the rest of the flame would be carried upwards by the heat. I incline to Mr. Hood's view that it is better to aim at the largest possible sheet of flame, and the remaining photographs show that as one approaches what Mr. Hood suggests as the best shape, so does the flame expand and become thinner using the same amount of powder.



No. 3 is a pan similar to No. 2, but has a low "wall" along the front, and the powder laid along the centre. No. 4 is a curved gutter, similar to that which Mr. Hood states is in general use by him, and though the efficiency of this is not apparently much superior to the preceding two, immediately one adopts that gentleman's suggestion of making the gutter deeper and narrower, as in No. 5, the flame is decidedly increased in area, besides being more compact in thickness. I consider this important, as the more particles of flame to the front the better.





No. 6 is similar to No. 5, but with the powder in a heap. This is obviously the best of all, and I attribute the larger flame to the force of the explosion.

Taking the size of this flame from one gramme of powder, and judging by previous experiments and practice, I am strongly of opinion that it is not advisable to use more than one gramme per one inch along the tray, as the flame would be practically increased in thickness only by heaping closer. It will now be obvious that guttering of larger section than that used in these tests is quite unnecessary if the proportion of powder stated be adhered to.

For very large work it would be quite simple to have an arrangement for suspending two rows of guttering, one, say, three or four feet above the other, and to be fired simultaneously.

The full importance of this matter of the shape of the pan will be realised when it is noted that commercial lamps (for mixtures) are very frequently either quite flat, or partake of the nature of 2, 3, or 4, but I have never seen one of the deep and narrow section of No. 6, which is so obviously superior to the others, and to Mr. Hood must be given credit for the suggestion.

Turning now to the question of the great difference in the results obtained, according to the correspondence mentioned, there is usually a fair amount of latitude in flash-light work on the side of full exposure, but none on the other side. A moment's consideration will show why this is so. The shadows are nearly always poorly lit, and without sufficient exposure are sure to be almost, if not quite, detailless, while it is difficult to over-expose such shadows.

Now, the effective exposure depends on several factors apart from the powder. These are: The distance of the flame from the subject, the stop in the lens, and, as artificial light drops rapidly, the height of the flame above the ground (or subject). The speed of the plate is, of course, important; but, apart from that, a soft working emulsion should be chosen. As regards the powder itself, I should certainly expect several ounces of a good powder to fully illuminate anything, though I remember some years ago using three or four ounces of a certain commercial powder or of a home-made formula where I should now use only as many grammes, and the negatives were not over-exposed. At that time, however, I was using a large flat lamp, and low down at that, which will account for a good deal of the discrepancy.

Another important point, often overlooked, is the distance and colour of surrounding walls; if these are dark or some distance from subject or lamp, it is safe to double the quantity of powder.

It may be a question for further experiment to find out whether the close sides of the gutter retard the combustion of the powder by preventing a full supply of oxygen. It certainly seemed as if the explosions in the narrow trays were slower, but such momentary impressions are very deceptive, and not to be relied on for certainty.

N.B.—In the end views of the flames I have strengthened the edges of the trays so as to show the shape of the sections clearly.

D. Berlin

# NOTES ON THE SINGLE-SOLUTION METHODS OF SULPHURETTING BROMIDE PRINTS.

Up till quite recently the hypo-alum bath was the only single solution known of any real value for converting the silver image of a bromide print into one of silver sulphide. It has, of course, been well recognised for some years that a solution of a soluble sulphide, especially of a polysulphide, would convert the image of certain bromide prints fairly quickly and readily into one of silver sulphide. Such solutions have been, however, deemed to be practically worthless, for, *as a general rule*, their action is exceedingly slow and uncertain.

In a recent article in "Photographische Rundschau," of which a translation was published in the "B.J." of November 4 last, Dr. Kropf advanced certain interesting theories on the subject of the action of sulphide solutions on the silver image of bromide prints, and gave a recipe for compounding a single solution sulphuretting bath on lines other than any hitherto published. It is the purpose of these notes to bring before the readers of the "B.J." the objections which I think must be made both to Dr. Kropf's theories and to his practical advice.

As soon as I read the translation of Dr. Kropf's article in the "B.J." I wrote a letter to the editors pointing out certain errors into which the doctor had fallen, and I made a suggestion, based on my own experience, for compounding a sulphuretting solution which I had reason to believe would prove far better than his. This letter was published in the "B.J." of November 11 last.

I had not, when I wrote the above-mentioned letter, had time to try Dr. Kropf's solution, nor to form any well-considered opinion on his theories. As I now have had time both to consider his theories and to test his solution I can properly offer certain criticisms on the contents of his article. Dr. Kropf begins his article by saying that sulphide solutions act upon an image of metallic silver according to the equation

$$2Ag + Na_2S + H_2O + O = Ag_2S + 2NaOH.$$

That is, he says, that oxygen is necessary and enters into the reaction. Well, it may be so, but I am not sure. As far as I am aware the question has never been properly investigated, and, although there seems a good deal to be said for the oxygen theory, until such investigation has taken place no definite opinion is possible. I have sulphuretted a piece of silver foil by immersing it in an alkaline solution of pyrogallol containing sodium sulphide. We should certainly expect oxygen to be absent here, but the question is complicated by the possibility of "occlusion," and can only be settled by very careful and somewhat elaborate experiments. Dr. Kropf goes on to say that when bromide prints are placed in a weak solution of an alkaline sulphide no action is noticeable and that this is because the vehicle of the emulsion (the gelatine) obstructs the access of oxygen. Here I can't agree with the doctor at all. The failure of the sulphide solution to act on the silver of the image is not due to the gelatine. This is shown by the fact that the image on a plainly fixed P.O.P. print is readily sulphuretted by a solution of sodium sulphide and occasionally, as I have above mentioned, a bromide print is obtained of which the image is similarly acted upon. Whether oxygen is necessary or not the failure of the sulphide solution to act in the case of most bromide prints is not due to the obstruction of oxygen. I don't see why Dr. Kropf should imagine that a gelatine film would obstruct the passage of oxygen to any appreciable extent. Surely all the facts we know point to the conclusion that the important thing governing the action of a solution of sodium sulphide on a silver image is the nature of that silver image. Experiments I have made seem to show that different pieces of silver foil are acted on differently. In this case one factor is the purity of the silver, the velocity of sulphuration apparently varying inversely with the degree of purity.

Dr. Kropf next passes on to suggest that even in the hypo-alum bath a supply of oxygen is necessary for the toning action to take place. He says that the aluminium hydrate which is separated acts as a carrier of oxygen. How it can do so he does not explain. The notion appears to me to be absolutely absurd. The generally accepted view, which I believe is perfectly correct, of the action of the hypo-alum bath, is that the solution contains unstable compounds of sulphur, and that these compounds part with some of their sulphur to the silver image. In short we may say that the toning is due to nascent sulphur.

The effect of an oxidising agent, if such could exist in the solution, would be in conjunction with the hypo to cause a solution of the image.

Dr. Kropf leads up to the statement that what one wants in a sulphide toning solution is a substance capable of yielding oxygen and proceeds to advise the use of a certain sulphide solution containing a persulphate. Now even if the oxygen theory is right a soluble persulphate in a solution of an alkaline sulphide would not give oxygen. Therefore I must say that I cannot clearly see the bearing of Dr. Kropf's remarks on the oxygen theory as an introduction to his toning method. If a persulphate could exist in any sufficient concentration and for a sufficient length of time in a solution of an alkaline sulphide, and if it enabled toning to take place, the action would be—

*(a)* The formation of silver sulphate.

*(b)* The conversion of this silver sulphate into silver sulphide.

As a matter of fact, as I pointed out in my letter of November 11 last, Dr. Kropf's toning solution contains no persulphate. It is quite true that when the persulphate and the alkaline sulphide are at a very low concentration the reaction between them is not very rapid. Employing the concentration advised by Dr. Kropf, I find that the time at normal temperatures required for the practical destruction of the persulphate is about twenty minutes. In Dr. Kropf's actual solution one can rarely notice any action at all, for as soon as sulphur is formed,

$$(NH_4)_2S + 2(NH_4)SO_4 = 2(NH_4)_2SO_4 + S.$$

it is dissolved by the excess of ammonium sulphide present, giving a polysulphide,

$$(NH_4)_2S + S_x = (NH_4)_2S_{x+1}.$$

If we reduce the concentration of the sulphide to about one-seventh of what it is in Dr. Kropf's solution, so that the formation of polysulphides is stopped, or greatly retarded, we can see by the deposition of sulphur how readily the interaction between the persulphate and sulphide takes place.

In the toning solution made up according to Dr. Kropf's specification there is, as I have said, no persulphate at all. It is merely a polysulphide solution. If, however, the solution be used as soon as mixed, without the half-hour's standing advised by the doctor, there is a little persulphate left for a short time. My experiments show, however, that, so far from any quickening in the toning action taking place by using the freshly made up solution, just the reverse is the case. It must be remembered that a persulphate solution of only 1-10th per cent. concentration acts very slowly on the silver image of any kind of print. Even with a freshly made up bath, all the persulphate will be destroyed before it has time to act appreciably upon the image of the print immersed in it. No, Dr. Kropf is undoubtedly wrong about the principle of his toning solution. He is also wrong, in my opinion, about its practical merits. Dr. Kropf's solution is merely one of the many possible polysulphide solutions, and, after trying it, I have come to the conclusion that it is no more rapid or reliable in its action than many others of the same kind. My own view is that no such solution is sufficiently rapid or constant in its action to be of real value for sulphuretting purposes, at all events as regards true bromide prints. With gaslight papers the case may be somewhat different. One can as a general rule obtain various shades of purplish black and brown tones by immersing bromide prints for several hours in polysulphide solutions. Some may admire these purplish tones, but I prefer purer browns.

If one wants a one-solution method of toning bromide prints which is always rapid and fairly constant in its action, and which generally gives darker tones than the indirect method, I can certainly recommend the recipe I gave in the "B.J." of November 11 last. The solution works as well without any potassium bromide as with it, so this substance should be left out. The following three stock solutions will be found useful:—

| | |
|---|---|
| I.—Pure crystalline sodium sulphide ($Na_2S9H_2O$) | 4 oz. |
| Water | to 16 oz. |
| II.—To 7 oz. of water add 1 oz. of conct. sulphuric acid, and then make up to 10 oz. with more water. | |
| III.—Potassium ferricyanide | 1 oz. |
| Water | 10 oz. |

The toning bath is compounded by adding 60 minims of No. I. to 2 oz. of water, and then pouring in 180 minims of No. II., and after this 1 oz. of No. III.

When a print is immersed in this bath the silver is first converted into silver ferrocyanide, and then immediately the silver ferrocyanide is changed into silver sulphide. Toning should be complete with any print in from two to five minutes.

After toning, the print is well washed.

The action taking place in the case of polysulphide solutions is similar to that of the hpyo-alum bath—nascent sulphur. The sulphuretted hydrogen and potassium ferricyanide solution is the first successful attempt to carry out the principle of the indirect method by means of a single solution. As far as I am aware, it is not possible to combine an alkaline sulphide with an oxidising agent when the latter is at a sufficient concentration to be of any use, since the two bodies react and destroy one another very rapidly. I tried some years ago a solution of sodium sulphide mixed with potassium cyanide, thiocarbamide, and ammonium sulphocyanide, but in no case could I obtain any toning action.

R. E. Blake Smith.

# ART IN THE SHOWCASE.

[The lesson which the ever-practical Mr. Claudy teaches in the following article in the "Bulletin of Photography" is one which we imagine most photographers have surely learnt. But, like other advice, it cannot be taken as a hard-and-fast rule. While it is true enough that the showcase should, and must, represent the work of the studio—that is, the type of work—yet, on the other hand, the showcase must be used to make people talk about the photographer, to make people stop outside his establishment; and to that end an occasional radical departure from the accustomed style will often be of service.—Eds. "B.J."]

Just as there are many flowers born to blush unseen, and some poets born to die with their songs unsung, so, I suppose, there are some artists with a camera born to the sordid destiny of making cabinets at $3 a dozen.

At any rate, whether they be real, sure-enough, dyed-in-the-wool artists, or not, there are quite a bunch of them who think they might, could, would, or should be artists, if they only had a chance, but whose little tummies, and the little tummies of their families, demand so much bread and butter that they have to spend time on doing "merely commercial portraiture, don't you know."

Well, this sort of man makes cheap pictures for a living and beautiful (?) photographs, which are fuzzily artistic and scrubbily low in tone, and therefore æsthetic—whatever that means when you call a photograph by that name—all for the pure love of Art, with a big A. This gentleman and his fellows have all read two text-books, attended three lectures, and read the magazines, and therefore they cannot be questioned as to the soundness of their art knowledge.

Far be it from the present scribe to attempt to interfere in any way with the pleasure anyone has in making solemn-looking "studies" in low tones and fuzzy ones, calling them "art" photographs and revelling in their sombreness. It is a perfectly innocent recreation, and, judging from the numbers of people who indulge in it, it must be a very satisfactory one.

But when it comes to putting said solemn smudges in the showcase, then one must arise and enter protest.

IF
  One could sell such things,
  One had a demand for such things,
  One's public wanted such things,
  One made one's living by making such things and purveying them to an expectant public,
THEN
  It would be all right to put them in the showcase.
BUT
  The man who makes smudges for fun usually makes map-like photographs for a living.
  The man who makes map-like photographs for a living wants to attract the trade of those who like map-like photographs.
THEREFORE,
  To put smudges in the showcase is to turn away the trade of those who would put dollars in your pocket.

In other words, don't put in your showcases anything but the things you sell.

If you sell "art," with quotation marks or without, with a big A or a small one, then by all means put it in the showcase.

But if you sell plain photographs and make "art" (again with either big or small letter and with or without quotation marks) photographs for the fun of the thing, don't put anything but plain photographs in the showcase.

If you are a patron of Goldensky or Mrs. Käsebier, you don't have to look at their showcases to see what they do. But if you are not customers of theirs, and they should display in their showcases the sort of work done, for instance, by any noted photographer of stage beauties, and you wanted the sort of work Goldensky or Mrs. Käsebier does, you wouldn't go any further than their front doors—you'd look elsewhere.

On the other hand, if you were a noted stage beauty and wanted some nice, clear, strongly lighted, well-retouched, map-like photographs, and you went to Marceau, for instance, and found in his showcase a typical Käsebier or Goldensky study, you wouldn't go any further up the stairs than the one step necessary to enable you to turn around and come down again, would you?

Well, there it is. The showcase is a sample case, a signboard, an advertising scheme. It's to sell the kind of photographs you make. It is not an accessory to your hobby, to your vanity, no matter how innocent that may be. If you make high art for a living, high art ought to go in the showcase; if you make low, plebeian, straight out-and-out photographs for a living, why, they are the sort of things you want to show. To do otherwise is to be an idiot and turn money away. Some bright soul said he stood in front of Mrs. Käsebier's studio front in New York and told the time of day by listening to the comments passed on her little showcase—those who came early—shop girls, workmen, etc., sneered and passed her by; those who came later in the day—men of means and taste, ladies of fashion, raved and went in to get some of themselves made in the same way.

Well, Mrs. K. and Goldy and a host of other people who make real sure-enough pictures with a camera which deserve the name of art products, with no special letters or quotation marks either, cater to the trade which demands such products, and put those products in the showcase. But dozens of other people—and some of them make mighty good-looking pictures at that—who cater to an entirely different class of trade, yet insist on putting their private hobby into the showcase, when all that belongs there is their public work.

And when you come to the other kind of art in a showcase—the art of showcase dressing and display—the first and most primer-like dogma you have to master is not on how to space, how to group, or how to arrange, but is on what to put in and what not to put in.

And the "what" to put in is the plain every-day staple photographs you make for a living—or the special beautiful and unusual pictures you know you can sell when your public sees them—it is never what you would like to sell if your taste were consulted, never anything that has to be stuffed down a customer's throat, because the only successful stuffing is that done in the reception-room, and the man who starts that process in the street never gets near enough to the customer's pocketbook to know whether it will stand the price or not.

C. H. Claudy.

# Photo-Mechanical Notes.

## Paynetype.

A new booklet of instructions just issued by Messrs. Mawson and Swan, 15, Mosley Street, Newcastle-on-Tyne, announces a very great reduction in the prices of the Paynetype zinc plates for this process of zinco blocks direct in the camera. The price, hitherto ruling, of 40s. for one dozen 12×10 plates is now reduced to 25s., the complete list of prices being as follows:—6½×4¾, 6s. 6d.; 8½×6½, 11s. 6d.; 10×8, 16s. 8d.; 12×10, £1 5s.

The prices for coating customers' own metal are as follows:—6½×4¾, 3s. 3d.; 6½×6½, 5s. 9d.; 10×8, 8s. 4d.; 12×10, 12s. 6d.

The following extracts from the booklet will serve to convey a better idea of the actual working of the process than has hitherto been conveyed:—

Since the process has become established in several process houses, considerable knowledge has been gained in the direction of economical working; and at the present time the following system seems to leave little room for improvement.

A reasonably large dark-room fitted with a sink of sufficient size to permit of the largest plates it is proposed to use being readily "whirled" in it, and also with a good supply of hot and cold water, is thoroughly cleaned and fitted with a good and fairly powerful orange light. A light that is perfectly safe for rapid bromide paper, or gelatino-bromide lantern plates, is suitable. The size of the utensils that will be required depends, of course, upon the size of plates that are to be used, but for the purpose of this article we will assume that the novice is using half-plates, as they are a useful size for a beginner.

A 12 × 10 deep porcelain developing dish is placed to the left of the sink and filled with a layer of the 5 per cent. solution of potassium bichromate of a sufficient depth to cover the plates when they are laid in the dish. To the left of this dish is placed an upright porcelain developing tank suitable for half-plates, and this tank is filled with hot water. On the right of the sink is placed a half-plate porcelain dish and a measure containing four ounces of the glycin developer mixed with water ready for use.

These preliminary preparations being made, the operator takes a Paynetype plate from the box and places it in the dark-slide, which is then carried into the studio. For the first attempts it is advisable to use line work of a fairly coarse character. The prism is removed from the camera lens and, after the copy is arranged on the easel and focussed, the plate is exposed in the usual manner. An exposure of five to ten seconds will probably be correct with a drawing on good white paper lit by two 12 amp. enclosed arcs, with the lens working at *f*/64.

### Developing the Plate.

The exposed plate is developed in the dark-room for about two minutes with the glycin developer until the picture appears in white lines on a good black background, but development must be stopped before the lines commence to veil. Both sides of the plate are then washed under the tap for about ½ minute and the plate placed film uppermost in the bichromate solution so that the film is well covered with solution.

The operator then exposes and develops a second and third plate in a similar manner, and when the third plate is placed in the bichromate solution it is time to remove the first plate from the dish, and, after rinsing it under the tap, to place it in the developing tank, where the hot water automatically dissolves away the unexposed gelatine. Whilst this is proceeding the operator exposes and develops a fourth plate, and after immersing it in the bichromate solution, removes the second plate to the hot-water tank. He then removes the first plate from the tank and rinses it under the tap, when it will be seen that all the unexposed gelatine has been dissolved away, leaving a negative image in gelatine on the resist. This plate is then whirled face downwards in the sink and rapidly dried film side uppermost over a flat bunsen burner and passed to the printer or assistant to finish, and the other plates are treated in a similar manner.

This cycle of operations takes considerably longer to describe than to work in actual practice. As a matter of fact, the time devoted by the operator to each plate, exclusive of arranging the subject on the copy board and focussing, is only about four or five minutes per plate, because most of the work proceeds automatically whilst the operator is busy with other exposures.

Herein is one of the principal economic features of the process, for it more than doubles the potential output of a camera and operator, and there are further possible refinements that will be referred to in another paragraph.

### Reversing the Print.

As the assistant—who for want of a better name we term the printer—receives the plate, he immerses it whilst slightly warm in a small quantity of methylated spirit contained in a developing dish and rocks the dish for about five or six seconds until the resist is thoroughly attacked. He then removes the plate from the spirit and washes it in the manner subsequently more fully described under the heading "Pointers to Success" with a strong stream of water until all the spirit is thoroughly removed. The plate is then immersed in hot water and the gelatine film rubbed off with a pad of cotton wool, and the plate dried and allowed to cool. When the plate is quite cold, a small quantity of amphitype or liquid ink is spread over the plate with a pledget of cotton wool, followed by rolling with a composition roller, until the ink is spread in a thin even coating over the plate, sufficient ink only being applied to give a grey appearance to the plate, so that the image may be distinctly seen through the layer of ink. The plate is rolled until the ink becomes tacky, and is then immersed in a dish containing methylated spirit and carefully developed with a pledget of cotton wool in a similar manner to an albumen print. When the image is clean, the plate is rinsed under the tap, dried, and dusted with bitumen, which is then burnt in and the plate is ready for the first etch. The whole operation takes about seven or eight minutes.

It has been found necessary, in order to obtain the highest possible efficiency for the process, to supply two different kinds of plates. One brand will be known as Intaglio Paynetype plates, and is to be used when the plate is not "reversed," for instance, when half-tones are made direct from negatives, or posters by enlarging from fine half-tone negatives, or "reversed" line work. The other brand will be known as Relief Paynetype plates, and should be used for all work in which the image is "reversed" by inking up the plate. Both kinds of plates are sold at the same price.

For other particulars of working and cost of blocks made by the Paynetype process, the full text of the booklet, which is sent free on application to Messrs. Mawson and Swan, should be consulted.

## Another Direct-on-Metal Process.

"Immediographie," an account of which is given in "Klimsch's Jahrbuch," is the name Messrs. Klimsch have given to a process they are introducing which is similar to "Paynetype." The article does not give any very precise details, because patents are not yet issued, but it would appear that the main difference from the process of Payne is in the nature of the film which insulates the gelatine-silver-bromide from the metal plate. This is stated to be the weakest point in Paynetype, and the writer claims that it has been improved very greatly, speaking of this film as a deposit that is produced by chemical means, and easily removable in the later operations. Certainly the map and the half-tone shown as examples of this process are excellent, though the author is not yet satisfied that half-tones are produced with sufficient ease. The author recommends the common plan, where large work is in question, of using the dark-room as the camera, but he has a novel suggestion to make in recommending large pneumatic printing-frames to hold the original and another to hold the thin plate which is used in photo-lithographic work.

## Indirect Printing from Engraved Plates.

The current issue of the "Inland Printer" has the attached paragraph :—"A new method of offset printing has been patented in France. The plan involves the use of intaglio engraved plates or cylinders which transfer to a roll of elastic material, which in turn is impressed on the paper by a suitable cylinder. The roll is washed and scraped and wiped after each impression. By this plan the rubber blanket or roll does not retain accumulations of paper dust or ink, for it passes through a basin of solvent and comes to the engraved plate free from the dust or surplus ink. The engraved plate is inked and scraped by the usual method, and in this way is somewhat similar to Dr. Merten's process. The use of the transfer roll of elastic material and the compression cylinder makes the method an indirect one by combining the offset principle. This method gives the third adaptation of the offset principle to printing. The first is the lithographic way now so widely used. The second is the adoption of this principle by a German press concern where a transfer is made from a type-forme to a rubber blanket and reversed on another blanket, to be again transferred to a web of paper for newspaper production.

## A Tasteful Year-Book.

"Klimsch's Jahrbuch" for 1911 maintains the high level of artistic production that it has always set itself. This year the binding is in dark blue cloth with handsome gold lettering, the type selected for this, and the text of the whole of the book, being "Tiemann-Mediæval." This is one of the best types ever cut, and it can now be obtained in England under the name of the "Wren" series. The articles are of the usual interest to those concerned in book production, and this year more of them than usual have some appeal to photo-engravers, as, for example, those by P. Fleck, on "Lithographic Transfer Work"; Dr. Harting, on "Freedom from Distortion of Photographic Lenses"; R. Russ, on "Negative and Positive Retouching for Colour Reproduction," and on the "Half-tone Cold Enamel Process"; A. Bauer, on "Metal Placard Production"; M. Bruchner, on "Merten's Rotary Photogravure"; H. Eberling, on "Offset Printing"; and lastly, Schumacher, on "Immediographie." There is the usual chronicle of events, list of patents issued and new books published, and at the end are the specimen supplements, which include examples of new types, rotary photogravure, collotype, and half-tone in one, two, three, and four printings. Let us repeat, these illustrations, having nothing to do with the text, are kept away from it; on the other hand, the illustrations in the text are frequently line blocks specially drawn so as to harmonise properly with the type, and even where half-tone is used it is printed on the same paper as the text, a paper without any chalk surface, and of a pleasant cream colour. The "Jahrbuch" is issued in this country by Hunters, Ltd., Poppins Court, E.C.

Ilford Photographic Society.—At the fifth annual exhibition of the Ilford Photographic Society, which opened on Monday last, a pleasing variation from the section of invited work which is now so common was found in a collection of "collective exhibits," each of from eight to twelve prints, from twenty-two different photographic societies. In this way 220 prints were obtained, two specially designed diplomas on vellum panels being awarded (to the societies) in this section. As Mr. F. C. Boyes, the President of the Ilford Society, writes us, "the idea seems one in which photographic societies might help each other, and it has certainly turned out very successfully in our case."

# Exhibitions.

### AYR AMATEUR PHOTOGRAPHIC SOCIETY.

The third annual exhibition of the Ayr Amateur Photographic Society opened in the Carnegie Library Hall on 16th inst., and closes to-morrow. The exhibition reflects much credit on the Society, the progress made since its first exhibition being distinctly evident, while the open class shows an increase from twenty-three entries last year to forty-six on the present occasion. Mr. Meikle, the enthusiastic secretary, and his committee must feel proud at the excellent show they have provided for the "honest men and bonnie lasses." In the open class are many pictures that have won honours elsewhere. The President's prize is gained by A. H. Watson, Glasgow, with "The Royal Bank—Night," a picture that appeared at the Glasgow Southern Exhibition in the "night subject" class, but was unnoticed there; plaques are gained by John McClure, Ayr, "Woodlands" (which also gained the special prize for the best picture by a member), and W. J. Hart, Glasgow, for "Nightfall in the Valley" (which gained premier honours in the Federation Class at the Glasgow Eastern); both "honourable mentions" were gained by John McClure with "The Exchange Arch—Night" (adjudged the best picture in the Glasgow and West of Scotland Exhibition, and awarded one of the plaques at the Glasgow Southern) and "Youth."

The awards in the members' classes are as follows:—

Landscape.—(1) "Down the Silver Thames," Thos. McClure; (2) "A Transient Gleam," Thos. McClure; (hon. men.) "Among the Firs," David Meikle.

Seascape.—(1) "Sunset," I. Terry; (2) "Sea and Sky," I. Terry; (hon. men.) "On Eastern Seas," Dr. T. Lauder Thomson.

Portraiture and Figure.—(1) "The Gleaner," I. Terry; (2) "The Sand Boy," Thos McClure.

Outings.—(1) "Old Mill, Dalrymple," I. Terry.

Lantern Slides.—(1) "Kirkfield Bank," John McClure.

Novice.—(1) "Winter Reigneth," David Meikle; (2) "Snowy," John Pratt; (hon. men.) "Brackline Road, Callander," John Pratt.

Mr. J. Craig Annan judged. The loan collection included, besides pictures by Mr. J. Craig Annan, Mr. John Moffat, and others, eighteen pictures by Mr. W. C. S. Ferguson, Glasgow (a native of Ayr), in his favourite medium, oil. The special loan section of the Glasgow Photographic Art Circle of twenty-one pictures by leading workers was also a feature of the exhibition.

### FORTHCOMING EXHIBITIONS.

**February 25 to March 11.**—Birmingham Photographic Society. Sec., T. Matthews, 60, Newhall Street, Birmingham.

**February 25 to March 11.**—Edinburgh Photographic Society. Sec., J. C. McKechnie, 31a, Castle Street, Edinburgh.

**March 3 to 18.**—Northern Photographic Exhibition (Liverpool). Sec., C. F. Inston, 25, South John Street, Liverpool.

**March 6 to 9.**—Worthing Camera Club. Entries close February 24. Sec., E. F. H. Crouch, 11, South Street, Worthing.

**March 7 to 8.**—G.E.R. Mechanics' Institution, Stratford. Entries close February 25. Sec., A. Woolford, 16, Grove Green Road, Leytonstone, London, E.

**March 11 to April 8.**—South London Photographic Society. Sec., Horace Wright, 180, Friern Road, East Dulwich, London, S.E.

**March 15 to 16.**—Bedford Camera Club. Entries close March 3. Sec., C. E. Craddock, 194, Castle Road, Bedford.

**March 20 to 21.**—Folkestone and District Camera Club. Entries close March 9. Sec., Hamilton Smith, 20, Radnor Park Crescent. Folkestone.

**March 23 to 25.**—Beith and District Arts and Crafts Club. Sec., J. Peat Millar, 40, King's Road, Beith.

**March 25 to April 1.**—Sunderland Photographic Association. Sec., Wm. E. Kieffer, Stirling Road, Sunderland.

**March 25 to April 20.**—Worcestershire Camera Club and Photographic Survey Society. Entries close March 16. Sec., G. H. Haycox, St. Wulstan's Crescent, Worcester.

**March 28 to April 1.**—Sheffield Photographic Society. Sec., C. H. Parker, 67, Wadbrough Road, Sheffield.

**March 29 to April 1.**—Bolton Camera Club. Sec., J. E. Button, 491, St. Helens Road, Bolton.

**March 29 to April 1.**—Ilkeston Arts Club. Entries close March 22. Sec., A. Smith, 11, Graham Street, Ilkeston.

**May 3 to 4.**—Chelmsford Photographic Society. Sec., C. H. Wallis, Rosebank, Moulsham, Chelmsford.

**May 8 to 31.**—Royal Photographic Society. Latest date, carrier, April 24; hand, April 25. Sec., J. McIntosh, 35, Russell Square, London, W.C.

**May 12 to 20.**—Photographic Arts and Crafts. Sec., Arthur C. Brookes. 15, Harp Alley, Farringdon Street, London, E.C.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between February 6 and 11:—

Dark-room.—No. 3,008. Portable dark-room. Alexander von Bajkay.

Shutter.—No. 3,318. Photographic shutter. Louis Joseph Emmanuel Colardeau and Jules Richard

Lamp.—No. 3,350 Lamp for photographic purposes. James Hazell.

Lenses.—No. 3,399. Photographic lenses. Horace Courthope Beck.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Developing Apparatus for Plates in Envelopes.—No. 26,194, 1909 (November 12, 1909). The invention relates to the daylight development and subsequent treatment of photographic plates or flat films (as distinguished from roll films) which are enveloped or sheathed in a flexible envelope and after having been exposed are again enveloped, transferred to apparatus for development, etc., and then exposed to the developer for development without the aid of a dark room or changing bag. The object of the invention is to provide improved apparatus for use as aforesaid, in which the plate or film is manipulated whilst in a more or less horizontal position, and in which mechanical means are provided for opening up the envelope, whilst this is completely enclosed inside the tank, for the purpose of exposing the plate to the developer, etc.

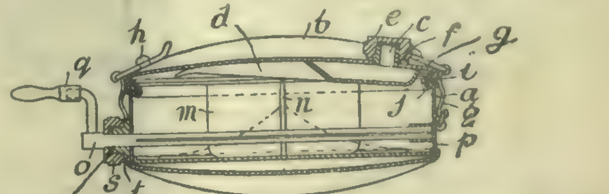


Fig. 1.

A tank is made as *a*, having a close-fitting, light-tight dished cover *b* formed with an aperture *c* therein. The aperture *c* is protected by a light-tight screen *d* and closed by a detachable cap *e* fitting on to a hollow boss *f* of the cover *b*. Convenient means, such as hinged loops *g* attached to the sides of the box *a*, and knobs *h* secured to the cover *b*, are provided for holding the cover down light-tight upon the box. The cover *b* is formed with a rim *i* to fit within a channel *j* provided upon the inside of the box *a*. The aperture *c* forms the inlet, and an aperture *k*, in the box *a*, similarly closed by a detachable cap *l* forms the outlet for the developer, etc. The aperture *k* is protected by a light-tight screen *m*.

At one end of the box or tank *a* is provided a means, which in the example shown, takes the form of a pin *n* for the purpose referred to below.

At the other end of the box or tank *a* is mounted a split spindle *o*, which passes through an aperture formed in one side of the box, and is supported by a socket or bearing *p* provided at the other side of the box. Where the spindle, which is split or divided throughout the greater part of its length, and is also provided with a crank handle or the like *q*, passes through the side of the box, is a means by which the hole or aperture permitting the insertion of the spindle, is made fluid and light-tight when the spindle is in place. Suitable means for this purpose consist of a rubber disc or its equivalent *r*, interposed between a cap *s* and a boss *t*.

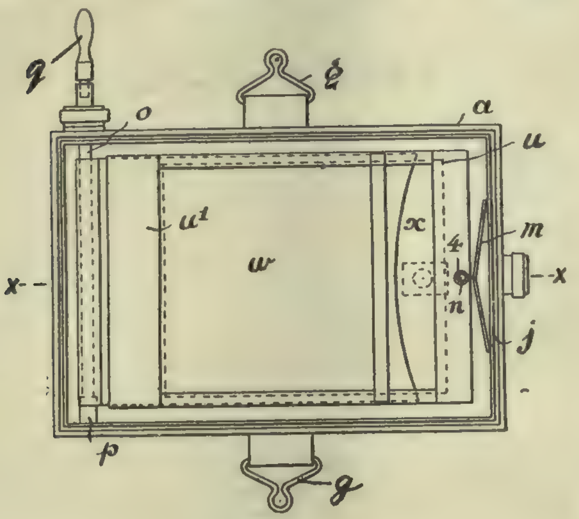


Fig. 2.

For use in connection with a daylight developing apparatus the plate or film-holding envelope *u* is provided, with an eye-hole 4 to engage on the pin *n*, and a tongue on the shutter *w* to engage the slot in the spindle *o*.

Exposures are made in the usual way, and the plate or film holder is then removed from the camera, and is subsequently placed in the box or tank *a*, the eyelet 2 of the bottom end of the holder *u* being slipped over the pin *n*, the top end of the sliding shutter *w* being passed through the split or divided portion of the spindle. The cover of the box or tank is then placed thereon and secured. The handle *q* is then turned, whereby the flexible sliding shutter *w* is gradually wound round the spindle, thus exposing the plate or film within the box or tank *a* to the action of the developing fluid which is poured in through the aperture *c*. After the plate or film has been developed, the developing fluid can be poured away through the aperture *k*, and the plate or film washed and fixed in the usual way, all without removing it from the tank. Percy Albert Craven, 16, Warmington Road, London, S.E.

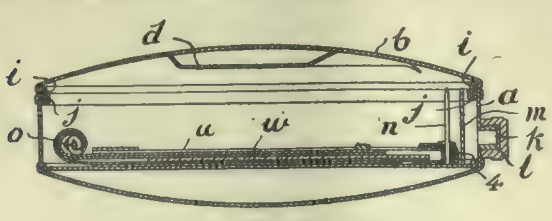


Fig. 3.

**Colour Screen-Plates.**—No. 4,208, 1910 (February 19, 1910). The invention is an improvement on the method of manufacture of a screen-plate (the "Thames"), described in Patent No. 19,652, 1906 ("B. J.," September 27, 1907). In this the procedure involves the production of one series of dots from a suitable plate, the relative position of which is then altered to admit of the production in intermediate positions of a second series of dots, and so on, for any further number of series required, although two series ordinarily suffice. It is the difficulty of effecting the changes in relative position between the plate and the medium so that the relationship of the different dot series and interspacial filling, in a plate made on one occasion, shall exactly correspond with those of a plate made on another occasion, that this invention is designed to obviate

According to one method for carrying out the invention, a parent plate is produced capable of yielding first a representation of the portion that, in the finished coloured article, corresponds to the space between the differently coloured dot series. By using a parent plate, providing for all the dot series and the filling, in unalterable positional relationship, colour screens in quantity can be produced therefrom, that, as to such relationship, shall be identical or practically so with the parent plate. The obtaining of the ultimately coloured elements of the plate, although effected in stages as hereinafter described, does not prevent or interfere with the maintenance of this feature.

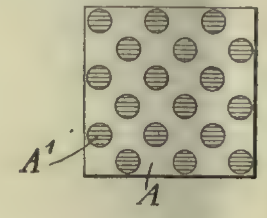


Fig 1.

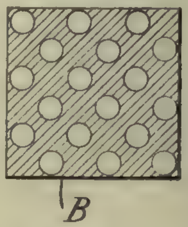


Fig. 2.

Alternatively, a colour screen, according to the invention, can be produced by the combined use of the process described in the prior specification and mechanical apparatus of accurate construction applied, for instance, to a printing machine using transparent or other inks as is used in the "tin printing" trade, whereby a predetermined and exact, or practically exact, positional relationship between the respective colour series can be effected and repeated in producing colour screens subsequent to the first, but the method last above referred to is the preferred one, and will be described in greater detail.

In one example of the use of such method for carrying out the invention there is first produced a parent plate.

Figs. 1 to 4 respectively show diagrammatically in exaggerated form the character of successive plates or impressions occurring in the production of the parent plate. Fig. 3 similarly represents an impression yielded by such parent plate and adapted to be converted into a colour screen.

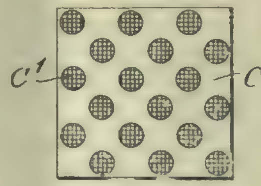


Fig 3.

There is produced photographically from a "Levy" cross line screen, by utilising screen distance and employing, for circular dots, a small circular stop in the camera lens, a plate A, as shown in Fig. 1, comprising, as to one-third or thereabouts of its area, symmetrically arranged opaque circular dots or patches $A^1$, the remaining and transparent portion accordingly comprising two-thirds of the plate area.

From plate A, treated as a negative, we produce a positive (plate B, Fig. 2) wherein one-third or thereabouts of the area comprises circular transparent spaces, the remainder being opaque. From such positive plate B there is photographically produced another negative (plate C, Fig. 3), this second negative comprising, as in plate A, circular opaque dots, termed, for distinction, $C^1$, as to one-third or thereabouts of its area and transparent intermediate space as to two-thirds. Plate C produced as described is again sensitised, and it is so superimposed on plate B that the circular spaces of plate B are, as to lateral direction, intermediate, and geometrically symmetrically so, of the circular dots C¹ of plate C. Upon exposure and development there now results a plate, as shown in Fig. 4, comprising two series, A¹ and C¹, of opaque circular dots, of which the dots of each series occupy one-third or thereabouts of the plate area, and therefore together occupying two-thirds, the remainder or clear glass of the plate comprising what may be termed the interspacial portion. The resulting plate will be called D, and is the parent plate. The process thus far described accordingly comprises steps of a preliminary nature for the production of such parent plate which, in the manner about to be described, can be caused to give rise to an indefinite number of colour screens having the precise definite special relation between the dot series and the interspace or filling of such parent plate.

Such colour screens can be obtained as follows:—The parent plate D is caused to yield, by the usual photographic procedure, on a sensitised transparent support (glass or celluloid) an ordinary practically colourless transparent impression whose curvilinear form will be that of the interspace as shown shaded in Fig. 5, and which, although regular, can never be circular, or of alternate form, elliptical for instance, that might be adopted for the dots, but only the complement thereof. The interspacial impression is now dyed with one or other of the transparent colours and the transparent support again sensitised, after which it and plate B are so super-imposed that the transparent circular spaces of the latter exactly register with one set, say S¹ of the circular or equivalent spaces on the sensitised plate, the other series, say S², and the interspace, being, by the opaque remainder of plate B, protected from light. The sensitised transparent support is then exposed and the impression developed and fixed in the ordinary way and afterwards dyed with the second necessary transparent colour.

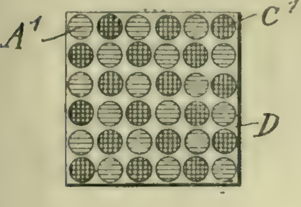


Fig. 4.

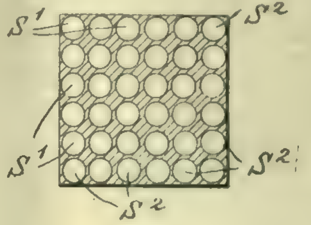


Fig. 5.

The transparent support is now sensitised for the third time and exposed to light through the back, thus rendering the second set S² of circular or equivalent spaces capable, after development and fixing, of being dyed with the remaining necessary transparent colour, which is then done.

It is necessary to protect each colour as it is laid down, as, for instance, by the use of a hardening bath, such as tannin, or by insulating varnish such as mastic in benzole, or a combination of both, so that in subsequent operations of re-dyeing the colour does not take up the latter dye or dyes.

A colour screen thus constructed can either form an integral part of a sensitive plate or film, or it can be used in conjunction with or in proximity to such a plate or film, whether for taking, viewing, projecting, or duplicating photographic impressions in colours. Oliver Samuel Dawson and Clare Livingstone Finlay, 256, High Holborn, London, and the Thames Colour Plate, Ltd., 256, High Holborn, London.

CINEMATOGRAPHY IN COLOURS.—No. 1,717, 1910 (January 22, 1910). The inventor employs within the taking camera a set of two or more lenses, the pictures of which are collected to a single composite picture on the film by means of adjustable mirrors or prisms. By the employment of such a number of lenses the exposure becomes so strong or intense that as many pictures per second can be taken as is the case with the usual cameras for uncoloured pictures. In order to avoid the employment of colour filters in the projection apparatus, and that the colours are always fresh, the positive film itself is coloured in such a manner that each one of its pictures obtains the colour used for taking the picture. Such a coloured film-band has the further advantage that it can be used without any difficulty in one of the apparatus employed for projecting uncoloured pictures, if such apparatus is provided with two prisms arranged before the condenser, and with a prism or mirror arrangement, arranged upon the single lens of the apparatus, and if at the same time the window of the apparatus is made so large, that the condenser can illuminate by means of the prism simultaneously three consecutive pictures of the film traversing the window, and throw this picture, by means of the lenses and of the mirrors or prisms arranged on the same, as one composite picture upon the picture screen. Each of the single pictures of the film, therefore, is thrown for three consecutive times upon the picture screen. As the prisms arranged before the condenser can be ground from a single glass plate, and the mirrors or prisms arranged on the lens can be arranged within a common frame, it can be seen that in order to change the apparatus for the projection of monochrome to the projection of colour pictures, it is only necessary to insert the disc carrying the prisms before the condenser, and to place the mirrors on the lens, and at the same time to enlarge the window aperture.

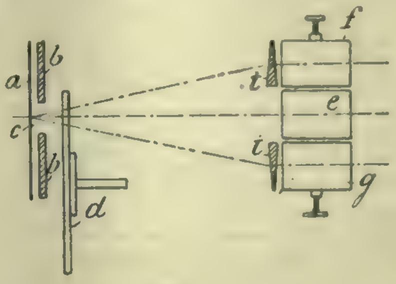


Fig. 1.

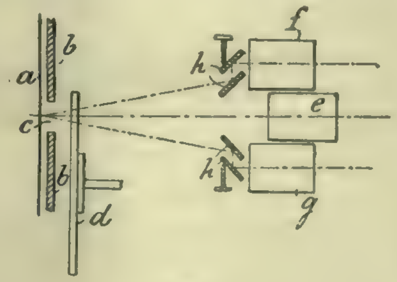


Fig. 2.

Fig. 1 shows a camera with mirrors, Fig. 2 a camera with prisms, Fig. 3 a projection apparatus.

In Figs. 1 and 2 *a* is the film traversing the window of the film box *b*. The window *c* is alternatively covered by the blue, red, and yellow colour-filter of the rotary disc *d*. The pictures are taken through three lenses *e*, *f*, *g*. Behind the lenses *f* and *g* adjustable mirrors *h* (Fig. 1) or prisms *i* (Fig. 2) are arranged, by which the pictures taken through the three lenses are collected to one composite picture on the film *a*.

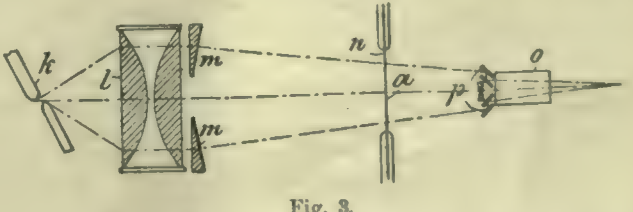


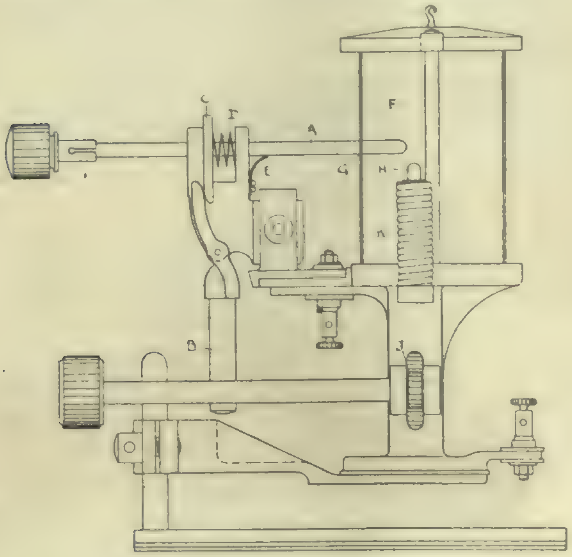
Fig. 3.

In Fig. 3 *k* is the source of light, *l* the condenser, and *m* the prisms which direct the rays of light in such a manner that three consecutive pictures of the films *a* are illuminated at the same time.

The window *n* of the apparatus is so large that it corresponds to three widths of single pictures. Mirrors or prisms *p* are arranged on the lens *o*, so that the three pictures illuminated simultaneously are projected upon the screen as one single picture. Rasmus Bjerregaard, 22, Tordenskjoldsgade, Copenhagen, Denmark, and the Continental Films Kompagni, of 22, Tordenskjoldsgade, Copenhagen, Denmark.

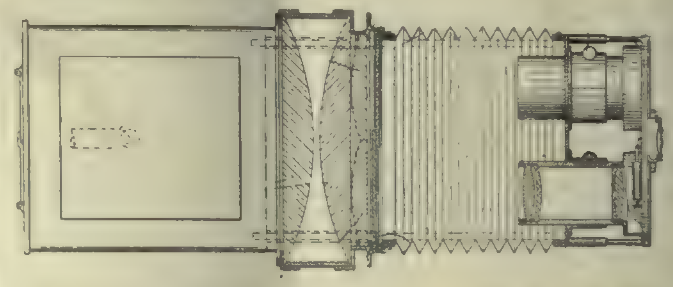
Projection Arc Lamp.—No. 9,225, 1910 (April 16, 1910). This invention relates to improvements in arc lamps of the projector type whereby an easy method of burning the carbons in an enclosure is provided. The invention enables the inclined carbon lamp to be used as an enclosed lamp with a minimum of space occupied, and thus combines the advantages of both types. The carbons are placed at right angles, or nearly so, the crater of the horizontal carbon A pointing in the direction in which the light is projected. The method of operating the horizontal carbon is by means of a lever B working on a ring clutch C opposed by a spring D and a friction contact E.

The carbon is moved forward in a series of steps, the lever being drawn forward and released alternately, the clutch carrying the carbon forward and the spring carrying the clutch back. By this arrangement the length of a rack and pinion or similar motion is avoided. The enclosure F around the arc is of glass or other transparent material, the side of this enclosure being pierced with a hole G to allow the horizontal carbon to enter. This hole is sufficiently large for the carbon to feed through freely, but not large enough to allow an undue quantity of air to pass. The enclosure may be of cylindrical form, and has, in addition to the opening in the side, a larger opening in the top or bottom closed by a flat metal plate, and through which the vertical carbon H enters the enclosure. The feeding of the vertical carbon, which may be either below or above the horizontal carbon, is controlled by a clutch or rack and pinion attachment J. A magnet coil or permanent magnet K is placed near the tips of the carbons to steady the light and to "bow" the arc in the required direction, a light of maximum efficiency thus being obtained. The bottom carbon may be placed eccentrically in the glass (as on drawing) to prevent undue heating in the direction of projection.



Owing to the smallness of the enclosure and the relative position of the carbons, the lamp burns without attention for a considerable time, and thus the expense and complication of automatic regulation is done away with. Without this, and owing to the relative position of the carbons and the method of actuating the horizontal carbon, the overall dimensions of the lamp can be kept within extremely small limits, and no difficulty is experienced in entering small lanterns and enlarging cameras. The Westminster Engineering Co., Ltd., and Arthur George Way, Victoria Road, Willesden Junction, London, N.W.

One-condenser Bi-Unial Projection Lantern.—No. 1,703, 1910 (Jan. 22, 1910). This invention relates to projecting apparatus, and more particularly to that kind in which the pictures are projected on a screen, one view or picture being dissolved into the other as the projecting lenses are covered and uncovered by a shutter. A single condenser is employed for collecting and passing the rays of light through the projecting lenses in contradistinction to the double stereopticon usually employed for this purpose. By reason of the arrangement a single source of light only is necessary for projecting the pictures, the light being placed out of focus with the condenser. The cut shows the optical arrangement of the condenser by which this result is obtained by the inventor. Maximilian Klaiber, 451, Fifteenth Street, Brooklyn, New York, U.S.A.



## New Trade Names.

T. T. (Device).—No. 327,009. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Theodor Teichgraeber, 26, Camphausenstrasse, Berlin, Germany, chemical manufacturer. September 19, 1910.

Triumph.—No. 329,826. Paper for photographic purposes included in Class 39. The Bayer Co., Ltd., 20, Booth Street, Manchester, manufacturers. January 5, 1911.

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## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Water Rates for Photographers.

The whole question is, shortly (writes Mr. H. L. Lewis in the "Amateur Photographer and Photographic News" for February 20), whether water used in the practice of amateur photography is water supplied for "domestic purposes" within the Waterworks Clauses Acts, 1847 and 1863.

There is no authority precisely in point, but in the case of Barnard Castle Urban District Council v. Wilson (1902), where a supply of water to a school swimming bath was decided not to be merely a "domestic purpose," certain broad principles were laid down by the Court which afford a useful guide to the law. "Domestic purposes" are not limited to such as are essential to the occupation, or even the healthy occupation, of a house. Any use which increases the amenities of life to the occupier is *primâ facie* "domestic," the amount used being reasonable. It would include water used for watering a horse or horses and washing a carriage, or in keeping dogs or cats. One of the judges went so far as to say that water used for a private swimming bath in the garden would be a "domestic purpose," but this was not generally agreed on. But, as another said, "it is idle to suggest that everyone would want a supply of water for a swimming bath; you must have regard for real facts." And it is a notorious fact that a very large number of people practise amateur photography, and consume a certain amount of water in washing prints and negatives, though probably much less than the use of a carriage would entail. In another case, of Harrogate Corporation v. Mackay (1907), it was held that water supplied to and used by a doctor for washing his motor-car, the motor-car being used by him for professional purposes, was water supplied for "domestic purposes." I trust the Leeds amateurs will resist these demands, and not be frightened by threats of proceedings. I feel sure that the Court will take judicial notice of the fact that amateur photography is a common domestic art, and one of the amenities of modern civilised life.

### Breakages in the Dark-room.

A good many breakages are caused (writes "L. S." in "Photography and Focus" for February 21) by the improper use of hot water in making up solutions. A good rule is never to put hot water in a graduated measure. Not only is the glass of the measure irregularly thick, but the engraving upon it, by destroying the continuity of its surface, gives a special tendency to break.

Many do not realise the importance of using the thinnest possible glass for hot liquids. A thick glass is almost sure to break. The interior is heated and expands before the warmth can get to the outside to make that expand also, and so a state of strain is set up, the result of which in most cases is a smash. Earthenware is much less liable to break from this cause than glass, and a few cheap earthenware jugs, white, so that their cleanliness or otherwise can be seen at a glance, should be kept in the dark-room for use with hot water. Two or three thin glass flasks or beakers are handy for the same purpose. These are so thin that liquids may be boiled in them, either by putting them direct on the gas stove, or, preferably, by standing them on a piece of wire gauze, or in a tin tray containing ordinary silver sand to a depth of half an inch. When hot liquids have to be put into a bottle there is less likelihood of it cracking if the outside is rinsed over with warm water first, and if, instead of pouring in the liquid so that it runs down one side of the bottle, it is poured in with a funnel, so as to go straight to the bottom without touching the sides. The funnel will not break if it is rinsed in warm water first.

# New Books.

"Wild Flowers as they Grow." London: Cassell and Co., Ltd., 5s. net.

The staple of this handsome volume is a series of photographs in colour of wild flowers made by Mr. H. Essenhigh Corke. These are reproduced by four-colour printing, and we hasten to say that the printed plates very excellently convey the impression of the original Autochrome transparencies. Both in fidelity of colour and brilliancy of effect the reproductions are most satisfactory, and we feel sure that the many photographers who have seen Mr. Corke's transparencies on the lantern screen will join with us in congratulating him upon their appearance in volume form. The text of the book is provided by Mr. G. Clarke Nuttall, B.Sc., who writes interestingly both of the botany and romance of the twenty-five wild flowers illustrated. The volume, we are sure, will be a further incentive to publishers of educational books to take advantage of the facilities placed at their door by colour photography, and we would suggest to professional photographers that they could not do better than invest 5s. in a copy of the book for the purpose of laying it upon the reception-room table, where it will undoubtedly interest waiting sitters, and contribute to the desirable end of proving the ever-growing importance of the craft of the camera in the world's work.

# New Materials, &c.

Visick M.Q. Developer.—In our notice last week of this developer we should have said that the price per bottle (of 6 not 8oz., and making 36oz. in all) is 1s. 3d. either at a dealer's or post free from the maker, 50, Stanbury Road, Peckham, S.E.

Messrs. Johnson and Sons notify us that they are showing at the Northern Exhibition at Liverpool. Their stand will contain a full range of the "Scales Brand" chemicals and other specialties. Demonstrations will be given continuously.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, February 24.

Stone and District Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Sunday, February 26.

United Stereoscopic Society. "Night Photography." Montague Wickham.

### Monday, February 27.

Southampton Camera Club. "Flower Photography by Artificial Light." E. Seymour.
Scarborough and District Photographic Society. "Amateur Photographer and Photographic News" Prize Slides.
Kidderminster and District Photographic Society. "A Talk on Mediæval Church Architecture." W. H. Witherby.
Altrincham Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Tuesday, February 28.

Royal Photographic Society. "Lordly Lincoln." By E. W. Harvey Piper.
Halifax Camera Club. "Rambles in Upper Wharfedale." Thos. Ryder.
St. Helens Camera Club. Lantern Lecture. H. Warzbom.
Leeds Photographic Society. "Photogravure." Herbert Denison.
Hackney Photographic Society. "Flower Photography." A. J. Linford.
Sheffield Photographic Society. "Sheffield in pre-Cromwellian Times." Thomas Winder.
Liberal Border City Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.
Isle of Man Camera Club. Autotype Carbon Demonstration.

### Wednesday, March 1.

Borough Polytechnic Photographic Society. Fourth Lantern Slide Competition.
Sale Photographic Society. St. Helens C.C. Folio.
Coventry Photographic Club. Judging No. 3 Competition.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. "Exposure." H. W. Bennett.
Partick Camera Club. "Photography and Focus" Prize Slides.
South Suburban Photographic Society. "A Plea for Simplification." Malcolm Arbuthnot.
Edinburgh Photographic Society. "Landscape." James Paterson, R.S.A.
Balham Camera Club. "The Carbon Process." W. C. Munsey.
Glasgow and West Scotland Amateur Photographic Association. "Tramps Abroad with a Kodak." W. F. Slater.
Armley and Wortley Photographic Society. "Noctona Gaslight Printing." Thos. Young.

### Thursday, March 2.

Handsworth Photographic Society. Annual meeting.
Bodley, Farsley, Calverley, and Bramley Photographic Society. "Bromide Toning." A. Matthews.
Oldham Photographic Society. "A Night with the Microscope." Chas. Ledger.
Sutton Photographic Club. "All About the Optical Lantern." Andrew Pringle.
Midlothian Photographic Association. "Holidays in Bruges." Fred. W. Clements.
Camera Club. "Illuminated Manuscripts." C. Davenport.
Liverpool Amateur Photographic Association. "Anti-Screen and Lantern Plates" Harry Wade.
Dundee and East Scotland Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.
Batley and District Photographic Society. "Noctona Gaslight Printing." Thos. Young.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, February 21, Mr. F. C. Boyes in the chair.

The occasion was the opening of a house exhibition of prints by members of affiliated societies, some critical notes on which had been prepared by Mr. W. J. Morgan, R.B.A. These criticisms were read by Mr. Boyes, and were followed by a short discussion, after which the members proceeded to examine the exhibits.

Croydon Camera Club.—Mr. J. M. Sellors ably demonstrated the carbon process last week, completing a series of connected expositions which started with transparencies for the enlarged negatives mainly utilised during the evening. The Autotype Co. had kindly undertaken the printing, and it is therefore almost superfluous to say that a most successful series of prints was obtained.

The proceedings were enlivened throughout by a sort of obbligato accompaniment by Mr. H. P. C. Harpur, who bobbed up and down so frequently as to threaten a severe racking of the knees. When Mr. Sellors began to reveal a print from one of his accompanist's negatives in a perfectly straightforward fashion the anguish of the latter was painful to behold. "Gently there, gently there," he implored; "whatever you do, preserve the massiveness and dignity of those shadows, which *must* be accentuated by lightening the contiguous grass." "If you think," said Mr. Sellors, "that I am going to stop here all night introducing one of your confounded paths across the meadow with a jet of boiling water, you are greatly in error," and he calmly continued to outrage artistic potentialities by laying hot water indiscriminately over the fast-developing print. This was too much for Mr. Harpur, who, with an exclamation that no man was justified in allowing murder to be committed under his eyes, was on his feet again in a twinkling, and in the most dexterous way secured possession of the victimised picture.

In the discussion which followed, familiar points were mainly dealt with. Mr. W. E. Dunmore, however, pointed out that in the double-transfer process matt celluloid would be found superior to ground opal. White celluloid also formed a capital final support for many subjects—it gave a delicacy peculiar to itself.

## Commercial & Legal Intelligence.

Whitminster Photographer's Failure.—The public examination took place on February 14, at Gloucester, of Thos. Gillies Gamlen, photographer, Moorhurst, Whitminster, Gloucestershire, lately of Hayne, Avenue Road, West Hartlepool, and 47, Church Street, West Hartlepool. The gross liabilities were put at £127 owing to twenty-four unsecured creditors, and the deficiency was estimated at £50. Failure was attributed to ill-health and insufficient trade. The debtor stated he was forty-eight years of age, and on leaving school at the age of fourteen became a railway clerk, at which occupation he remained for twenty years. He then started as a photographer at West Hartlepool with £300 borrowed from the trustees of his grandfather's estate. A legacy of £300 left him in 1900 also went into the business, and he had a further £300 out of his grandfather's estate, and a loan of £100 from a cousin. This last-mentioned sum, however, was repaid when his grandfather died. In June, 1899, he had a loan of £300 from his wife, and had paid back £100 of this. Altogether he had put about £1,000 into the business. The turnover was never large, and he kept only a cash-book, which was really a scribbling diary, and he had no record of what he received or paid in any one year, nor had he any means of ascertaining. He knew, however, that the takings decreased, and last year he sold the business. He did not relinquish the business before, because he had hoped that from the sale and some money residue from his grandfather's estate he would have been able to pay everybody in full. After selling the photographer's business he went in for poultry farming on a small scale. The examination was concluded.

Legal Notices.—A receiving order has been made in the case of Fritz Yungblut (carrying on business under the style of A. and G. Taylor), photographer, residing at 45, Mill Street, Stockton-on-Tees, and carrying on business at 106, High Street, Stockton-on-Tees; and at Station Road, Loftus; and at Boosbeck, both in Yorkshire.

## News and Notes.

The Los Angeles Y.M.C.A. Camera Club, 715-729, South Hope Street, Los Angeles, California, ask us to intimate that they will be pleased to be placed in communication with dealers, etc., in Great Britain introducing novelties.

Silvering Mirrors.—Messrs. Penrose and Co., 109, Farringdon Road, E.C., writing in reference to a recent reply to a query, inform us that surface-silvering of mirrors, prisms, and other optical goods is a department of theirs. They can offer very rapid silvering.

The Illingworth Monthly Competitions.—The prize winners for January are:—Open class, £1 1s., T. B. Smith, 129, Margate Road, Ramsgate, "Bruges, Belgium"; print on "Slogas" paper. Novice class, £1 1s., F. H. Watts, 70, Crunden Road, South Croydon, "Christchurch Priory"; print on "Slogas" paper. Junior class, £1 1s., C. D. Percy, Beverley, Acacia Grove, New Malden, "Sunset"; print on "Slogas" paper."

Mr. Frank E. Butcher, senior partner of the firm of W. Butcher and Sons, Camera House, Farringdon Avenue, London, E.C., has just started on a world commercial tour in the interests of the cinematograph as well as the photographic business of his firm. He will visit South Africa, Australia, New Zealand, China, Japan, Straits Settlements, and other countries, returning possibly by way of India and Canada. This is the third tour of this character which Mr. Butcher has made. On this occasion he expects to be away for over eighteen months, and during his travels to meet personally the many firms with whom the Camera House firm has long had business relations.

The "I. P. N.," or "Indian Photo. News," is a new monthly photographic periodical issued from 10, Russell Street, Calcutta, and published specially for the reading of photographers in India and the East. Under the editorship of E. Byron Jacob, the first three numbers certainly offer a variety of reading, which is not wholly made up from articles in the English photographic papers, but contains a notable proportion of original contributions. Each issue likewise contains a four-page supplement on art paper, consisting of reproductions of the work of notable pictorial photographers in this country. If this part of our contemporary is printed in Calcutta, we can only say that it is some of the finest half-tone printing which we have seen produced in the Indian Empire. The "I. P. N." is published on the 5th of every month, price 8 annas per copy.

Worcestershire Camera Club and Photographic Survey Society.—The seventh annual exhibition of this society will be held from March 25 to April 20, in the Art Galleries of the Victoria Institute, Worcester. The exhibits in the pictorial section will be judged by Mr. W. T. Greatbatch, and those in the survey section by Mr. A. H. Whinfield. There will be one open class for framed pictures, any subject, in which one silver and three bronze plaques will be placed at the disposal of the judge for award. A Worcester china after-dinner coffee service, value £3 3s., will be awarded to the best picture in the exhibition. Pictures from the Birmingham exhibition can be sent to Worcester, carriage paid, at the request of any exhibitor. Entries close March 16, on or before which date entry forms, correctly filled in and accompanied by the necessary fees, must reach the hon. secretary, Mr. G. H. Haycox, St. Wulstan's Crescent, Worcester, from whom also the forms may be obtained.

The Halcyon Club.—The Organising Committee of the Halcyon Club are appealing to intending members to send in their applications by the first week in March, as the committee have secured a short option on a very suitable club-house close to Bond Street, Dover Street, and Piccadilly, and negotiations must be brought to a prompt conclusion if the club-house is to be opened before the turmoil of the Coronation season sets in, a most desirable consummation from the point of view of the members.

It will be remembered that the club is intended for professional and other women workers, and that it is proposed to form it as a limited company in which every member holds at least one share, the object of this being that the club shall be run by its members on their own lines. The club aims at securing the best that women are doing in every honourable calling, and will provide a lecture room and a gallery for the exhibition of members' work, in addition to the usual accommodation. Friends may assist the movement by donations towards equipment, or by an offer to take up shares when the company is formed. All information can be had from the Secretary, Miss C. M. Thomson, 61, South Molton Street, W.

The Labour Exchanges.—The Labour Exchanges have now been in operation for a year, the first batch of sixty-three centres having been opened on February 1, 1910. There are at present 160 exchanges at work, and it is expected that nearly as many more will eventually be established. The total number of vacancies notified to the exchanges during the eleven months ended December 31, 1910, was over 450,000, and the number filled was 370,000. Somewhat contrary to general expectation, the exchanges have proved more useful in filling vacancies for skilled workmen than those for unskilled labour. As the exchanges are in constant communication with one another, they are able to do a great deal in filling, with men from other districts, vacancies which cannot be filled locally. Between 2,000 and 3,000 vacancies have recently been filled each month in this way. Great assistance has been rendered to this branch of the work by the power of advancing railway fares conferred by regulations made under the Labour Exchanges Act. In several thousand cases fares have been so advanced, and the bulk of the money—usually deducted from the workman's wages by the employer—has been recovered.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SUNDAY WORK IN PHOTOGRAPHIC STUDIOS.

To the Editors.

Gentlemen,—May I be allowed to say a little more on the above subject? I can agree, from experience, with all that was said by "F. J. S." in last week's issue, and also know the truth of Nimrod's remarks in to-day's Journal. In my opinion, it is through the cheap, unscrupulous man that the present conditions of photography are so unbearable, and in the majority of cases these employers are not photographers at all. I think, Gentlemen, now that electric light serves so good a purpose after daylight hours, that there is no just cause at all for Sunday trading. Both those engaged in shops and factories are free about one o'clock on one day a week, and most studios are open till eight or nine at night; so where is the real need for Sunday opening? If Mr. Cheap Jack says, "I cannot afford electric light, but prefer to open Sundays instead," I should say it was time such a man sought to make his premises equal to present-day requirements. Let me give an instance what some of these cheap jacks really do know of photography. Some time ago I answered an advertisement for smart gentlemanly operator-retoucher, excellent prospects, etc. As a favour I undertook some bromide printing. There was no hypo in the place; I had to use the bath that was made, probably a week or two old. After I had used it some days, and my employer was fully aware of the fact, I tested the bath with an unexposed plate, and found it took forty-three minutes to fix; yet this man (he was not an Englishman) used to exhibit a large placard informing intending sitters that to take a really pleasing portrait required great skill and practice, and concluded with a few other lines of real Yankee "bluff." Both studios were open on Sundays from 10 till 8; the wages were, of course, "progressive"—a good operator-retoucher was paid 25s. a week, and had to manage the business, but no one stays long enough to find out when the first rise occurs. One more instance, and I will close. This year I applied for a situation in North London. Fifty letters and personal applicants had already been received. One of the latter was a German. He wanted 15s. a week salary, open all day Sunday. He was shown the door, and is now working for that salary in Essex for a cheap jack man who has never served an apprenticeship, and is doing a whole-plate enlargement with three postcards for 1s. at one penny a week.

Thanking you, Gentlemen, if you can find space for what I personally know to be true.—Yours faithfully, MANAGER II.

To the Editors.

Gentlemen,—Years ago photography as a business went on the down-grade, and still going in the hands of workers who try to earn or eke out a living by every means that can defraud the public and degrade their taste. Hardly a number of the "B. J." but records some fraud to deceive the public by canvassing for photographs or obtaining cash by false pretences, therefore the public should be protected from these mean characters which abound everywhere.

Also the "B. J." is a witness that many dabble at home in photography, and then coolly ask what prospects they would have of a situation, or how best to erect a studio and fit up blinds and start as a professional photographer?

Others attend to a different calling, such as tailor, cobbler, or chemist, etc., and obtain orders from the public and get every penny they can for rubbish they supply. In a town of 5,000 to 7,000 you might count ten or twelve working in this contemptible manner—even some in Government employ. A remedy should be found for all these evils, and the public protected from being gulled and defrauded. A heavy tax should be charged on all using a camera unless a professional having a proper place of business; such should be exempt. All canvassers should pay a heavy licence and be known to be trustworthy. I think the P.P.A. should grapple with the evils; but they don't do so, but allow things to drift. If the P.P.A. would petition Parliament to tax and licence cameras and curtail the present liberties of frauds who supply cheap work and call it "permanent," it would be a great benefit to the public and the legitimate worker. It is done even in such common business of a trader who dare not supply margarine for butter. But canvasser and cobbler can supply rubbish and call it permanent.

A canvasser can tell lies at every door and get orders under false pretences without check or hindrance. Every decade there is an increase of the ruin and degradation of photography.

To check untrained workers and tax cameras and canvassers would check the evil in some measure. No wonder that Sunday work goes on now that never was thought of years ago.

Even that evil, only the Scottish branch of the P.P.A. interested themselves in it—not the headquarters.

I hope this letter will lead to a discussion of the matter.—Yours, etc., DISGUSTED.

## "OLD PRO." AND "NEW PRO."

To the Editors.

Gentlemen,—A few comments on the two articles in issue of BRITISH JOURNAL OF PHOTOGRAPHY of date January 27, 1911, pages 64 and 68. It is rather a coincidence that "Old Pro." (I wish he had signed his name) should give his experiences in the same issue as Mr. Elwin Neame, thus constituting the "Old Pro." and the "New Pro." May I be allowed a few inches of your space for a few comments and statements of fact on different points that each deal with, and so run the risk of again being dubbed a pessimist in your pages? "Old Pro." states that good photographers "in my time" turned out pictures and got good prices—"a guinea a dozen for cartes we got easily." True; full length and no retouching, and it was my duty as a youth to sensitise from twenty to thirty whole sheets of albumenised paper every morning for the day's printing. What memories are stirred by the illustration in the articles of the embossed "Diamond Cameo" portraits introduced by Messrs. Window and Grove! I photographed scores of these compound negatives, and until quite recently I had the repeating back in my possession for making them, also the embossing press. No wonder they became "obsolete," because it was equivalent to showing four proofs, and each sitter invariably chose one of the ovals, and had it printed separately. To quote "Old Pro." again. "Enlargements used to go then. I've made dozens with the solar enlarger." May I be egotistical and say so have I, using Monckhoven's revolving and dipping mirror to follow the sun, and so keep its rays through the condenser, developing without dish, the paper itself being turned up at the edges for about an inch and fastened at the corners with American spring clips, thus forming a tray, and the developer spread with a swab of cotton wool over the surface? My "record morning" order was a fifty guinea one; and, just fancy, I took husband and wife, one pose only each, and that on a quarter wet plate (which I have to this day). What a contrast to Mr. Elwin Neame's example of "five or six positions," "fully retouched proofs," "and resitting and more proofs free of charge." It makes you reflect and wonder which example is "the poor method of business" Mr. Elwin Neame means. I know which I prefer, but I am a little too previous, because I shall refer to Mr. Elwin Neame later, so just another comment on "Old Pro." respecting direct 24×18 negatives. At this I, too, had an expensive and disappointing experience, struggling for the "Crawshay prize of £50" to be given for the best direct life-size head on a 24×18 plate (will the New Pro.'s please note that these plates were wet collodion, and had to be coated with collodion, developed, varnished, etc., all without tray or dish, by hand?). This "Crawshay prize" was eventually awarded to Messrs. Chaffin, of Yeovil, and my only reward is my examples still hung on my showroom walls—a splendid monument to zeal and energy.

And now Mr. Elwin Neame states "professional photography has greatly changed"; but is it for better or for worse? All the fun that Mr. Elwin Neame pokes at the "Old Pro." does not lessen the fact that we booked good orders from simply two quarter-plate negatives.

And, again, does Mr. Elwin Neame know that it has come under my notice that the "five or six fully retouched proofs" have been taken to rival photographers by the sitters to be mounted and finished, and even sent with a coupon to some advertising "Rotten-type" enlarging company to be enlarged for a few coppers, while a polite note has been sent by the sitter to the unfortunate artist who made the negatives, saying they were not liked and no copies would be required? Oh for the days of the "stained fingers," and—in my case often—clothes and arms, too! But I have yet to realise that we ever dressed in an insane manner in those old days. Just another cogitation on this statement of Mr. Elwin Neame's, viz., "Should a magazine require pretty pictures for the inside of their paper within thirty or forty minutes, they could have 150 or 200 to choose from; and should there be nothing to please them, pictures were specially taken, and could be supplied within forty-eight hours if necessary." Truly, most liberal treatment of the magazine, and it is to be hoped the editors reciprocate in as handsome a manner.

But enough. I am afraid that the "New Pro." will deem my reminiscences tiresome; while of the "Old Pro.s" there are so few left to be interested. With many apologies.—Yours, etc.,

Hull. W. BARRY.

### A WORD TO STEREOSCOPIC PHOTOGRAPHERS.

To the Editors.

Gentlemen,—May I trespass upon your space to call the attention of stereographers generally to the exceptional encouragement offered to stereoscopic exhibitors at this year's R.P.S. Exhibition?

In recent years stereoscopy has been merely tolerated by the R.P.S., exhibitors having to provide their own stereoscopes, and even to pay the cost of necessary lighting. Now, however, the prospectus states that "stereoscopic photographs will be suitably shown"—a notable concession. The list of the selecting and judging committee in Section II. (in which the stereoscopic class is included) contains the names of men whose judgment of stereographs can be relied upon, and (quoting again from the prospectus) "medals will be placed at the disposal of the judges in this section."

In the interests of stereography and stereographers—so long overlooked by exhibition committees—it is highly desirable that this favourable movement on the part of the R.P.S. should have due recognition; and I want to urge the many experienced stereographers throughout the country to give it their practical support by sending in a record number of entries, and thus ensuring the success of the stereoscopic division. Full particulars are to be found in the exhibition prospectus, obtainable on application to the Secretary of the R.P.S., 35, Russell Square, W.C. The last day for receiving entries by post will be April 24.

The prospectus states of Section II. that it "is intended to show the possibilities of the craft, and photographs will be selected for their technical excellence only." *Verb. sap.*—Yours truly

ALBERT J. SNOW,
Hon. Sec., United Stereoscopic Society.

February 18, 1911.

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**DERBY PHOTOGRAPHIC SOCIETY.**—The secretary, Mr. Thomas A. Scotton, advises us that he has removed to 179, Osmaston Road, Derby.

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPH REGISTERED:

Hayman and Son, Church Street, Launceston, Cornwall. *Photograph, Group of Bell Ringers, Lifton Church, Lifton, Devonshire.*

R. L. B., AND OTHERS.—In our next.

EDWIN SMITH.—Marion and Co., Soho Square, London, W.; the Tress Co., 4, Rathbone Place, London, W.

R. W. BROWN.—W. H. Redshaw and Son, Bourne, Lincolnshire; Tress Co., 4, Rathbone Place, London, W.

F. COLLAS.—We have no precise data, but from some practical trials we certainly believe the shutter to be as efficient as—if not more efficient than—the average focal-plane.

E. W.—We know of none which is in any way complete. There is a list in "Kelly's Trade Directory." The only other list is that of the members of the Professional Photographers' Association.

PORTRAIT SUPPLY.—We can only refer you to our advertisement columns and to the entry "Bromide Printing" on page 1139 of the "Almanac."

CELLULOID FACING.—Will you please let me know through next issue of the "B.J." the method of facing miniatures with celluloid, and where the celluloid suitable for this purpose can be bought?—CELLULOID.

The method is to dip the print in spirit and hot-roll in contact with the celluloid. You can be supplied with hot-roller and the celluloid by Jonathan Fallowfield, 146, Charing Cross Road, W.C.

POSTCARD WORK.—We are thinking of commencing small middle-class business, and are enclosing sample of our work. Do you consider this good enough for such a class of trade, chiefly postcards? Thanking you for the great help we have received through being a regular reader of your journal.—R. R.

The specimen is quite up to the standard—in fact, above it—of portraits made at a price of about 3s. per dozen postcards.

TONING BROMIDES.—Can you recommend me a good book dealing with the methods of getting sepia and other tones on development papers. Your kind reply, with titles and prices of same, will oblige.—QQUUTO.

"Toning Bromide Prints," by R. Blake Smith. "Toning Bromides," by C. W. Somerville. 1s. each, from your dealer. "Toning Bromide and Gaslight Prints" (No. 103 of the "Photo-Miniature"). 6d.

BOOK ON COLLOTYPE.—We shall be much obliged if you will let us know which is the best book published on collotype printing in English, and also in German.—A. T. A.

"Collotype and Photo-lithography," by Schnauss, translated by E. C. Middleton, price 5s.; "Practical Collotype," by A. W. Fithian, price 2s. 6d. Both published by Iliffe and Sons, Tudor Street, E.C. In German, "Der Lichtdruck," by August Albert, second edition, price 7 marks, published by W. Knapp, Halle a/S.

FIRE PHOTOGRAPHS.—Can you tell me of any insurance companies who buy photographs of large fires, to use as advertisements? I was told that one of them did, but I could not get the address.

An answer in your paper, the "B.J.," will oblige. Chas. E. Bardekin.

Some year or two ago our contemporary, the "Photogram" (now the "Photographic Monthly"), arranged a competition for fire photographs in conjunction with an insurance company. If you write the editor at 68, Carter Lane, E.C., doubtless he can give you the particulars you seek.

Payment for Sitting.—I am a subscriber, and should like to ask as to taking a person's photograph and submitting proofs and they (such persons) won't either be taken again or order from the proofs you deliver. I ask 1s. only for each time I take, and deliver a proof (cabinet). No order ensues in three months. Are you sure to recover it in a county court case?

Presuming that the proof submitted is a reasonably good likeness, you will be able to recover the charge for the sitting in the county court. A judge is usually not a severe critic in such cases, and, if the work is up to a fair standard, will rule in your favour. Whether it is policy for a photographer to sue in the county court for such a trifling sum, we must leave you to decide. Usually, we should say, it is not good policy, but much depends upon the class of customer.

Negatives.—I am in possession of a number of negatives—good pictorial negatives, ¼-plate size—of scenes of camp life in India, which would, I fancy, if I only knew where to place prints from them, make very good designs for Christmas or post cards. They would also do for illustrating the covers of small pamphlets, such as almanacs. I would be much obliged if you could, in an early issue of your paper, give me an idea as to whether it would be possible to place them, and if so, where?—W. G. B.

Miscellaneous negatives, particularly of this small size, are not of great value. The best thing you can do is to offer them to a firm of agents, such as Gallichân and Gasquoine, 188, Strand, W.C.; or seek a purchaser for them by a small advertisement in our "Miscellaneous" section.

Brush Toning.—As I have been finding a difficulty in getting prints of quite equal tone—I use P.O.P.—a friend has put me on to toning with a brush. I get good tones now, but I find this system uses a lot more gold than toning in the ordinary way. Can you tell me of any way in which I can tone with the brush, but with more economy?—Echelon.

No, we cannot. Brush toning, to be successful, requires to be done with a strong solution of the toning bath used in small quantity that is sufficient to tone a single print. We should not expect, when using a toning bath of the ordinary strength by means of a brush, to obtain at all even results. In any case, such a method would require so much time that it would be quite impracticable. If you are handling prints in number, you had far better master the ordinary method of toning.

Situation.—Can you kindly inform a constant reader of your valuable journal (who is an amateur photographer, and age nineteen) if it is possible to obtain a situation with a professional at a low wage, as I am anxious to do, with a view of being able to gain further experience? I am rather inclined to think it is not possible. I shall be much obliged for your assistance in the matter through your columns.—Constant Reader.

Without knowing anything of your capabilities it is impossible for us to say. We can only advise you to study the advertisements under "Situations Vacant" and judge if you are qualified. You must recollect that even a considerable skill as an amateur will not be of much help to you with a commercial photographer, where speed and uniformity of work are prime considerations. If you have other careers open to you, we should advise you to think twice before taking up photography, the supply of labour, as you can judge from the advertisements in our pages each week, being much in excess of the demand.

Markings on Negatives.—I am sending you a negative herewith which shows peculiar markings, not only absolutely straight lines across the plate, but also a kind of patchy mottle. I have tried every way possible to discover the cause of this trouble—over-heating in development, and also in drying; immersing in icy cold hypo, etc.—but cannot obtain these markings. Out of a batch of about four dozen there were about ten or twelve more or less marked as this. If you have ever come across markings as this, or can enlighten me in any way as to the cause, I shall be greatly obliged. This is *not* tank development. C. Stuart.

The horizontal lines in your negatives might be caused by using an oxidised developer with a mechanical rocker, but the white mottled markings rather suggest a partial decomposition of the gelatine. If not due to using warm developer or other solutions, this must be a defect in the plates. We should apply to the plate-makers for their opinion and advice.

Miniature Painting.—I have been a photographic miniaturist, etc., for some years, but now wish to learn the genuine miniature painting (with freehand basis). (1) Could you kindly advise me? If not, where else must I apply for information on following:—(2) Is it possible to take postal lessons? If so, from whom, and how do fees run? (3) Can you recommend any handbooks on the subject? If not, where shall I inquire? (4) Is it possible to teach myself? (5) Is there much scope in this field of art? Your kind help will greatly oblige me. I may say I have been a reader now for ten years nearly. Trusting I have not put too many questions.—(Miss) Edith M. Spiers.

(1) and (2) See advertisements in the "B.J." and in art periodicals. (3) A shilling handbook published by Winsor and Newton, Rathbone Place, London. (4) An art training is required for this as for all other methods that are dependent upon talent. Its special application to miniatures could be self-taught. (5) There is fair scope for good work. Your best chance would be as a member of the Society of Miniaturists, if you could reach to their standard.

Colour Plate.—In conjunction with a friend I have been making some experiments on a new method of producing a screen-plate. From the few trials we have made it looks as though the process could be worked commercially, and I should be glad to know if, on our submitting the particulars to you in confidence, you would give us your opinion as to whether there is anything novel in the process, and if so, as to the value which you think it would have if it were patented?—J. Igleiro.

The best thing for you to do is to refer to past volumes of the "B. J. Almanac," in the section of which for colour photography we have abstracted all the recent patents relating to colour photography, including screen-plates. Patents prior to that, and dating back to the earliest in colour work, were the subject of a series of articles in the "Colour Photography" Supplement for 1907. We may tell you that, though a very large number of patents for screen-plates have been taken out, very few of them have reached a commercial stage, and though we do not wish to discourage your research, we think it very unlikely that you will gain any financial return from it.

Hawker's Licence.—For some months past I have been moving about in the Midlands making a livelihood by photographing people, or rather their houses. My method is to call on the householders and ask permission to take a photograph. Then, if they agree, I take a negative and a deposit of sixpence, and I supply them postcards within the next day or two, taking the cards myself. I have now been told in a certain district that I cannot carry on this business unless I obtain a hawker's licence, and that for that I must live for at least a month in the district before it can be granted. I should be glad if you can tell me if this is the case, and, if so, what other means I could employ?—Wait and See.

The police authorities appear to be somewhat lax in many places, and in others unduly severe, but we think that your trade would come under the Hawkers Act, where, however, it is provided that a licence is not required by the maker or worker of goods who carries them abroad and exposes them for sale. We should advise you to obtain a copy of the Act (22 and 23 Vict.), and show this clause should you be interfered with in the future.

Patents.—I have an invention, and I wish to take out a provisional protection for the same, and should feel obliged if you would enlighten me on the following. In the book of instructions received from the Patent Office I am informed that "The applicant may apply in the first instance with a provisional specification . . . and may leave his complete specification at any period within six months," etc. Further on it states: "If an application for a patent has been accepted, the invention may be used and published between the date of application and the date of sealing the patent without prejudice to the patent; but an applicant is not entitled to institute proceedings for infringement until the patent has been granted, and no proceedings can be taken in respect of an infringement committed before the publication of the complete specification." What I should like to know is, what is the use of spending £1 for a provisional protection if no proceedings can be taken? Why not offer the patent for sale as it is? Where does the protection come in?—VICTOR.

If you offer the invention without any protection, you have no power to restrain infringement. When patenting it, the law cannot, of course, recognise proceedings until the patent is actually sealed; but when that is done, the patentee may take action against infringers. That is our reading of the clause quoted, and we think that, as a rule, the fact that provisional protection has been applied for is respected by those having their eyes on the invention.

**BLISTERS ON BROMIDE PAPER.**—Every now and then we find we have a little trouble with bromides showing a group of small blisters, either in the washing water, but more often after prints have been sulphide-toned. The effect will last perhaps for a day or two, and sometimes we shall not have it for two or three weeks, whilst everything in the way of hypo baths, developer, etc., remains just the same, so that we are at a loss to put down any cause of the trouble unless it may be the water supply. As we have to pay for our water by meter, we use, as well as the supply from the main, soft water collected from the roofs. This for washing prints only. Do you think that this has anything to do with it, because if it has we could easily arrange for bromides always to be kept to one particular water supply.—Q. F. M.

A very soft water—and rain water is one of the softest, of course—will give rise to blisters. We would suggest that you could avoid the trouble by fixing prints in a bath which will also harden them. If prints are to be sulphide-toned, it is not a bad plan to make this a rule. A suitable bath is as follows:—

| | |
|---|---|
| Water | 64 oz. |
| Hypo | 16 oz. |
| Sodium sulphite | 1 oz. |

when dissolved add

| | |
|---|---|
| Acetic acid glacial | 1½ oz. |
| Potash alum (dissolved in 5 oz. of water) | 1 oz. |

This mixture should be only very slightly cloudy. You will find that when freshly made it will make prints of a leathery feeling in about half a minute. A good sign that it is becoming exhausted is when prints still feel soft to the fingers after half a minute in the bath.

**SEPIA TONING.**—I shall be greatly obliged if you can assist me by recommending a thoroughly good toning bath for bromide prints. I have been using the following:—

| | |
|---|---|
| Ferricyanide of potassium | 400 grs. |
| Bromide | 600 grs. |
| Water | 10 oz. |

One in ten of water.

| | |
|---|---|
| Sulphide of soda | 1 oz. |
| Water | 10 oz. |

½ oz. to 10 oz. water.

but do not find that it gives me the tone I require. The prints are too yellowish. I want the tone of sepia platinotype. As I am doing a good deal of sepia work, and ordinary bromide, especially in the winter time, I require a really good toner, and one that would by manipulation give the prints when finished a more purple-brown colour, and not so yellow. I shall appreciate any help you can give me in this matter. Thanking you in anticipation.—SURREY.

The tone obtained by the formula you describe depends mainly on the print, which should be very fully developed. We do not, however, consider it likely that you will get the tone of sepia platinotype with the two-solution method, and should advise you to adopt hypo-alum toning. If you are doing a good deal of sepia work, it is just the process for you, as it is only an inconvenient one when little work is to be done. Use th formula in the "Almanac," and note that the older the bat the better it works. The first two or three prints may disappoint you, but the rest will be all right.

**PYRO-SODA DEVELOPER, ETC.**—The pyro developer which I have i use is, when mixed for use, as A below. The one given by Mr Watkin for use with his thermometer is, when mixed for use fo a plate of medium "developing rapidity," as B below:—

A (my own). One ounce contains:—

| | |
|---|---|
| Pyro | 2 gr. |
| Citric acid | ¼ gr. |
| Soda sulph. | 12 gr. |
| Soda carb. | 10 gr. |
| Potass. bromide | ½ gr. |

B (Watkins'). One ounce contains:—

| | |
|---|---|
| Pyro | 2 gr. |
| Potass. metab. | 1 gr. |
| Soda sulph. | 11 gr. |
| Soda carb. | 22 gr. |
| Potass. bromide | ½ gr. |

You will observe that they differ, practically, in the amount o soda carb. *only*. Please say if you consider 10 gr. to ounce o 22 gr. to ounce the more desirable proportion, if of any consequence. I am inclined to think there is a wide variation allowable without any effect on rate of development. Have you any idea what the limits of this variation may be, if it exists? I notice that the Imperial pyro-soda formula gives when in use:—

| | |
|---|---|
| Pyro | 2¾ gr. |
| Potass. metab. | ⅓ gr. |
| Soda sulph. | 22 gr. |
| Soda carb. | 22 gr. |
| Potass. bromide | ⅜ gr. |

I have heard it said that the soda should not exceed four times the pyro, but then one must allow for the amount neutralised by the potass. metabisulphite or acid used.

Your tip as to carborundum powder for obscuring glass was good. I have tried the finest grade, "F.F.F.," and it is first class. I find by laying negative on blotting-paper and using due care I can put a ground back on in five minutes. That is splendid, and beats matt varnish hollow.—N. F. H.

The point you raise with regard to the effect of alkali in the pyro developer is an interesting one with regard to which no exact figures are yet available. It is possible that a real difference exists between the results produced by the two formulæ, but whether this difference would be practically noticeable in ordinary negatives is doubtful. We would, however, be inclined to think that formula A would tend to give a slightly more contrasty result than formula B, and that it would require a rather longer total time of development in strictly comparable circumstances. We are glad you found the carborundum method so successful. We have noted recently that the finer powder works much more rapidly than the coarser varieties, and your "F.F.F." should be ideal for the purpose.

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The British Journal of Photography.
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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2652. Vol. LVIII. FRIDAY, MARCH 3, 1911. Price Twopence.

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## SUMMARY.

Some points of business policy connected with proofs and re-sittings are referred to in a leading article. (P. 154.)

In some notes by "Viator" will be found a number of hints on how the studio may be improved at moderate cost. (P. 155.)

An interesting sketch of the well-known New York professional, Mr. Pirie MacDonald, is quoted from a Philadelphian contemporary. (P. 159.)

Markings in tank development, the glycin developer, a useful studio accessory, professional photography past and present, and the taxing or licensing of photographers, figure, with other topics, under "Correspondence." (P. 165.)

The opportunities for photographic craftsmen in the new Section II. of the R.P.S. exhibition are the subject of a note on page 153.

The Birmingham Photographic Society is now holding another successful exhibition, in which technical and scientific exhibits form a considerable part. (P. 160.)

The authoritative paper on high-power photo-micrography, recently read before the Royal Photographic Society by Mr. Max Poser, is given on page 156.

Necessary precautions in avoiding defects caused by air in tap water are referred to on page 154.

### "Colour-Photography" Supplement.

Dr. R. Luther, in a recent paper, has discussed possible methods of preparing sensitive plates on which, by one exposure in the camera, positives or negatives in colour might be obtained. (P. 17.)

Some correspondence on the recently suggested method for a colour screen-plate will be found on page 24.

The technical and business methods adopted by Mr. B. J. Falk, of New York, in preparing portrait Autochromes is the subject of a note on page 23.

A new form of stereoscope specially intended for the viewing of screen-plate transparencies taken in the ordinary way and unreversed in position has been patented by a French inventor. (P. 22.)

The latest introduction in colour photography, namely, the Ives "Tripak" method of producing the three colour-sensation negatives at a single exposure and printing three-colour prints or transparencies therefrom by a simple and rapid process, is dealt with on pages 19 and 22, where will be found the full working instructions for this new system.

## EX CATHEDRA.

**Trade Throughout the World.** In further reference to the forthcoming Colonial and Foreign Number of the "British Journal of Photography," to be issued on March 31, we may be excused for again reminding intending advertisers of the special grounds upon which this issue claims the attention of all classes of the photographic trade. In addition to the normal circulation of the "B.J." this issue is posted direct to photographic studios and dealing establishments throughout the world to a number of close upon 5,000. The following list of the countries included in this selective canvass is taken from the actual guides of the index cards recording this world-distributed circle of buyers:—

Argentine Republic
Asia Minor
Austria
Bahamas
Barbados
Basutoland
Bechuanaland
Belgium
Bermudas
Bolivia
Brazil
British Columbia
British East Africa
British Guiana
British New Guinea
British North Borneo
British West Indies
Bulgaria
Burma
Canary Islands
Cape Colony
Central America
Ceylon
Chili
China
Cochin China
Colombia
Corea
Costa Rica
Cuba
Delagoa Bay
Denmark
Dominican Republic
Dutch East Indies
Eastern Siberia
Ecuador
Egypt
Fiji
Greece
Guatemala
Hayti Republic
Honduras
Hungary
India
Italy
Jamaica
Japan
Java
Malacca
Malay States
Manitoba
Mauritius
Mediterranean
Mexico
Morocco
Natal
New Brunswick
Newfoundland
New South Wales
New Zealand
Nicaragua
Nigeria
Norway
North-West Territories
Nova Scotia
Ontario
Orange River Colony
Paraguay
Persia
Peru
Philippines
Polynesia
Portugal
Portuguese East Africa
Prince Edward Island
Puerto Rico
Quebec
Queensland
Rhodesia
Roumania
Russia
Russian Poland
Salvador
Sandwich Islands
Siam
Sierra Leone
South Australia
Spain
Straits Settlements
Sweden
Switzerland
Tasmania
Transvaal
Trinidad
Turkey in Asia
Turkey in Europe
United States
Uruguay
Venezuela
Victoria
Western Australia
Windward Islands
Zanzibar

Year by year, since the special Colonial number was established, no pains have been spared to keep this directory of Colonial and foreign firms up to date, with the result that those whose announcements appear in the forthcoming issue have the assurance that each copy of the extra circulation goes to an interested and frequently isolated consumer of photographic materials on a considerable scale.

* * *

**On Some Possibilities.** A short time ago a writer observed that the invention of the automatic piano player afforded musicians the opportunity of writing what might be termed a new style of music, the mechanism of the instrument not being limited to two hands with five fingers on each. In a similar fashion the invention of photography rendered it possible for picture makers to adopt a new method of interpreting nature which previously was not open to them, and the uses that can be made of this new method may form as interesting a study to artists as "pianola" music may be to musicians. Unfortunately, however, photography as a pictorial craft has developed itself not in the hands of artists, but of amateurs with little or no artistic knowledge, and they have almost universally neglected the new possibilities of their craft and devoted their attention to the emulation of methods proper to the older craft of painting. The result has been that pictorial photography has suffered badly. It has been forced into competition with a rival that it could never hope to touch instead of being encouraged to develop on its own very clearly indicated lines. Therefore, there is now something of the nature of a "slump" in so-called pictorial photography, and distinct signs of a strong reaction which may lead to the firm establishment of photography as an honest art craft and to the final disappearance of the artless craftiness that has hitherto been too prominent. We have been much struck by the enthusiasm with which the establishment of the new class in the R.P.S. exhibition has been greeted. This approval is a pretty sure sign that the pressing need for a change has become generally felt. Hitherto we have seen too much of the work which photography cannot do even passably well; now we are hoping to see something of the work in which it can excel, and we feel that it is likely that the new class will be not only well supported this year but have a very marked influence on future progress. It should reveal the possibilities that have been neglected by the pictorialists in the past while it should also set a technical standard that picture makers can only fall short of at their own risk. Sheer bad photography has been so painfully in evidence of late years that some seem to have forgotten that good photography is possible. The new section should serve as a reminder to the general public and as a warning to those who have trusted that ignorance would overlook bad workmanship.

* * *

**The Use of Air-Free Water.** We expect we may safely assume that the majority of photographers mix their developers with tap water, and though under normal conditions such water is quite good enough for most purposes, there are occasions on which its use leads to serious trouble. The mischief is that we never know when trouble is to be expected, and when the work for one particular day goes wrong the water is usually the last thing to be suspected. It is a good plan to examine carefully the first lot of water drawn from the pipes in the morning. If this is cloudy or discoloured we shall then know that the pipes are dirty and require cleaning or renewal, while we can take the immediate precaution of filtering the water. Sometimes we shall find the water to be white with numerous small air bubbles which take some time to rise and disperse. This denotes that the mains somewhere are, or have been, open for repairs—a very frequent occurrence in large towns. We have often noticed our own taps to yield water as white as milk, and when it is like this its use for developing is likely to lead to bad stains and possibly fog. There is always air in tap water, but when there is so much as to turn it white a very little of the water will rapidly oxidise a developer and spoil it, while some developers fail to act properly when mixed with water full of air. In large establishments there is no reason whatever why a permanent supply of distilled water should not be available. A still can easily be worked in connection with the heating apparatus and its initial cost should soon be covered by the saving of material. If used only for the purposes for which it is really desirable not very much distilled water will be required in the course of a day. Where no still is available there is no difficulty in using boiled water. All that is wanted is a tank or some kind of receptacle that will hold enough for a day's consumption, and if this is filled every night with water from either the heating apparatus or from the domestic supply, in the morning we shall have a stock of cold, air-free, and fairly pure water that will serve for practically all purposes.

◆

## PROOFS AND POSITIONS.

The question of proofs is always of interest to the portraitist; the questions whether they are to be rough or finished, and how many are to be submitted being matters for discussion when photographers meet. From enquiries we have recently made, it seems that under stress of competition, the expense of submitting a number of finished proofs is becoming a very serious matter. Not many years ago it was not usual to expose more than three or four plates upon an average sitter for cabinets, and to submit proofs from two, or at most three, of these. Now we find that photographers are taking seven or eight poses of the same class of customer and submitting proofs in proportion, the sitters regarding it as quite the usual practice and asking to see proofs from the remaining positions. This is undoubtedly a very undesirable state of things, and one for which we are afraid that photographers have only themselves to thank. Such a hit-or-miss method of working does not obtain in any other trade or profession, and why photographers should continue to endure it we cannot at all understand. No other trade or profession would tolerate it in any form. Imagine asking your tailor to make to your measure two or three suits on the chance that you might order one or more if they pleased you, or the builder to re-decorate your house on the off-chance of your choosing to approve of and pay for it. We laugh at the letters from Gold Coast "princes" which we see printed in the papers from time to time, in which the simple native writes to a jeweller or an outfitter and asks for free specimens of all his goods, yet the photographer is often faced with a request almost as naïvely impudent. We believe that we have already referred to the case of the photographer who took a dozen cabinet poses of the children of an old customer and was rewarded with an order for a dozen postcards. Here is an excellent opportunity for the Professional Photographers' Association to take some action which shall not only save the pockets of the members but raise their status in the artistic scale. When a sitter commissions a portrait painter or miniaturist to produce a picture, he does not expect to see half-a-dozen carefully finished sketches before he will decide which he likes, although the outlay is much greater than in the case of a dozen photographs. He has from the first to place himself in the hands of the artist, who starts with a definite idea in view, and the results are usually satisfactory. Now, to use an Americanism, it is "up against" the modern photographer to alter all this; some of the best workers on both sides of the Atlantic do not submit proofs, and their work is accordingly treated with respect. They spend their time in studying the sitter and not in exposing plates. Of course, they have their failures, but Millais had his failures, and even Reynolds had his failures from the patrons' point of view, but to-day these failures are valued as pictures and as portraits, when only the memory of the sitter remains, and the transient expression is forgotten.

At the recent P.P.A. Congress two well-known photographers joined issue on the subject of children's portraits, one advocating the most rapid exposures possible so as to catch the momentary smile and dimple, and the other preferring to wait until a more placid, and what may be called a more average expression could be obtained with a longer exposure. Good as the results might be by the first method, it was found that parents found a more lasting satisfaction in pictures produced by the second, which was always a likeness. Excessive and injudicious retouching causes the rejection of many proofs, and the average busy portraitist who employs skilful retouchers, and expects them to earn their wages, is the greatest sufferer in this respect. We can instance one case where a firm doing a fair business which necessitated the constant employment of three retouchers reduced their re-sittings to less than one half by reducing the retouching to the minimum, no change being made in lighting, posing, or other details. The retouchers were anxious to justify their existence, and in securing a "fine" finish took all the life out of the portrait even if they did not lose the drawing. The amateurs of a year or two back, who have become the professionals of to-day, have not this respect for the retoucher, and their work is the better for it. The retoucher is excellent in his way, but, like fire or water, he is a bad master, though a good servant.

A point on which some agreement might be arranged is the advisability of giving free re-sittings, when the portraits are in all respects satisfactory, except in the matter of some detail of dress, which the sitter or her friends consider unbecoming. We can instance a case in which after considerable trouble some good pictures of a baby were obtained, but upon seeing the proofs the mother asked for a re-sitting because the child looked over-dressed. She thought that it would look nicer in a little smock, and the photographer had to look pleasant, lose half-a-dozen plates, three mounted proofs, and an hour's hard work in the studio.

# NOTES ON STUDIO DECORATION AND FURNITURE.

In the great majority of studios in Great Britain there is a distinct lack of any serious attempt on the part of the photographer to make, by means of attractive surroundings, a pleasing impression on the sitter about to be photographed. It is a well-known fact that, unless the sitter is made to feel happy and comfortable, the best results are quite impossible, and even the most perfect posing and technical work in portraiture is sadly marred by an unhappy expression produced often by depressing surroundings. Almost invariably it is found that tidiness in the studio, coupled with artistic decoration and furniture, is an important factor in making the sitter feel at ease, when there is, of course, the best opportunity of securing a natural expression. One finds too many studios crowded with antiquated wooden balustrades and other like accessories, and, also, with backgrounds, some in rolls, and others unrolled but suspended, and all of them more or less untidy and unduly creased and worn. This state of affairs naturally tells seriously against the success of the business. The writer of this article has visited nearly all the studios in the United Kingdom, and, from his long experience and intimate knowledge

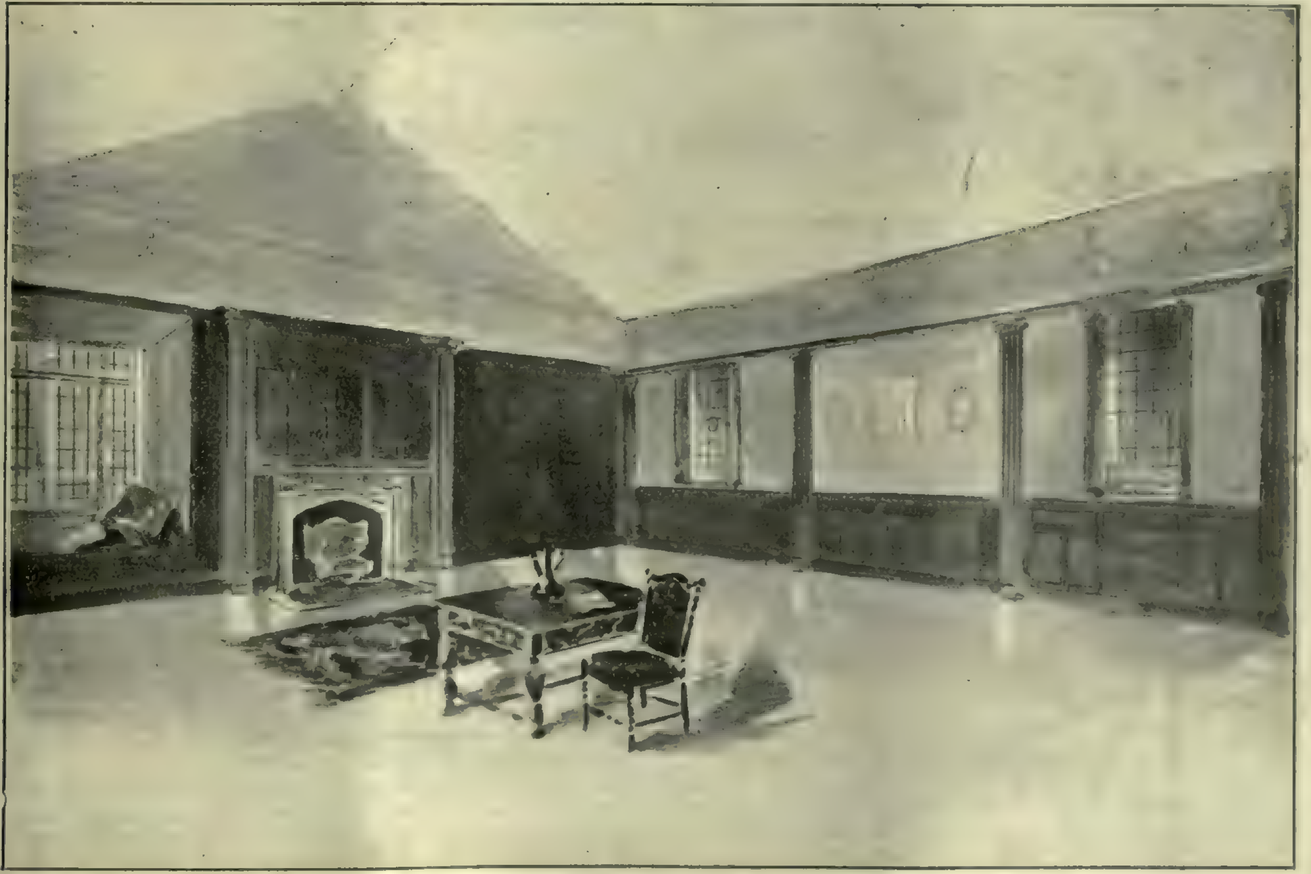

Fig. 1.

of what is needed to ensure success to the photographer, and satisfaction to the client, ventures to offer some hints on studio decoration, backgrounds, and furnishing, and hopes the suggestions may be of service and interest to the readers of the "B.J."

In the first place, attention should be directed to the studio itself, and, instead of the usual plain or distempered walls, the interior should either be panelled in real or imitation oak (see left side of Fig. 1), or, alternately, if a somewhat cheaper method of decoration is desired, it should have a dado of stained panelling, with the upper portion of the walls covered with art canvas, and this divided into panels, with oak flats to hide the canvas joints and to fix the canvas against the wall (see right side of Fig. 1).

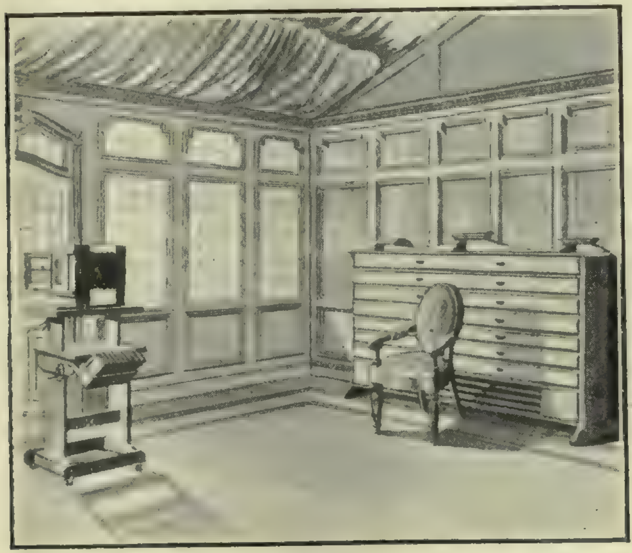

Fig. 2.

Either method is most artistic, and the cost need not be very great for an ordinary studio, as the panelling and art canvas can be obtained at reasonable prices. Besides, by a little scheming, you can often utilise the walls, window-seat, and fireplace as excellent natural backgrounds, and the effects can be varied by slightly altering the position of a few neat pieces of furniture and bric-à-brac.

Next in importance is the question of backgrounds, and of these the photographer should not have in the studio at any one time more than, say, seven or eight good full-sized grounds, and three small ones for busts. When backgrounds are lying about or hung up, the studio has a decidedly dishevelled appearance, and this is quite unnecessary, for there is now on the market a background cabinet (see Fig. 2), which is a handsome piece of furniture in itself, and not only keeps the grounds tidily folded in place when not in use, but is so constructed that when the required background is fully opened out, it hangs as if stretched on a frame. By so storing backgrounds, they are kept cleaner and fresher, and will last much longer than those stored in the old-fashioned way. The modern method of storing in a cabinet in these and other respects really makes for efficiency and economy in working a busy studio, and the advantages gained are well worth the comparatively low cost of such a handy article.

There are now so many beautiful and useful accessories offered to photographers that it is often difficult to select just the exact thing to perfectly harmonise with other details in the portrait, but there certainly can be no excuse for anybody clinging, as many unfortunately do, to their detriment, to hopelessly out-of-date accessories, which have served their day, and which clients are quite tired of seeing in portraits. Good taste demands that accessories and backgrounds shall be in keeping with each other, and that both shall thoroughly suit the subject.

With most backgrounds, nothing is so becoming or so much favoured as first-class reproductions of antique furniture. Indeed, antique furniture is quite the thing to-day in portraiture, but very great care must be taken to avoid unsuitable combinations of backgrounds and accessories. For instance, for ladies in light dresses, a most artistic effect can be obtained by using a light Louis XV. drawing-room background, with, of course, a Louis XV. chair or settee; while, if a dark oak background is used, a piece of old oak furniture would certainly be more in keeping, and so on.

A very useful piece of antique furniture for a studio is a monk's bench, which can be used as a table or a seat, and the box in the seat is useful for storing toys for children, artificial flowers, stuffed birds, or other small accessories.

No hard and fast line can be laid down for every studio, and a well-conceived scheme is absolutely essential to assure individuality in each studio, but attention to the main principles underlying the above suggestions will ensure better working conditions, and also bring an improvement in business generally. VIATOR.

## HIGH-POWER PHOTO-MICROGRAPHY.

(A Paper read before the Royal Photographic Society and published in the Society's Journal.)

In most instances where high-power photo-micrography is attempted the greatest difficulty experienced is with the illumination. It is a trouble which sometimes overtakes the expert as well as the beginner, and for this reason high-power photo-micrography is often considered a very difficult matter. If one goes carefully into details as to the correct illumination, I think you will agree with me that, provided with a suitable apparatus and following a sound method, there need be no great difficulty, even in high-power work. Of course, in many cases where the worker wants to make original experiments before he has mastered what has already been done by others, the matter often leads to disaster. If everything is carefully manipulated and patience bestowed upon the work, one will find it, if not quite easy, at any rate not specially forbidding to the beginner.

I will deal in the first place with the source of illumination. Sunlight is, without doubt, the best light source for high-power photo-micrography. But in London, and especially in the winter, it cannot be relied upon. Failing sunlight, the next most suitable source is the arc lamp. This lamp exists in many varieties, but a good automatic-feeding arc lamp will produce an absolutely steady crater if used with continuous current. Arc lamps working with alternating current, however carefully they may be constructed, will never give a sufficiently steady light for delicate photo-micrographic work, owing to the continual pole-changing. Such a lamp might be useful for projection, but it should never be used in photo-micrography where critical illumination is desired.

Not everyone, however, is in the happy position of being able to install an automatic-feeding arc lamp arrangement in his private house, and, where this is not possible, I would recommend a good lime-light or incandescent gas lamp, acetylene, or even the use of an ordinary oil lamp. If manipulated in the correct manner, excellent results can be obtained, as has often been proved, with any of these illuminants. Whatever source of light we use, the great essential is to have maximum light within the field of the objective. If, for example, an arc lamp has been chosen, and the image of the crater projected in such a manner on the substage condenser that it fills its entire aperture, a uniform illumination with great brilliancy over the whole of the field will be ensured.

In order to demonstrate how the crater ought to look when projected on the screen, I will show by means of a micro-projection apparatus the actual image of the crater enlarged. After the current has been connected, the crater should be formed within about half a minute under normal conditions, and, in order to have the entire crater at our disposal, the carbons of the arc lamp should either be rectangular to each other, so that the positive carbon is in a horizontal position while the negative is vertical, or both carbons may be approximately in a line but inclined to such an extent that the full crater is drawn to the front towards the microscope, otherwise the maximum light of the arc lamp is not obtained. There is no difficulty in accomplishing this, as the arc lamp can be regulated by means of a resistance, in order to give a clear round crater, and if there is proper pressure (voltage) between the positive and negative carbons, and an automatic feeding adjustment on the lamp to regulate slight variations in the current automatically, the arc lamp should be as silent and steady as an incandescent gas lamp.

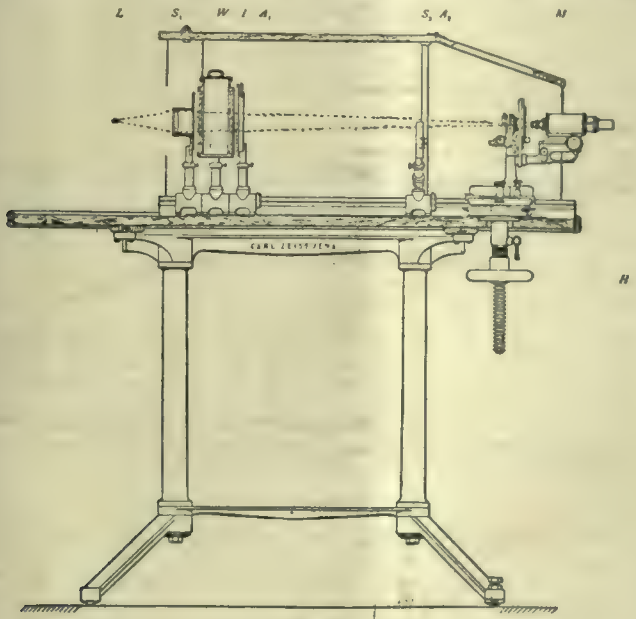

Fig. 1.

**Diagram of large Projection Apparatus with High Power Converging Lenses, as set up for Projection by means of Microscope Objectives and Eyepieces.**

*L* Source of light. $S_1$ Converging Lens **Ia** (in the case of Lens I the distance from the radiant would have to be rather greater). *W* Water Cooling Chamber. *I* Iris Diaphragm on saddle stand with stop $A_1$ behind it. $S_3$ Lens III, turned aside, with stop $A_2$ behind it. *M* Microscope Stand on its sole-plate. *H* Elevating Device for the sole-plate. The table stand itself is not vertically extensible, and in all recent patterns the feet are fitted with castors and set screws, as in the vertically extensible stand shown in Fig. 2.

The size of the crater of an arc lamp, however, is limited, even with a 30-ampère lamp, so that it will by no means fill the full opening of a substage condenser of, for instance, a numerical aperture of 1.30 or 1.40; we therefore have to use an auxiliary condenser in front of the lamp, and the focus of this must be chosen of the correct length to enable one to project an enlarged image of the crater on the substage condenser large enough to fill the entire aperture of the latter, when the primary condition for critical illumination is fulfilled.

I have seen microscopists illuminate the substage condenser by means of an auxiliary condenser, applying this method for bacteriological work, but paying no attention to the condition that the image of the source of light should fill the *entire aperture* of the substage condenser, and naturally an illuminating cone of the full aperture was not obtained.

Furthermore, if we project the actual image of the crater into the field of the objective we do not obtain that uniform illumination which is achieved when projecting into the object field the image of the lamp condenser.

In the latter case a uniform illumination is easily obtained, and by slightly racking the substage condenser up or down the image of the lamp condenser is easily focussed in the object field. In order to obtain the right focus, we may hold a pencil in front of the lamp condenser and focus same by means of the substage condenser. Next to this lamp condenser is placed an iris diaphragm for adjusting the beam of light illuminating the object field. Needless to say, an iris diaphragm underneath the substage condenser is also required, so that when it is desired to use a cone of light smaller than the full aperture of the objective this can readily be obtained merely by closing the substage iris. The object of the lamp-condenser iris is to prevent the illumination of a larger portion of the object than the field of the objective in use embraces. This is especially necessary when using a large cone of light, such as is essential for bacteriological work, because if the illumination is carried out without the lamp-condenser and iris with a powerful light-source like an arc-lamp, and with a full cone, the light will strike the margin of the objective, and the inner walls of the mount, causing internal reflection in the optical system and a certain halo or mist over the field will be the result. By placing an iris diaphragm, however, in front of the lamp condenser and opening the same to such an extent that no more than the field of the objective is illuminated, we avoid all these internal reflections, and so increase the contrast and improve the definition of the picture in general. By observing these conditions we shall have an evenly illuminated field of great intensity, and, practically, all that we can expect in the way of critical illumination.

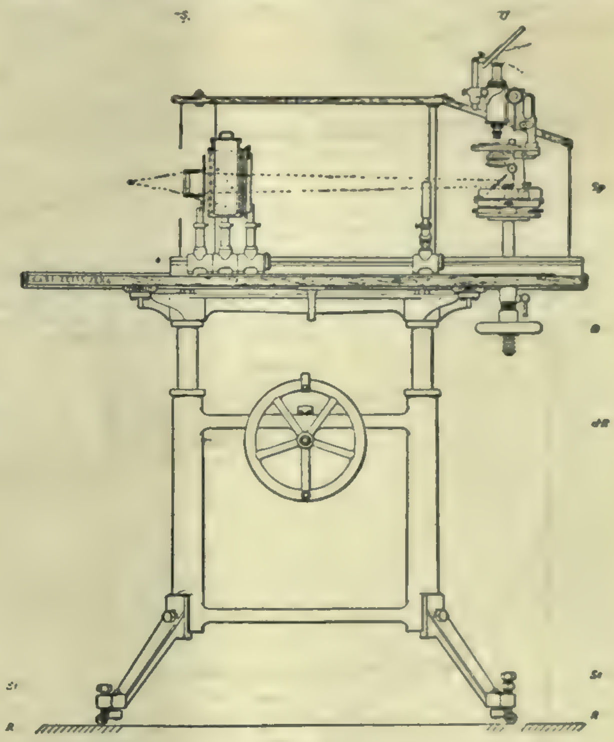

Fig. 2.

**Diagram of large Projection Apparatus with High Power Converging Lenses, as set up for Projection with Vertical Microscope fitted with Microscope Objectives and Eyepieces.**

*H* Elevating Device showing the sole-plate raised together with the microscope to a sufficient height so as to place the centre of the substage mirror *Sp* on a line with the axis of the converging lens $S_1$. *U* Reversing Mirror. *HR* Hand Wheel for the vertical extension of the stand. The wheel is fitted a diametrically opposite points with a handle and a stop which is arrested by a stud when the table is in its lowest position so as to protect the gearing from damage. The feet of the stand are fitted with castors *R,R* and set screws *St,St*.

Having established in this manner an illumination process which will meet the widest numerical aperture of modern oil-immersion lenses, it is now a comparatively easy matter to deal with the various objects. Diatoms, being of a transparent substance, require in most cases an illuminating cone smaller than the aperture of the objective, and no definite rule of illumination can be given for such objects. A diatom like *Amphipleura Pellucida*, for instance, has to be illuminated with a very oblique beam of light in order to show the fine line or bead structure, and to make use of the oil angle to the fullest extent the substage condenser must necessarily be an oil-immersion condenser connected with the object slide by a drop of cedarwood oil. A further advantage in getting the highest resolving power possible is to have such diatoms embedded into a medium of high refractive index, in order to obtain great differences in refractive indices of the specimen itself and the embedding media. A diatom like *Pleurosigma Angulatum* should never be illuminated with oblique light, since its structure demands axial illumination, and the aperture required is considerably less than the air angle. In illuminating bacteria or five-fibred structures only axial light should be used, and the illuminating cone chosen should be the largest possible.

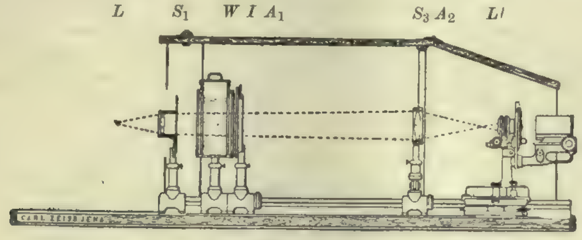

Fig. 3.

Diagram of large Projection Apparatus with High Power Converging Lenses as set up for Projection with Projection Lenses or Planars.

*L* Source of Light. $S_1$ Converging Lens Ia moved nearer to the radiant (Lens I would have to be placed a little farther off). *W* Water Cooling Chamber, *I* Iris Diaphragm on saddle stand, wide open, with the stop $A_1$ behind. $S_3$ Lens No. III turned up into the path of the rays. *L′* Intermediate Image of the radiant, whence the rays proceed to the spectacle lens condenser. *M* Microscope on its sole plate, which is shown without elevating device.

I come now to the use of light in photo-micrography belonging to the various colours of the spectrum, the colour being chosen with due regard to the object with which we are dealing. In diatom work, in order to get the highest resolving power possible, it is practically essential to use a blue filter, even with the best apochromatic lens. The shorter the wave-lengths of the light employed, the higher will be the resolving power, for when the light chosen belongs to the shorter wave-lengths of the spectrum it will act like an increased numerical aperture. That is to say, if we use a blue light with a given aperture instead of a red light, all other conditions being equal, that blue light will furnish us with a resolving power considerably higher than that of the red light. From this it will be seen at a glance that the blue light is to be preferred in diatom work.

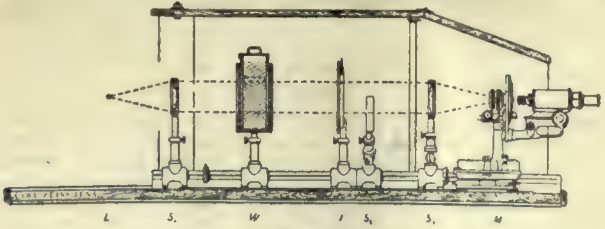

Fig. 4.

Large Projection Apparatus with Collective Lens System of Great Light-gathering Power.

For projection with low magnifications (diagrammatic).
*L* Source of light (arc lamp); $S_1$ Lens I (Collimator), a short distance behind the first stop; *W* Water chamber; *I* Iris diaphragm; $S_2$ Lens II hinged over; $S_3$ Lens III (Collector), close against the second stop; *M* Microscope on sole-plate. The sole-plate has no elevating gear.

In medical work—for instance, photographing bacteria, etc.—the matter is different. We have to deal here with specimens more or less stained, and in such cases it has always been the practice to select the filter in accordance with the absorption bands of the staining solution as seen through the spectroscope. To cut down the beam of light with such objects in order to obtain contrast would result in forming diffraction lines, and in cases of fine details would destroy the definition altogether. Let us suppose that we find in a staining solution an absorption band between wave-lengths 580 and 590 $\mu\mu$ in the spectrum, all the remaining colours of the spectrum being visible. In order to cut out the colours of this visible spectrum, we take a colour filter which only allows the passage of light between wave-lengths 580 and 590 $\mu\mu$, and by photographing with a light passed through this filter we obtain maximum contrast, the details of the object being rendered as black shadows on the screen. This method has been used for many years with great success, and is simplicity itself.

In pathological specimens, however, we have some preparations which are fairly thick, and it would not be wise to use a filter strictly to the absorption band, because we desire to see some differentiation of structure in the staining. It is a good plan in such a case to use a filter which allows some of the light belonging to the absorption band to pass, and so illuminate with a reduced light of that portion of the spectra to act in conjunction with the powerful light which passes directly on the plate. That is to say, a certain amount of weak light of the colour of the staining solution will be acting on the plate as well.

I have here a few colour filters, and will show their spectra on the screen, in comparison with an ordinary spectrum, so as to illustrate the method. The proportions of the chemicals used in these filters are as follows:—

I. Light-filter for yellow light. In a globe of about 9 cm. diameter. Wave-length 579 $\mu\mu$ and 576 $\mu\mu$

| | |
|---|---|
| Bichromate of potash | ½ oz. |
| Sulphate of copper | 1 dr. |
| Sulphuric acid | 17 minims. |
| Distilled water | 1 oz. |

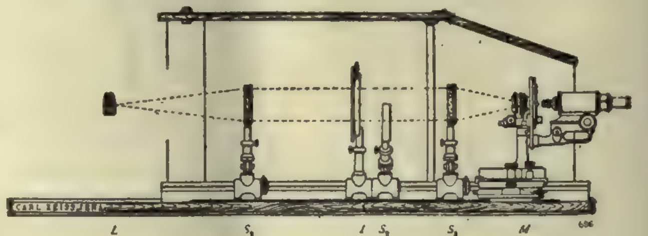

Fig. 5.

Large Projection Apparatus with Collective Lens System of great Light-gathering Power.

For incandescent gas lamp and for medium magnifications.
*L* Source of Light (Incandescent gas mantle); $S_2$ First lens II (Collimator); *I* Iris diaphragm; $S'_2$ Second lens II, hinged down; $S_3$ Lens III (Collector); *M* Microscope on sole-plate.

The filter for this portion of the spectrum is mostly used for photo-micrography with blue stained preparations.

II. Light-filter for green light. In similar globe. Wave-length 546 $\mu\mu$

| | |
|---|---|
| Picric acid | 5 grs. |
| Sulphate of copper | 1 dr. |
| Didymium nitrate | ½ oz. |
| Distilled water | 10 oz. |

III. Light-filter for blue light. In similar globe. Wave-length 436 $\mu\mu$

| | |
|---|---|
| Sulphate of copper | 15 grs. |
| Distilled water | 8 oz. |
| Liquid ammonia | 3 oz. |

IV. A saturated solution of copper sulphate in ammonia, in cell of about 1 cm. thickness, I have found of very great service in photo-micrography of diatoms, like *Amphipleura Pellucida*, in order to resolve them into line or bead structure.

V. One per cent. solution of quinine with a few drops of sulphuric acid will absorb all violet light.

VI. The Zettnow filter. Wave-length 530 to 590 $\mu\mu$ in a similar cell, consisting of:—

| | |
|---|---|
| Nitrate of copper | 8¼ oz. |
| Chromic acid | ¾ oz. |
| Water | 9 oz. |

is also very useful for general stained specimens.

Besides these, of course, a large number of filters can be prepared to meet any portion of the spectrum.

Objectives free from secondary spectra, that is to say, lenses corrected in such a manner that no colour fringes whatsoever are shown around the margin of the structures of the objects, render great service in this kind of work, since the definition of these lenses, known as apochromatics, for the various portions of the spectrum is equally good.

As I have already pointed out, if we use a light of short wave-length we thereby increase the given resolving power of an objective, and to give us even a higher resolving power than an objective of numerical aperture 1.40 would furnish us, microscope lenses have been constructed for ultra-violet light. Dr. von Rohr, of the Zeiss works at Jena, constructed microscope objectives of this nature to suit wave-lengths of the cadmium and magnesium lines, wave-lengths of 275 $\mu\mu$ and 280 $\mu\mu$ respectively, thus practically doubling the resolving capacity of the highest power oil-immersion lenses. Ultra-violet light, as we all know, cannot be passed through glass lenses, since even a thin sheet of this material, like, for instance, an ordinary cover-glass, will stop, for example, the cadmium line of 275 $\mu\mu$ entirely, and consequently the whole optical train has to be made of quartz and the microscope objectives even of fused quartz. The first attempts made to utilise ultra-violet light were handicapped by the lack of suitable quartz material. When the correct material became available, and special quartz objectives had been made, the experiments turned out to be a great success. In addition to this, most of the organic substances absorb ultra-violet light, and therefore we have the great advantage in photographing fresh preparations unstained with the light of this portion of the spectrum. With this light even the finest structures of fresh preparations appear in strong contrast, and, as a matter of fact, if one is not careful in preparing the specimen sufficiently thin the object may appear semi-opaque. Ultra-violet light has been found extremely useful in photo-micrographic work of diatoms, since it renders the finest details easily visible.

As ultra-violet light is invisible, it will be asked how it is possible to carry out the focussing. The apparatus for ultra-violet light constructed by Dr. Köhler, of the scientific staff of the Zeiss Works, is therefore provided with uranium glass screens, which renders the ultra-violet light fluorescent, and thus provide sufficient visibility to carry out the focussing arrangements. The apparatus for the use of this mode of illumination has to be constructed in its optical parts in such a manner that ultra-violet light passes freely, and a powerful bright spark is required to get sufficient illumination for high-power work. If an induction coil having a four-inch spark is used, with two or three Leyden jars to act as a condenser, a very powerful spark can be obtained, and in order to get a fairly brilliant light of the wave-length of 275 $\mu\mu$ or 280 $\mu\mu$ we use the spark between either cadmium or magnesium electrodes. I repeat that with ultra-violet light in photo-micrography the objectives, oculars, prism, and condensing lenses must be made of quartz, as the interposition of the thinnest piece of glass is sufficient to block this light as effectively as a piece of metal will block an ordinary beam of light. The making of this apparatus is therefore rather expensive; also, high-power photo-micrography with this instrument is not very easy, which accounts for the fact that up to the present it has only been employed to a limited degree. MAX POSER.

## PIRIE MACDONALD.

THE first number of Vol. III. of "Photographic Progress" contains a welcome innovation in the shape of a series of articles, "Men Who Have Succeeded," planned on the commendable lines, "not so much with a view to the glorification of the few as for the purpose of assisting the many." As our contemporary writes: "In nearly all of us is the latent possibility of success. So many of us lose heart early in the game that anything that will tend to give an inspiration to greater energy or supply lacking self-confidence is worthy of a place in this little journal, the primary idea of which is to benefit the craft at large." One cannot refrain from praising appreciation of success when it is entered upon in this spirit, nor from approving the choice of Mr. Pirie MacDonald as the first subject of the series. Mr. MacDonald's own energy and talents have been shown, not merely in his artistic and commercial success, but in his tireless labours in advancing the interests of his less gifted or fortunate brother craftsmen.

Ask any photographer in New York city, or even in the State of New York, whose name occurs to him first when men of affairs in the photographic field are under discussion, and nine out of ten of them will at once respond, "Pirie MacDonald." Ask them why, and they will tell you that his dominant personality, his skill as a leader, his achievements in the peculiar specialty he has adopted, and his past record as a winner of prizes, places him at once in the forefront among his fellow-kind.

The Pirie MacDonald of to-day is an evolution, forming as interesting a psychological study as any man in the business. The Pirie MacDonald of fifteen years ago was a supercilious, rather egotistical young man, prone to consider the rank and file of photographers as a people beneath his notice. He was then just beginning to acquire that reputation for pictorial portraiture which gained him so many honours at the National Conventions. At that time in his Albany, N.Y., studio, everything was grist that came to his mill—man, woman, or child. And it was the effort that he employed to win out at Conventions that made him a master of his business. At that time he spared no pains to gather in the cups and medals that were freely offered at pictorial exhibitions, and, as he himself says, the preparations he had to make in order to succeed in the competitions were the real issue in his success in making such portraits for the public that his reputation as a photographer went up by leaps and bounds.

The story of how he came to quit making portraits of women has been told time and again. A woman, of course, was at the back of that story, but whether it is true or not, doubtless the real reason was that MacDonald was wise enough to see that this was the age of specialisation; that in New York, the city on which he had set his eyes, as a general photographer, he would be only one of hundreds, many of whom already were photographers of national reputation.

MacDonald is original—we all grant him that. He is a man who likes to do things a little differently to the other men, and a little more forcibly, and he broke all traditions by selecting "men only" as his future class of trade, and as a natural sequence to that selection he opened his studio in the heart of the business section of New York, renting a couple of ordinary every-day offices in one of New York's skyscrapers as his future sphere of action. Some have an idea that MacDonald's success in this new line of work was immediate, but it was many weary months before the New York business man took to this new kind of studio, and most of the hard-earned dollars which had been acquired in his successful Albany studio went overboard before the tide turned. But MacDonald knew that he was on the right track. He had that trait which is not at all common among photographers, namely, perseverance. Gradually the excellence of his work, the peculiar situation of his studio, and the fact that he made portraits of "men only" forced itself upon the attention of the New York business man, and this, coupled with his unique methods of advertising himself and his studio, brought him in the dollars of the public, until to-day, even if he may not be counted a rich man, he is at least sufficiently well provided with this world's goods. Then, too, he has changed from the man of fifteen years back. He has broadened in his vision and in his ideas of his fellow-kind. The smallest photographer of them all can get a ready welcome from him. He is in his element when trying to force upon photographers his ideas of brotherhood and mutual assistance. He it was who brought the New York society to its early successes, and to his tactful handling of men is largely due the continued life and success of the well-known metropolitan section.

He is not by any means a man of one idea, yet his success as a photographer is due to the fact that he has set down for himself one line of conduct, one line of work, one positive aim—to do the best he knows how, to give the best that he is capable of, to do his full duty to his fellow-man; and, following this one plan, MacDonald has achieved a name known all over this country and not unknown abroad. Surely all this can be counted success.

# Photo-Mechanical Notes.

### The Evolution of Photo-Mechanical Illustration.

[The conclusion of a series of articles in the "Lithographic Artists' and Process Workers' Quarterly." The first article was reprinted in the "British Journal of Photography" of July 29, and the second in the issue of November 18, last year.]

THE introduction into commerce of the perfect cross-line screen and the gradual dissemination of the correct principles that underlie its use, has probably done more for the spread of "process" than anything else. Ives, who made the first cross-line screen from a theoretical postulation of its behaviour, made, from the first, blocks that have not been surpassed; those produced under his direction by the Swan Electric Engraving Company in the early nineties were actually superior to many of to-day, and it is only by learning to use the screen in the way pointed out by Ives that the general level has reached the quality of those firms working by his methods twenty years ago.

From producing black and white pictures in a rapid and comparatively simple manner, it was obviously only a short step to attempt to do it in colours. The first suggestion of the possibility of modern three-colour photography was made by Clerk Maxwell, who, in 1861, working on Young's hypothesis that there are three fundamental colour sensations, produced photographs of coloured ribbons. These were only imperfect because there were no plates at that time sensitive to green and red light. As before mentioned, this trouble is now overcome, and Maxwell's theory is proved to be correct. Ducos du Hauron and Charles Cros, in France, in 1868 and 1869 produced three-colour carbon prints, and soon after Leon Vidal produced three-colour photo-lithographs. In 1877 Albert, in Munich, made three-colour collotypes. This process was worked in England in 1890-1 by Waterlow and Sons, but was not brilliantly successful, and the process is not extensively worked here even now, as it is in Germany and Austria, in spite of the large sale of such prints in this country, though Bemrose and Sons, of Derby, are very successful with this method.

E. Vogel, the son of H. W. Vogel, the discoverer of colour sensitising for plates, joined a lithographer named Ulrich, and they successfully produced colour collotypes in 1890. Vogel went to New York, where he introduced the process to the firm of Kurtz. They could not, however, work collotype, but turned their attention to relief methods, with which they were successful, publishing three-colour half-tones in 1892. Here again Ives had been a pioneer, for he had so early as 1881, and again in 1885, exhibited at Philadelphia three-colour prints from blocks made with a single line screen. But because he saw that the theoretical requirements were not completely attainable, he did not believe in the commercial possibilities of the process, and turned his attention to the more perfect additive colour processes. The three-colour process was worked in England in 1892, the Photochromatic Company, of Belfast, Gilbert Whitehead and Company, and Waterlow and Sons being the first to produce three-colour blocks in the United Kingdom, according to Mr. Burch in his recently published "Colour Printing and Colour Printers." Since that time the process has become widespread, every up-to-date engraving firm having its colour department.

I think I have now touched on all the salient points in the history of photo-mechanical illustration as it is practised to-day, and I must here acknowledge my indebtedness to Eder's "Geschichte des Photographie" for much of the information relating to the earlier days. Of course, there are many processes that I have omitted (for example, the "wash-out" gelatine process, at one time largely used in America), but these processes have no apparent bearing on those worked now. There are also many attractive side-lines of history of details of the processes, as, for example, in the method of making the print on metal, the process of etching, including the introduction of the etching machines, the various modifications of the ordinary cross-line screen, such as the four-line screen, the wavy line screen, the chessboard screen, and the screen ruled at 60 degrees. It might also be interesting to consider the many attempts that have been made to replace the cross-line screen altogether, either by a grain-screen like Wheeler's Metzograph, or a process like "Spitzertypie," which uses no screen at all, but a sensitive solution that reticulates. Aids to the printer other than the actual block, in the shape of photo-mechanical overlays or interlays, would also have a place in a comprehensive survey, and finally some account of the improvements in printing machinery, in paper, and in ink, which are directly due to the introduction of the half-tone block. A. J. NEWTON.

# Exhibitions.

## BIRMINGHAM PHOTOGRAPHIC SOCIETY.

THE Birmingham Photographic Society are again fortunate in securing the loan of the fine suite of galleries of the Royal Society of Artists for their twenty-sixth annual exhibition, which was opened on February 25 by Sir Thomas Barclay. The number of frames hung in the large, circular room seems scarcely as great as in former years, but a first glance reveals a fair number of striking exhibits. The members' section is not as strong as in some recent exhibitions, as several of the larger works by members are in the open section. The foreign exhibits are again numerous and striking, many of them being large and powerful, although we miss Duhrkoop's fine, dignified work. The novices' section has some excellent work, and promises well for the future. The section devoted to scientific and applied photographs is full of interesting things. The colour section contains some really beautiful Autochromes, several being very fine indeed.

In the members' class (championship section), a medal is awarded to No. 14, "Betje," a charming portrait of a charming little girl, by P. B. Rider. It is a very successful outdoor portrait with a pleasant suggestion of fresh air. H. W. Rennie receives a certificate for "The Necklace," No. 6, a rather weak, fuzzy Bromoil. We prefer No. 2, "The Harbour-master," a strong figure at the end of a pier. No. 23, also by Mr. Rennie, receives a certificate. It is an unconventional portrait of the ex-president, Mr. Harold Holcroft, lighting his pipe. It is decidedly good, and a pleasant departure from the usual.

No. 24, "Near Tower Bridge," by Wilfred Harrison, receives a certificate, but the distant bridge does not seem to recede as it should; it appears almost attached to the large steamer in the foreground. In 21, "Unloading Pilchards," by the same exhibitor, the same fault is seen; the centre figure near the boat needs more emphasis and the white houses across the harbour come too close. "The Glen" (8), by W. T. Greatbatch, is very pleasant, sunny, and peaceful. W. A. Clark seems to have deserted carbon, in which he succeeded so well, for toned bromide, apparently without his former success in the matter of control—which becomes a little obvious. No. 30, "The Passive Persian," by Henry Ryland, is a very good photograph of a difficult subject—a cat; the print in the catalogue does not do it justice.

In the members' class, ordinary section, W. Howard Coley gains a medal for a powerful Bromoil (70), "Quai Vert, Bruges." It is a fine subject broadly and sympathetically treated, and the colour chosen is far pleasanter than the foxy brown Mr. Coley used a year or two ago. Miss Mary Eames receives a well-merited medal for 53, "A Street in St. Servan, Brittany." Its breadth and power remind one of the quality of a fine etching. It is interesting to compare these two medal pictures, both equally good, yet so different in technique; and yet both are oil prints. It speaks much for a process which is capable of such different results under different hands. In 32, "Sunshine and Shade," by Wilfred Harrison, we see the danger of so elastic a process in less skilful hands, for the shadow of the large trees on the grass has been over-inked to such an extent as to make a strong, almost black, ugly shadow across the grass, completely upsetting the balance and composition. "The Spirit of London," 34, by A. P. Marks, well deserves the certificate it receives; but the various planes of the subject do not recede behind one another sufficiently. It seems to need some of the kind of work the late Wm. England used to put on his Alpine negatives, when he said he was "putting the mountains into their places."

"Sunshine, Kenilworth Castle" (35), by W. T. Ballard, should not escape notice, for the rendering of sunshine on stone is delightfully caught. W. Howard Coley's "The Mill, Wetteren" (39), at first very striking, is a little disappointing on further examination; the light in the sky is too bright and the mill's sails are in an awkward position, continuing the line of the house-roof. Technically, it is a fine example of bromoil. W. Stewart Broughton, in 51 and 57, has secured successful portraits of a boy, with the now fashionable white background; they are both very good.

In the open international class, a medal has been awarded to 79, "Homewards" by E. T. Holding, a little girl driving some ducks across a common. Apparently this is a composite picture, and it seems a pity that the face of the little girl was not better rendered; it is far too black to be either natural or pleasant, and the features are as shapeless as those of a Dutch doll. We much prefer the same exhibitor's 85, "Where are you going to, my pretty maid?" a little girl meeting a black pig in a wood—a quaint conceit; but we must protest against the slovenly "spotting" of this print. Dr. A. R. F. Evershed shows several strong prints, but the most successful is 80, "Cairo, from the Citadel," it suggests so well the glaring, blinding sunshine. Bertram Cox has scored a triumph in the "Sunnyside" (95), a sordid street glorified by the summer sun. It is a picture that grows and grows in one's estimation. Surely no one gets such luscious shadows as Mr. Park in his oil prints. "Portrait" (117), which receives a medal, is a glorious piece of technique, but one feels that it has the defects of its qualities, and that the background is *almost* too black; in spite of that, however, it is a joy to look at. No. 107, "Miss Muriel George and the Follies," is almost as good, and it is quite an achievement as a stage snapshot; but one asks if the rays of limelight would not have been more apparent. Mr. Park's "Three Birches" suffers from too much blackness in the dark, but all the same it suggests an old mezzotint.

"A Castle of Romance" (109), by J. McKissack, illustrates the title admirably. J. C. Batkin sends three "gums," but none so good as "While the Daylight Lasts" of two or three years ago. His work this year suggests laborious efforts to get Turneresque effects; it lacks spontaneity. The composition of "A Silent Watcher" (127) suffers from a sense of emptiness in the centre, intensified by a light patch on the ground and a break in the dark band of bushes on the left.

Some of the foreign work is remarkably strong and vigorous, and has secured several awards. Some most interesting work is shown in the applied photography, and one marvels at the patience and persistence which is necessary to secure some of the series of natural history subjects. An interesting exhibit is shown of photography as an aid in the detection of crime.

Among many Autochromes of great excellence, "Eastnor," by J. Dyson Perrins, stands out as one of the most completely satisfactory colour photographs it has been our lot to see. Many workers lose all the exquisite greys that one sees in nature, perhaps because the photographer's sense of colour has never been cultivated, and they see only brilliant colours of primary quality, and that is what they try to get in their Autochromes.

Some multicolor, gum, and oil prints in the open section can be described only as utter failures, and it seems remarkable that they should have succeeded in passing the selection committee. Interesting demonstrations of printing processes are given each evening, and also of the grinding of the Aldis lens. The exhibition remains open till March 10.

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"HOUGHTON'S" VERSUS "KODAK'S."—On Saturday, February 25, a football match between teams from Houghton's Works, Walthamstow, and Kodak's Clerkenwell Branch was played at Wadham Lodge, Walthamstow. The game was stubbornly contested throughout, the play being particularly fast during the first half. After the match, tea was provided in the pavilion for the two teams and their supporters, and a little speech-making indulged in, which showed the good-fellowship that exists between the employees of the rival firms. Another match has been arranged for April 1.

PORTRAITS OF H.M. THE KING.—At Buckingham Palace last week the King gave sittings to three photographers—Messrs. Bassano, Campbell-Gray, and Thomson—by whom a series of excellent photographs of His Majesty in the uniform of Admiral of the British Fleet were obtained.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between February 13 and 18:—

CAMERAS.—No. 3,686. Photographic cameras. Henry Stanbridge.

LENSES.—No. 4,075. Lenses for photography and projection. Horace Courthope Beck.

FLASH-LIGHT APPARATUS.—No. 4,089. Photographic flash-light apparatus. George Hana.

VIEW FINDER.—No. 3,954. View finder for cameras. Olof Arvid Axelsson Tenow.

OPTICAL PROJECTION.—No. 3,626. Optical projection apparatus. Oskar Messter.

TRANSPARENT PHOTOGRAPHS.—No. 3,828. Process for the preparation of transparent photographs. Carlos Courmont.

CINEMATOGRAPHS.—No. 3,939. Cinematograph films. Luis Wirtz.

CINEMATOGRAPHS.—No. 4,150. Manufacture and treatment of photographic films for cinematographs. John Owen and Frank Sydney Ongley.

CINEMATOGRAPHS.—No. 3,629. Film-guide for cinematograph projectors and like machines. Ernest Francis Moy and Percy Henry Bastie.

STEREOSCOPIC CINEMATOGRAPHY.—No. 3,552. Means of displaying stereoscopic pictures with optical lanterns and cinematographs. Herbert Dickinson and Mabel Alice Dickinson.

PHOTOGRAPHIC STENCIL REPRODUCTIONS.—No. 3,988. Process for the reproduction of photographic reproductions on stencils of wire-netting or the like. Alexander Pindikowsky.

ARC LAMPS.—No. 4,166. Arc lamps for use in connection with cinematographs and like optical projection apparatus. Abraham Kershaw.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

RAPID BROMIDE PRINTING MACHINE.—No. 2,369, 1910 (January 31, 1910). The invention provides a "machine" having a single common pressure-bar hinged to one end of the frame and having transverse spring pressure-arms separately pressing on the back of a pressure cover in two parts. These are hinged together. One part is also hinged to the frame at the same end as the pressure-bar, whilst the other part is connected to the bar by a link connection so as to open therewith. There is a spring clip for holding one part of the pressure back in position, also an elongated plate having a crank arm, the former being adapted to clamp the printing paper and negative in position. A spring arm holds the pressure-bar and back in their opened position, and a spring-hinged handle, attached to the pressure-bar, forms a guide for the pressure-bar.

The front 3 of the body is provided with an opening about which is formed a printing frame, which consists of ends 9 and 10 and sides 11 and 12. A shoulder 13 is formed within the printing frame to support the print and printing paper supporting glass 14. Shoulders are also formed within the printing frame to provide supports for tinted or ground glasses or for vignetting, etc. The shoulder 13 is disposed below the upper edges of the ends 9 and 10 and the side 11. The upper edge of the side 12 is disposed below the shoulder. The back of the printing frame comprises hinged sections 16 and 17, and it is secured to the upper edge of the end 9 by hinges 18. Each hinge 18 comprises a comparatively short hinge leaf 19 and a comparatively long hinge leaf 20. The hinge leaves 19 are secured to the upper edge of the end 9 in any suitable manner, while the hinge leaves 20 are secured at their free ends to the upper side of the back section 16. The hinge leaves 19 are located above the normal plane of the back of the printing frame. In view thereof, in view of the length of the leaves 20, and in view of the fact that these leaves are secured at their free ends to the back, the back may as a whole adjust itself to various thicknesses of printing paper and films.

The back of the printing frame is held in closed position by means of a pressure bar 21 which is hingedly secured at one end to the end 9. The other or free end of the pressure bar 21 is provided with a hooked keeper 22 which is secured to the under side of a handle section 23, the handle section being secured to the bar 21 through the medium of a spring hinge 24. The hinging of the handle section 23 to the bar 21 permits the keeper 22 to be thrown out of engagement with the bolt 25 when it is desired to open the cover of the printing frame. The spring of the hinge 24 maintains the keeper 22 in position for interlocking working with the bolt 25 when the bar is thrown into the position—that is to say, in position to secure the cover of the printing frame closed. The bolt 25 is pivotally secured at its lower end to a plate 26 which is secured to the end 10. The free end of the bolt 25 passes through a strap 27, and the bolt is yieldingly held in position by an expansible coiled spring 28 which is mounted between the bolt and the plate. Spring pressure arms 29 and 30 are secured at points centrally between their ends to the inner side of the pressure bar 21, and bear at their ends on the sections 16 and 17 of the back of the printing frame, respectively.

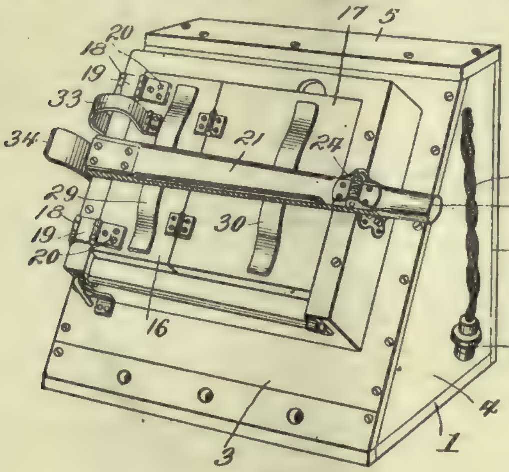

Fig. 1.

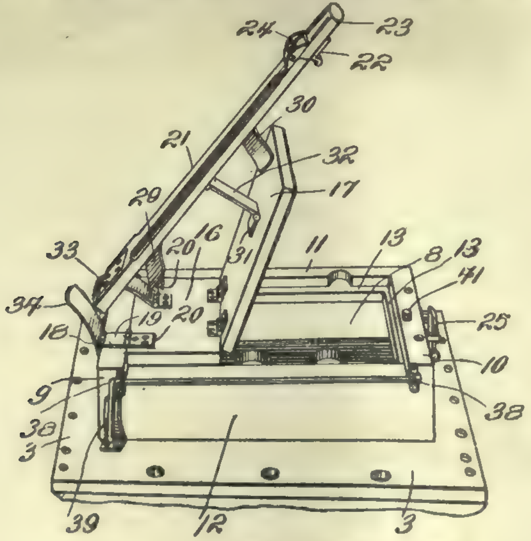

Fig. 2.

The pressure bar 21 is secured to the section 17 of the back of the printing frame by means of a hinge which comprises a leaf 31 which is secured to the part 17 of the pressure cover, and is hinged to a link 32 attached to the pressure bar. This connection between the section 17 and the pressure bar 21 is such that the initial movement of the pressure bar into inoperative position moves the section 17 upon its hinges—that is to say, moves it with relation to the section 16, as fully disclosed in Fig. 2. This permits the printing paper to be examined without removing the entire back, and facilitates the proper application of the negative and printing paper to the printing frame. The section 16 is normally held in closed position by a spring 33, which is secured at one end to the end 9, and at its other end of the section 16. This spring holds the section 16 against movement during the movement of the section 17 by the initial movement of the bar 21. The further movement of the bar 21 throws the sections 16 and 17 to one side of the printing frame—that is to say, opens the back of the printing frame. After the negative and printing paper have been placed in the printing frame, the bar 21 is given an initial movement in a direction to close the back of the printing frame; this movement of the bar, owing to its connection with the section 17, and owing to the action of the spring 33 upon the section 16, closes the section 16 first, this section 16 clamping the negative and printing paper between itself and the glass 14. A further movement of the bar closes the section 17 and throws the keeper 22 into interlocking engagement with the bolt 25. It should be apparent that the manner in which the back of the printing frame is closed greatly facilitates the correct application of the printing paper and negative to the printing frame. The pressure bar 21 and the back sections 16 and 17 are supported in opened position by a spring arm 34 which is secured to the end 9. George Albert Ley, 827, Marietta Street, South Bend, Ind., U.S.A.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

COLOUR SCREENS.—No. 19,554, of 1910. Manufacture of colour screens for colour photography. Ruth.

## New Trade Names.

HEDWORTH BARIUM Co., LTD. (DESIGN).—No. 329,297. Chemical substances used in manufactures, photography, or philosophical research. The Hedworth Barium Co., Ltd., 1, St. Nicholas Buildings, Newcastle-upon-Tyne, chemical manufacturers. December 13, 1910.

VOLUS.—No. 329,214. Metal draining racks for photographic plates. John Hanks Cooper, jun., 23, King Street, Gravesend, Kent, upholsterer. December 9, 1910.

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## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Numbering Plates when on Tour.

It is often difficult (writes "C. H." in "Photography and Focus" for February 28), on returning home from a holiday, to identify any particular plate out of a box of a dozen or so, and the value of the carefully-noted particulars of exposure, etc., is considerably discounted thereby. I have found the following method work admirably. A stick of chalk, such as is used for school blackboards, is used, and the number is written on the backing. (Being an earnest photographer, anxious to do the best work I can, of course I use backed plates.) The plates may be numbered consecutively, but the plan I adopt is this. When a dozen plates have been exposed, they are packed in the box with the wrappings from which are taken those that replace them, each dozen being distinguished on the label on the box, and in my notebook by a letter. However long the trip, it is quite easy to find in the notebook details of any particular plate that is wanted, and the letter found, the box can be picked out directly. Just before development the number and letter of the negative are marked just on the edge of the film with an indelible pencil. The chalk numbers on the backing may be made large so as to be read with ease in the dark-room.

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MESSRS. GEVAERT, LTD., will be among the exhibitors at the Northern show, where they have taken the whole of the wall space on one side of the trade room for a collective display of specimens on Gevaert papers.

# New Materials, &c.

### Advertising Seals for Photographers. Made by Sharp, Walker and Co., Ltd., Watford, Herts.

In these attractive items of stationery, Messrs. Sharp Walker provide the photographer with the ready means of taking each opportunity of keeping his name before his customers. The "seals" may be affixed to envelopes, parcels, proofs, mounts, etc.; in fact, to anything which leaves the photographer's establishment. Made in thin paper, well gummed on the backs, and heavily embossed, they present a handsome appearance, being, in fact, an exceedingly good imitation of the wax impressions they are intended to represent. They are supplied in six shades, viz., Bartolozzi Brown, Malachite, Green, Murillo Brown, India Brown, Raw Amber, and Bronze Green, a selection which allows of a match being chosen to suit practically any style of mounting or stationery. The price, inclusive of the lettering in the centre, which may run to about 35 letters, is 30s. per 10,000. At this rate of 28 seals for one penny, the photographer should find the use of the seals a most inexpensive means of impressing his business upon all with whom he has any dealings.

A postcard to Messrs. Sharp Walker will bring a circular bearing an actual specimen of each of the six shades of seal.

### The "Moore" Loose Leaf Album. Made by Moore's Modern Methods, Ltd., 4, St. Bride Street, London, E.C.

A quite new introduction in the way of photographic albums reaches us from this well-known firm of specialists in loose-leaf volumes of all descriptions for business purposes. Messrs. Moore's Modern Methods, Ltd., are producers of time-saving appliances, the advantages of which, in comparison with card indexes, are worthy of study by business photographers. Whatever may be said as to the relative advantages of the two systems—and it cannot be denied that for many purposes a list in card index form is inconvenient—photographers, both amateur and professional, will welcome this highly convenient album, which for the present is issued only in one size, namely, 8 x 5, allowing a clear space for mounting prints of 6½ x 5—that is to say, for one half-plate or two quarter-plate prints. The album consists of a pair of stout covers enclosing seventy-five art mounts, which are held on four metal supports. Every mount is thus held firmly in place, but pressure for an instant on a spring lever contained in the binding allows of the whole number being released and any removed without disturbing the order of the others. The system further permits of index-tab sheets being inserted in any required positions as a guide to the contents of the album. The loose-leaf mounts, in the specimen before us, are dark green, dark brown, and grey, all of matt art texture. While dry-mounting has attained a widespread use for photographs to be attached to loose mounts, its employment has necessarily been restricted in the case of albums, in consequence of the comparatively small variety of loose-leaf albums procurable, as well as of the trouble necessary in withdrawing and re-inserting the leaf-mounts. The album before us is a great step in advance, and is certain to be appreciated both by amateurs requiring a tasteful album for their photographic records as well as by professionals wishing to mount prints on a system which will allow of their re-arrangement when necessary. The price (retail) of the album is 5s. Dealers should apply to Messrs. Moore's Modern Methods, Ltd., for terms of discount.

A Coronation Booklet.—A booklet for the use of the portrait photographer, in addressing himself to the residents in his neighbourhood, has just been prepared by Messrs. Walter Pearce and Co., St. George's Press, Brentford, W., with the appropriate superscription "Coronation Year, 1911." A few words of introduction point out the fitness of securing photographic portraits during the present year, and the booklet contains three-colour reproductions of portraits of their Majesties King George V. and Queen Mary. Like other of the tasteful literature for photographers issued by the St. George's Press, it is supplied to one studio only in a district. Prices on application to Messrs. Pearce.

A sample book of "Ensign" art mounting boards, the very beautiful series of materials for mounts supplied by Messrs. Houghtons, both in cut sizes and in full sheets, reaches our table. It is a little price-list and specimen book in one, which our readers should be anxious to preserve, for the reason that the selection of tints and surfaces is done with much discrimination. There is a commendable absence of pronounced colour in the mounting boards, every one of which is eminently suitable for photographic purposes. The specimen book is sent free on application.

Prices of Developers.—Messrs. Charles Zimmermann and Co. notify us that the retail prices of metol and ortol will be reduced as from March 1 as follows:—1 oz. bottles, to 2s.; 4 oz., 7s. 6d.; 8 oz., 15s.; 16 oz., 30s.; and at the same time the 10 gramme bottles will be introduced at 1s. each.

Eikonogen remains the same price as before. Messrs. Zimmermann are also introducing 10 gramme bottles of this developer at 6d. each.

## CATALOGUES AND TRADE NOTICES.

Carbon and Bromide Enlargements.—Two special lists of prices of enlargements in these processes reach us from Mr. S. H. Fry, Frisian House, 5, Highbury Grove, London, N., each including a tasteful specimen of the respective process. The work of Mr. Fry's firm in all classes of trade printing and enlarging has been before professional photographers for so many years and has so consistently merited the high opinion which it has secured, that commendation on our part is surely unnecessary. Still, to many photographers the phrase "Send it to Fry" may not have suggested itself as the way to obtain printing and enlargements as good as can be done from the negative. Our own correspondence with photographers constantly demonstrates to us the satisfaction as regards both quality and promptitude given by the Frisian House establishment. As regards prices, our readers can judge for themselves by the simple process of applying for a list. In the case of that just issued of carbon enlargements, we may draw attention to the special offer made to photographers placing their first order for a carbon enlargement with Mr. Fry.

Westminster Second-hand Apparatus.—A special 64-page list issued by the Westminster Photographic Exchange, Ltd., 119, Victoria Street, S.W., reaches our table. Its itemised description of scores of cameras—film, plate, magazine, reflex, focal-plane, stereoscopic, and stand—should specially interest amateur workers who wish to add to their outfit at the minimum of cost. The Westminster Exchange has rapidly come into the front rank of dealers in second-hand apparatus, and the large number of goods in the present list testifies to the wide scope of its dealings. In addition to cameras, the lists of lenses, enlargers, shutters, dark-slides, tripods, light-filters, developing apparatus, and sundry other goods occupy a prominent place. The articles may be seen at 119, Victoria Street, or by giving an hour's notice, at the firm's other house, 111, Oxford Street, W.

Fallowfield Bargains.—The thirty-two page list of the annual sale of the firm of Jonathan Fallowfield should be secured by those desirous of taking advantage of this opportunity for purchasing apparatus, etc., at greatly reduced prices. The list specifies reflex, hand and stand cameras in great variety, and includes among the box instruments a number of the older patterns which are extraordinarily good bargains. Though somewhat bulkier than present-day models, they are cameras which a few years ago sold at six or seven times the prices at which they are now offered. Enlargers, lanterns, tripods, shutters, lenses, burnishers, washers, and a host of sundries figure in the sale, which lasts for another week.

New Cameras for 1911.—A new handsomely bound list of over 200 pages reaches us from Messrs. Houghtons, Ltd., 88 and 89, High Holborn, London, W.C. It describes the latest introductions and improvements in all classes of cameras and camera-sets manufactured at the Houghton Works at Walthamstow. Notable among the contents are the particulars given of the British-made anastigmatic lenses, now fitted by Messrs. Houghton to a number of cameras of their manufacture at extremely low prices. Thus, £2 2s. purchases a good folding camera fitted with an anastigmat; £3 5s. a folding instrument with specially rigid front, F. 6.8 anastigmat, and a Simplex-Auto. shutter, whilst a similar camera, with Cooke-Luxor lens and Ensign Sector shutter, is issued at £4 10s. The list likewise includes particulars of the various models of the most popular "Ensignette," now introduced in a series of focussing models with Ensign, Aldis, Cooke, Goerz, and Zeiss anastigmats. Similar value in roll-film cameras likewise figures in the list, and, finally, we may refer to the Houghton series of reflex cameras, the Model A of which (box-form) represents extremely good value in cameras of this type, and recommends itself specially to professionals taking advantage of the reflex type for studio use. The complete list is one which dealers making preparations for their season's goods will be well advised to have before them. It is sent free on receipt of trade card, the price to amateur workers being 6d.

HOUGHTONS' STOCK-TAKING SALE.—A list of cameras of all descriptions, dark-slides, shutters, enlargers, and sundry goods, reaches us from Messrs. Houghtons Ltd., by whom they are being offered during the next week or two at very substantial reductions on the list prices. Application should be made to 88 and 89, High Holborn, for a copy of the list; or better, a visit paid to Messrs Houghtons' premises, where other sundry goods, likewise offered at sale prices, but not catalogued, may be inspected.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### FRIDAY, MARCH 3.

Aberdeen Photographic Association. "Tramps Abroad with a Kodak." W. F. Slater.
Wakefield Photographic Society. "Noctona Gaslight Printing." Thos. Young.

### SATURDAY. MARCH 4.

Edinburgh Photographic Society. "A Tour in Jersey, Brittany, and Normandy." A. Eddington.

### MONDAY, MARCH 6.

Southampton Camera Club. "Photography" Prize Slides.
Cleveland Camera Club. Y.P.U. Portfolio (Discussion).
Scarborough and District Photographic Society. Lecturettes. G. R. Ditchburn and Frank Foster.
Catford and Forest Hill Photographic Society. "Flower Photography." E. Seymour.
Bournemouth and District Camera Club. "Applied Micro-Photography." W. Melluish.
Kidderminster and District Photographic Society. "A Journey up the Nile." H. Tomkinson.
Stafford Photographic Society. "Photography and the Microscope." H. and F. Cliff.
Leek Photographic Society. "My Tour through Egypt." John Hall.
Grangemouth Amateur Photographic Association. "Tramps Abroad with a Kodak." W. F. Slater.

### TUESDAY, MARCH 7.

Royal Photographic Society. "On the Relationship between the Size of the Particle and the Colour of the Image." Chapman Jones, F.I.C., F.C.S., F.R.P.S.
Rotherham Photographic Society. "Lantern Slide Making" F. A. Tinker.
Leeds Photographic Society. "The Growth of the English House." Sydney D. Kitson.
Handsworth Photographic Society. Council Meeting.
St. Helens Camera Club. "Bird Life." J. R. Matthews.
Hackney Photographic Society. Annual Meeting.
Sheffield Photographic Society. "To the East with a Camera." Dr. G. Laycock Barker.
Keighley and District Photographic Association. "Beyond the Esterels." C. B. Howdill.
Monklands Photographic Society, Airdrie. "Tramps Abroad with a Kodak." W. F. Slater.
Halifax Camera Club. "Noctona Gaslight Printing." Thos. Young.

### WEDNESDAY, MARCH 8.

Croydon Camera Club. Lantern Evening for Members' Slides.
South Suburban Photographic Society. "Intensification and Reduction." J. McIntosh.
Borough Polytechnic Photographic Society. "Press Photography." A. Barratt.
Balham Camera Club. "Colour Screens and their Use." J. G. Parsons.
Sale Photographic Society. "The Rhine, the Neckar and the Moselle." F. Mahler.
Coventry Photographic Club. Lantern Lecture. A. B. Clarke.
West Surrey Photographic Society. "Ortol for Lantern Slides." Mr. Baskett.
Edinburgh Photographic Society. Members' Slides. Slides of the Rambles held during Session 1909-10.
Partick Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.
Rodley. Farsley, Calverley, and Bramley Photographic Society. "Noctona Gaslight Printing." Thos. Young.
Norwich Institute Amateur Photographic Society. "Noctona Gaslight Printing." A. Webb.

### THURSDAY, MARCH 9.

Oldham Photographic Society. "Peeps at Life in the East." Mr. Hadfield.
Handsworth Photographic Society. Social Evening.
Coatbridge Photographic Association. Autotype Carbon Demonstration.
Maidstone and Institute Camera Club. "Photography" 1910 Prize Slides.
Camera Club. "Greek Sculpture." Professor E. A. Gardner.
Hamilton Natural History and Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.
Birstall Photographic Society. "Noctona Gaslight Printing." Thos. Young.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, February 28, Mr. John H. Gear in the chair.

Mr. E. W. Harvey Piper delivered a lecture entitled "Lordly Lincoln," which was illustrated with a large number of fine lantern slides dealing very thoroughly with the details of the subject. The lecture was much appreciated by those present both for its interesting character and the entertaining manner of its delivery, and a hearty vote of thanks was accorded to Mr. Harvey Piper.

# Commercial & Legal Intelligence.

LEGAL NOTICES.—A first dividend of 5s. in the £ has been declared in the bankrupt estate of Albert Edward Seaman, photographer, 5, Hady Lane, near Chesterfield, in the parish of Hasland, Derbyshire, and carrying on business at 13, High Street, Chesterfield, and lately residing and also carrying on business at 75, King's Road, Brighton.

# News and Notes.

THE FRECKLETON BACKGROUND CABINET.—Messrs. F. E. Jones and Co., 22, Gray's Inn Road, W.C., advise us that they have been appointed sole agents for the Freckleton background cabinet.

FIRE AT CARDIFF.—An outbreak of fire took place last week in the Metropole Buildings, 3, The Hayes, Cardiff, occupied by Messrs. Corn and Co., photographers. A wooden partition and framework in the enlarging room were burnt, and some of the photographs and other stock badly damaged by water. The cause of the fire is unknown.

HYPONO ASTRAY.—Messrs. Marion and Co. inform us that a sample of Hypono has been returned to them, owing to the label having been torn off in the post. This was returned from the Cranbrook post-office, but as no sample has been sent recently to Cranbrook Messrs. Marion and Co. would be glad to hear from any of the recent applicants who has not received his sample.

BALHAM CAMERA CLUB.—At the fourth annual exhibition of the above club, Mr. Frederick Humpherson awarded the following prizes:—Landscape: 1st, J. S. Child; 2nd, H. S. Freestone; 3rd, J. G. Parsons; hon. mention, C. Davis. Figure studies: 1st, H. S. Freestone; hon. mention, E. Saunders. Miscellaneous: 1st, F. J. Blackie; 2nd, E. E. Saunders; hon. mention, E. C. Nesbit. Lantern slides: 1st, H. S. Freestone; hon. mention, W. J. Ifould.

"PHOTOGRAPHIC PROGRESS."—With its issue for the present year this excellent little monthly, published gratuitously by the A. M. Collins Manufacturing Co., Columbia Avenue and American Street, Philadelphia, appears in an enlarged size. It continues to keep professional photographic topics to the fore in its pages, and the offer of the Collins Co. to send their magazine to any studio making application for it is one which we advise our readers to take advantage of.

WATER SUPPLY IN LEEDS.—According to the "Rossendale Echo" of last week about 2,000 amateur photographers are now in revolt against the Leeds Corporation because of the proposed new water charges. The new scale comes into operation in June, and thence onwards amateur photographers, whose hobby at present goes untaxed, will have to pay a minimum tax of ten shillings per annum. The various photographic societies and camera clubs in Leeds have a total membership of about 300, and as the ratio of non-members is reckoned at 7 to 1, there are probably more than 2,000 amateur photographers in the city. Various plans are being considered by photographers as a protest against the proposal, among them, as a last resort, that of "passive resistance." Arrangements are being pressed forward whereby an influential deputation of amateur photographers will be enabled to lay their case before the Waterworks Committee. If no relief is granted, a petition will be probably drawn up, and an attempt made to rouse public opinion by means of protest meetings. Photographers complain that it constitutes an unnecessary tax upon a harmless hobby. They point out that since the Corporation propose to charge 9½d. per 1,000 gallons of water for manufacturing purposes, it assumes that the average amateur photographer uses about thirty-five gallons daily in the pursuit of his hobby on each of the 365 days in the year.

WEEKLY DAY OF REST MOVEMENT.—A conference convened by the Imperial Sunday Alliance, which has for its object a universal weekly day of rest, was held at the Westminster Palace Hotel last week. The Archbishop of Canterbury wrote that there seemed to be a growing appreciation of the real importance of the subject, notwithstanding the rather successful efforts now prevalent to evade the intent of our existing laws. Lord Kinnaird moved a further resolution in favour of giving shopkeepers and their employees one day's rest in seven, that day to be always (except under proved necessity) Sunday. The resolution also declared that the conference could recognise no necessity for the sale on Sunday of intoxicating liquors, fruit, tobacco, confectionery, newspapers, and motor and cycle accessories. Lord Kinnaird referred to the opening of cinematograph theatres on Sunday, and asked how much of the money taken at the doors really went to charitable institutions. He said he did not believe that the charitable societies of this country wanted to obtain their money at the expense of those who were entitled to a day's rest. An amendment was made welcoming the Home Secretary's suggested amendments to the Shops (No. 2) Bill to restrict Sunday trading, and appealing to him to include the sale of newspapers among the classes which should be subject to the Sunday closing order. It was also agreed to appoint a deputation to wait on the Home Secretary. The Duke of Devonshire presided over the afternoon's proceedings.

Photogravures in Monochrome and Colour.—We have recently had an opportunity of inspecting a large selection of the photogravures in colour prepared by Messrs. Copperfield, Ltd., Tower House, 28, Tite Street, Chelsea, the subjects being both copies of paintings and portraits photographed from life in the studios of Messrs. Copperfield, Ltd. Multi-colour photogravure, that is to say, in which the intaglio plate is inked by hand in the colours required, is, as our readers doubtless know, a craft which calls for a considerable degree of skill and artistry, but, with these at command, yields most charming results. Those shown us from the Copperfield studios include a large number of portraits closely resembling fine water-colour paintings. Particularly in the case of subjects composed chiefly of light tones, such as portraits of ladies and children, the effect is most charming. We are glad to learn that among sitters of taste these photogravures in colours have met with a most appreciative reception. Work of this kind of undoubted art quality and unquestionable permanency cannot fail in reflecting credit upon the photographer. In the case of reproductions of works of art, etc. (articles which can be placed with the firm when the work is being done), commissions can be accepted by Messrs. Copperfield, Ltd., though in the case of living sitters difficulties necessarily arise in regard to reproducing correct colouring. In monochrome work this objection does not present itself, and the production of photogravure copies in considerable number from photographers' negatives is a branch of work which this firm of craftsmen can undertake for professional photographers generally.

The Scottish Historical Exhibition.—Glasgow exhibitions are proverbially successful, and we are confident that the great Scottish Industrial Exhibition, which opens in Glasgow at the beginning of May, will be in every way worthy of its predecessors. There is to be a Fine Art section, which will illustrate the progress and development of Scottish art during the last 100 years. Everything possible is being done to have really a unique collection, and the scope will include the work of Sir Henry Raeburn, and the most eminent artists from his time to the present day. Nothing could be finer than the splendid pile of buildings set aside for the Fine Art section. The Palace of Art consists of eight large galleries, and it is desired to get together a representative collection of the work of Scottish artists, of those who have for ever laid aside their brushes, and artists who are still in harness. The Fine Art section includes photography, and the photographic sub-committee, consisting of Archibald Cochrane, James McKissack (Convener), and Mr. F. R. Moffat, will be glad to hear from Scotsmen in all parts of the world—and where are Scotsmen not to be found?—who are photographers, and who may be in a position to send in representative work. The work will be invited, and a number of pictures, it may be mentioned, have already been chosen from the recent Scottish Salon. Sons of Scotland will surely respond heartily to this call, and will not only give of their best, but do everything in their power to strengthen the hands of the Fine Art sub-committee. Scottish workers should send without delay to the Curator of the Fine Art section, Mr. S. M. Frazer, 190, West George Street, Glasgow.

Photo-Sculpture.—The "Scotsman," in its issue of February 25, prints an account, translated from a Helsingfors newspaper of an invention of a young Italian, Signor Storti, of Milan. The writer, a Flemish art dealer, thus describes his visit as follows:—

"No one would for a moment suppose but that these busts were the work of some celebrated sculptor. Without having seen the persons themselves one is at once compelled to believe that they are splendid likenesses, and the work is brilliant; the most fault-finding critic could not find an objection in this sculpture work.

"Here is a whole figure produced from the sculpture work on the dome in Milano. This living reproduction shows us a new phase of the importance of the invention. Through photoglyfia perfectly true copies of the greatest sculpture work in the world can be obtained in a few minutes, and all at small cost. Every art museum can now at a small outlay secure copies of the best antique and modern art works. A death mask taken through photoglyfia is taken as quickly as an ordinary photograph.

"And now my bust was to be taken or made.

"In the centre of the room I notice three big objects covered with black cloth. I raise the cover of one and discover what looks like a cannon on a revolving platform. They have not the slightest resemblance to ordinary photographic apparatus.

"I was placed in the centre of the three machines. The inventor touches a button and an intense electric light fills the room, green and red flames almost blinding me.

"In facing the three mysterious machines, one in front and one on each side of me, my bust had been made.

"'To-morrow afternoon at two o'clock the bust will be ready,' said the inventor.

"The following day at two o'clock I called at the studio, accompanied by Signor Basevi, and there is my bust all finished. As far as I could judge, it was as true a resemblance of myself as the most excellent photograph, the hair and moustache having the same compactness usual in sculpture.

"I was certainly astonished. Here I was looking at my bust, started at five o'clock in the afternoon the preceding day, and virtually a work of art.

"'You are a magician,' I said to the young inventor. He only smiled, but there was a triumph in his glittering eyes.

"And what is the process? I frankly admit I am mystified. Sculptors that I had talked with said it was a cheap humbug, an impossibility, and yet here is the bust before me, technically and artistically correct, and the cost much less than taking a photograph."

[We reprint this paragraph as we find it, but would say that we are unable to verify the description of the writer. From some passages in it, it might almost be a fanciful account of the Baese method of relief photography demonstrated in London some few months ago before the Royal Photographic Society.—Eds. "B.J."]

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

## TAXING OR LICENSING PHOTOGRAPHERS.

To the Editors.

Gentlemen,—With your kind permission I should be glad to say a few words with regard to the letter written by "Disgusted" in the "B.J." dated February 24.

While it is a great pity that so much fraud goes on in connection with photography, ours is not the only business to suffer in this way. Hardly a week passes but what a sample of tea, sample brushes and combs, handkerchiefs, postcards, etc., are placed in my letter-box, each an inferior article, and each an attempt to take business from the straightforward people with whom I deal. But I refrain, and I am of the opinion that the majority do likewise.

In cases of this kind, it is necessary to remember that the world is a huge place, and that humbugs of the kind are fortunately few in number, as are also those that patronise them. To tax everybody who earns money with a camera (as "Disgusted" seems to suggest) would not cure these fraudulent persons. There never was, and never will be, any harm done by a person working a district and supplying photographs, providing they act straightforwardly; in fact, it would be little less than cruel.

The only way not to rid, but to check, such fraudulent practices is to impose heavy fines or long terms of imprisonment of a reforming rather than a demoralising character. It would, of course, be impossible to entirely prevent such fraudulent dealings, which, though by no means necessary evils, are nevertheless unpreventable.

I would add that the reason no harm can be done by canvassing for photographs is that the local photographer does not suffer. The clientele of the canvasser either give him an order because he was clever enough to obtain it, or to be rid of him if he is sufficiently pushful to become a nuisance.

Be it understood, I offer not the slightest encouragement to canvassing on behalf of firms or individuals whose address is usually one room in the heart of the city, and who pay commissions to the unemployed to swindle the public. No punishment could be too severe for them.

In conclusion, may heaven prevent additional taxation of the wrong kind. Although I ride a cycle, and would not object to paying a reasonable tax for so doing, nothing is demanded nor even suggested, nor is anything demanded from my neighbours whose cats uproot my flowers, worry my canary when they get a chance, and are in every way a nuisance, chiefly because they are not kept in their own homes. Instead, another neighbour owning a beautiful St. Bernard dog, the protector of the home and its occupants, and the joy of the children, is forced to pay 7s. 6d. per annum in the form of a licence, to say nothing of feeding, cleaning, and veterinary attendance upon the animal. Whereas its feline friend, paying no tax, apparently costs nothing to keep, for the neighbours' fish and canaries plus kitchen mammalia keep him or her going. Pray let us have a revision of existing taxes before more are thrust upon us.—Yours very truly, P. FREDK. VISICK.

50, Stanbury Road, Peckham.
February 27, 1911.

## STARTING PHOTOGRAPHY.

To the Editors.

Gentlemen,—A young man, of distinct ability as an amateur photographer, is desirous of going into business on his own account. He would be prepared to devote some few months to study with a professional photographer, and would have command of a small capital—say £200. He is business-like, hardworking, and energetic. Do you think that he would stand a fair chance of meeting with a modest success? H. F.

[Our advice to your young friend is to consider seriously the prospects which portrait photography offers. In your own neighbourhood you doubtless have evidence of the very cheap competition which photographers—particularly those catering for the middle classes—have to face. Certainly your friend's qualities are excellent, and if his personality is attractive and his business ability above the average, there is no doubt a reasonable chance of his doing fairly well.—EDS. "B.J."]

## MARKINGS IN TANK DEVELOPMENT.

To the Editors.

Gentlemen,—I have read the correspondence in the "B.J." of late with respect to markings on plates as a result of tank development, and would say that I have spent considerable time investigating trouble of this nature, and as far as my experience goes the trouble lies wholly in the lodgment of air patches between the plates, lodgment taking effect either: I., at the beginning of development; II., at the rinsing in clear water; or III., at fixing. In case I., if the air lodges at the beginning and remains undisturbed throughout the period of development, the result is a clear, transparent spot; but should the air become shifted, the result would be characteristic markings of less density than the parts adjacent. In case II., the air patch prevents the gelatine film from being rinsed of developer in the part affected, and, of course, development continues into greater density and contrast; should, however, the worker examine his plate in actinic light at this stage, the result would be a spot of great density and almost total obliteration of detail. In case III., the air simply prevents the hypo from acting on the part, and if rinsing has been sufficient no harm is done, providing the air has been expelled and fixing continued.

Believing this trouble likely to be more prevalent in tanks of horizontal development, I was impelled with a desire to confine my experiments to this style of development, together with an endeavour to successfully treat glass negatives by the plan of stacking them horizontally in any convenient number in a tray one upon another, film side upwards, with means for spacing them apart; means for preventing shifting laterally; development by the short time and temperature method. The tray thus loaded was set (temporarily) on an incline, and the liquids poured on at the lower end. As a result there was a gradual filling in between the plates from the lower end of the incline upwards. But I found from a specially arranged means of observation that this flow was not always a smooth and even flow, but, on the contrary, often a hesitating and jerky progress upward, which resulted occasionally in leaving behind air patches of various sizes and positions, the cause of which I have discovered to be the repellent action between the glass surface of the plate and the liquid. This repellent action was nicely overcome by scouring the glass side of the exposed plate with the aid of a small piece of slightly wet cloth plunged in dry sulphite soda. Afterwards I used as a means of separating the plates a thin sheet of metal scoured on one side (instead of the glass) with little spacing legs attached near each of the four corners, with very satisfactory results.

The complaint of one of your correspondents relative to markings resulting in single tray development was caused, I believe, by a very scanty covering of developer, which was allowed to remain perfectly stagnant. I have noticed on several occasions an even mottled result when the tray was allowed to lie without any rocking whatever, but should the tray be given a very *slight* movement once or twice, the markings were rendered streaked or cross-streaked, similar to brush marks, as suggested by the Editor.—Yours respectfully, W. G. RICE.

Edison Park, Illinois, U.S.A.
January 13, 1911.

## GLYCIN DEVELOPER.

To the Editors.

Gentlemen,—I noticed in a recent number of your journal an inquiry regarding the use of potassium metabisulphite with glycin, as a substitute for sodium sulphite. I intended to send you the same query, but, instead, made a few trials. The original formula is:—

| | |
|---|---|
| Hot water | 500 |
| Potass. carbonate | 130 |
| Glycin | 25 |
| Sodium sulphite anhydrous | 25 |

The 25 grams of sodium sulphite may, I find, be replaced by either five (5) grams of metabisulphite, or by ten (10) grams of acetone sulphite, without materially affecting the time of development. Negatives are entirely free from fog with metabisulphite, and but very slightly veiled with acetone sulphite.

The formula is excellent for X-rays and colour-sensitive plates, in both tray and tank. At 65 deg. F., the time is about forty minutes or less in a dilution of one in (80) eighty, and five minutes in a dilution of one in ten. The absolute time varies, of course, with the contrast desired, brand of plates, and other factors.—Yours very truly, H. W. S.

U.S.S. "Connecticut," c/o Postmaster, New York.
February 13, 1911.

## LANTERN SLIDES DIRECT IN THE CAMERA.

To the Editors.

Gentlemen,—I note with much gratification your re-publication of my short article on the direct production of lantern slides, and am sorry that it was not possible for you at that time to have seen the MSS. of a more extended account in the possession of "Camera Craft," in which I gave full credit to Mr. Douglas Carnegie for his improvement. This was published in this month's issue, and I enclose a copy. I have read your editorial in the January 20 issue, and feel constrained to remark that, in the technique of photographic processes, theory and practice often stand far apart. Thus the objection that the acid bichromate bath should undo the effect of the light on the second exposure has no validity; in fact, as you may easily ascertain by trying it. Equally the idea that the red bichromate of silver image should be as effective a shield as the metallic silver it replaces is not so, in fact. And lastly, you will not succeed in making presentable lantern slides of delicately graded tones on a one minute's washing. The fact is that the great essential in this process is careful washing at all stages. I have learned this by well-paid-for experience. Thanking you for your kindly recognition of my work in this and other instances, believe me, very faithfully yours, H. D'Arcy Power.

San Francisco, California.
February 10, 1911.

## A "MULTUM IN PARVO" ACCESSORY.

To the Editors.

Gentlemen,—Your paragraph on a "Home-Made Throne" suggests to me that a description of a simple box accessory, which I have had in use for some years, and which I would not willingly part with, would be of some interest to your readers. The article in question serves three purposes, being a store box for draperies, toys, etc., a seat, and, last, but not least, a low studio camera stand, which I have found very useful for child portraiture. It consists of a plain wooden box, measuring about 17 inches each way, running on four castors, and having a well-hinged lid, fitted with a spring strut, which will hold it open at any angle. The interior forms a receptacle for the many oddments which are constantly in demand, while the lid, with its simple tilting arrangement, makes an excellent dwarf studio stand. A loose cushion of art serge fixed upon a light frame, which carries a deep frill of the same material, slips on over the top and makes a presentable seat. If home made, the whole cost need not exceed half-a-crown, but probably after a fair trial the box will be deemed worthy of being reproduced in polished wood, with an upholstered top to match other furniture in the studio.—Yours faithfully,

Economy.

## "OLD PRO." AND "NEW PRO."

To the Editors.

Gentlemen,—As a regular reader of the "B.J." may I beg some space to deal with the letter from W. Barry, published in last week's issue, especially as I fear that the attitude I take to the bygone "pros." may be misunderstood? In the first place, I must thank Mr. Barry for the designation, "the new pro.," which I am honoured to accept. Had Mr. Barry been present at my lecture, instead of reading a summary in cold print, he would have found that I concentrated my attention to showing how the business side of photography had progressed. In the good old days the professional photographer was a technical photographer. Customers came for the best technique. Nowadays, unfortunately, there are insufficient sitters to keep half the photographers busy, the result being that the most successful studios are run by business men who make a fine art of procuring work. Anyone can do the work when once obtained. If the staff cannot do it, give it to Raines!

I fully realise that it was only the work and research of the "old pros." that made it possible for us to buy plates, papers, etc., so perfect that they practically work themselves, so that the new pro. can give plenty of time to business getting; so, after all, photography *has* progressed, both on the technical and on the business side. The progress is, of course, in favour of the customer, but my lecture was given before customers and possible customers, and there are two sides to every question. If you ask whether the profession of photography has improved, the answer is, "Certainly not," but it must be remembered that the photographers of the past occupied much the same position as the airmen of to-day—they were a novelty; now they are a hard fact, and often a nuisance. My principal plea for the "new pro." is that he makes, at any rate, a decent living, and still gets a guinea per dozen for c.-de-v.'s, while if he had adopted the methods of bygone days he would have gone to the wall years ago.

With respect to my custom of giving five or six retouched proofs and re-sittings free, the proof of the pudding must be in the eating. This is a system I have now worked for years, and cannot call to mind a single instance in which I have been defrauded, and the number of re-sittings I am asked to give is very, very small.

My statement that I am prepared to send from one to two hundred pictures to the editor of a magazine requiring studies for his pages was not exaggerated, and that this proves a successful business-getter is shown by the quantity of special illustrations I am called upon to produce for the principal magazines and newspapers. Although I cannot claim the experience of the majority of your contributors, the above facts are the result of six years' hard work in professional photography, and I think the majority of the "new pros." will agree that they ring true.—Yours faithfully,

Elwin Neame.

4, Onslow Place, S. Kensington.
February 28, 1911.

# Answers to Correspondents.

**Photograph Registered:**

General E. F. S. Lloyd, 34, Lennox Road, Southsea. *Photograph of a Winter Scene in the Grosser Garten, Dresden.*

**Potash Solution.**—What is the strength of potash, and how can it be dissolved in methylated spirit, as your answer to "Cleaning Lens Mount" in the "B.J." of February 10?—Old Subscriber.

The exact strength is not important. Dissolve 1 to 2 oz. of stick caustic potash in 10 oz. of methylated spirit. The potash dissolves almost as readily as in water.

**Carborundum.**—Will you kindly inform me where the finest grade "F.F.F." carborundum powder, referred to on page 152 of this week's "Journal," can be obtained, and the approximate price of the same?—Cathay.

Either order it through a local tool shop or write direct to the Carborundum Company, 29, Clifton Street, Finsbury, E.C. We cannot give you the exact price, but the material is cheap.

**Working up in Oils.**—Can you inform me what firm prepares mediums "Nos. 1 and 2" mentioned by Albert J. Lyddon in his article on "Finishing Photographs in Monochrome and Colour," which appeared in the "B.J." for January 20, 1911, p. 40? Are the mediums any special preparation? Can you tell me where to obtain the same?—Medium.

Apply to Mr. Lyddon, Photographic School, Regent Street Polytechnic, London, W.

**Sensitising Whatman Paper.**—Will you tell me how to sensitise "Whatman's" paper without any gelatine; also tone and fix? If permanent or not?—Tom Wilkinson.

A suitable formula is given on page 757 of the current "Almanac." It contains a little gelatine, and this you will find is the best sizing for preventing sensitising solution from sinking into the paper. Still, in the case of a hard paper, such as Whatman's, you can doubtless omit it from the formula. Such "plain paper" does not yield prints of the highest degree of permanency. You can also sensitise the paper by the Kallitype process, using the formula on page 778 of the "Almanac." For full directions see "Ferric and Heliographic Processes," published by Routledge, 68, Carter Lane, E.C., 2s.

**Cleaning Film Negative, Etc.**—Will you kindly let me know (1) Best method of cleaning front of a film negative? (2) Publisher's address and foreign subscription of the American "Inland Printer"?—H. Fletcher.

(1) We do not quite understand what it is you want to know. If you mean how can the film side be cleaned from dirt you can only treat it like an ordinary glass negative. If you want to remove the film from the celluloid support you can soak first in an alkali and then in an acid, when the film will probably come off by itself. Generally the gelatine film will roll off dry quite easily, if you first trim off the edges and then lift one corner with a knife. (2) The "Inland Printer" Company, 120-130, Sherman Street, Chicago; $3.85 per annum.

**Virtual Image.**—Will you inform me, through the "B.J.," what a "virtual image" is? I think it is something to do with optics. —L. A. F.

A virtual image is one that cannot be received upon a screen in the same manner as the real image formed by a photographic lens. A negative lens renders parallel light divergent, and the diverging rays, if produced backwards, will be found to radiate from a point which is a virtual image. Similarly, if an object is placed between a positive lens and its focus, divergent light is produced, and this radiates from a virtual imago situated behind the actual object. Magnifying glasses act in this way, and the magnified image that we see is a virtual image farther from the lens than the object magnified.

Lantern Slide Tinting Glasses.—I am anxious to dye up a series of gelatine-coated lantern plates so as to form tinted cover glasses for some special slides. Can you tell me what is the best means of clearing off the image from old lantern plates for this purpose? I have tried Farmer's reducer, which clears off the image fairly well, but frequently leaves the plate with a yellow stain that will not wash out.—Panorama.

A less staining reducer, but one which is extremely poisonous, is the iodine-cyanide. Dissolve some potassium cyanide in water, and some crystals of iodine in methylated spirit. Add the iodine solution to the cyanide in sufficient quantity to form an active reducer. The proportions do not very much matter for your purpose, but you will find a formula, which in a stronger form (less water in it) will answer your purpose well, on page 747 of the 1911 "Almanac."

C.C. Prints.—Are collodion prints permanent if worked as follows? They are first fixed in a slightly alkaline hypo bath, washed in about eight or nine changes of water, for half an hour or so, then toned in a phosphate gold bath, and finally washed again a few times.—Ontario.

This is a very exceptional method of working C.C. paper, and we are not at all sure that is the one conducive to the highest degree of permanence. It is the general experience that gold followed by platinum toning gives (when proper precautions are taken) a more lasting print than those which are gold-toned simply. Whether that would apply to your process of toning after fixing only experience can say, but our own opinion is that thorough fixation and washing before toning should favour permanence. Here, however, printers have not generally adopted it as a commercial process.

Studio Lens.—Is it possible for me to get a lens for studio work that will give good results on any size plate ranging from C.D.V. to 15 x 12? If not, how many and what types of lenses would be required?—A. P.

No, it is not possible. If you had given us the length of the studio we could have better advised you. For average work, the best all-round focal length is one of 10 in. to 12 in. If you purchase a lens of the portrait type you get a large aperture $f/4$, but you do not get the power of covering a larger plate. We should advise you to choose a lens of the so-called "portrait anastigmat" type, of aperture $f/5$ or $f/6$, and about 10 in. focal length. This will serve for cabinet heads and full lengths in a studio of 20 ft. to 25 ft. length, and will cover a much larger plate (12 x 10 to 15 x 12) when using it for outdoor groups. If you look up the price lists of the makers named under "Lenses" on page 1343 of the "Almanac" you will find a number of such lenses listed at prices which you can take as fairly proportional to the working qualities of the instruments.

Lens Plate.—Will you please inform me in "B.J." which you consider is the best lens and cheapest for outdoor work for a half-plate camera, taking houses, groups, people, and animals, etc.? Also which make is the best plates to use for this class of work? Osborn.

There is no best lens or plate. As regards the former, we should advise you to get one of 8 or 9 inches focal length and $f/6$ aperture. A focus of this length on a half-plate is a good average for such work as yours, which, in the case of buildings, will sometimes require to be done in somewhat confined quarters. In bright weather a lens of $f/8$ aperture will be more than sufficient, but to be able to reduce exposure in a dull light we should certainly advise you to get a lens of at least $f/6$. Several firms issue such lens at very moderate prices. See the list under "Lenses" on page 1,343 of the "Almanac." As regards plates, choose one of "extra," not ultra, rapid speed. If you select the most rapid plate sold by any maker at the standard price of 2s. 3d. per dozen in the half-plate size you will not be wrong.

Phœnix Reflex Camera.—I have bought an old 5 x 4 reflex hand camera, box pattern. I bought it for the lens, which will be useful to me as a wide-angle for another camera. However, I find that the camera is only short of the ground glass and blind, although parts of it are loose, and, of course, shutter spring, etc., are out of adjustment. It is marked "McKellen's Phœnix Patent." Could you tell me:—1. Who were the makers, and if still in business? 2. Is it likely to be worth repairing, for river scenes, boating, and landscape, not requiring high speeds? Having other cameras, I do not want to go to too much expense. 3. If likely worth repairing, and makers are not in existence, who would be the best to send it to? 4. Would my 9 in. anastigmat be a suitable lens to have fitted to it, as I like a long focus for my work?—Aquaticus.

1. The camera is evidently one made by the firm of McKellen, formerly (but not now, so far as we are aware) in business in Manchester. 2. Our recollection of the details of the camera does not allow us to say, but we should think it could be put in order. 3. Send it to Mr. A. B. Allen, 20, Endell Street, London, W.C. 4. Certainly it would, if the extension of the camera permits. If it does not, an extension-box might be fitted.

◆

Enlarged Negatives Direct.—In the current issue (March) of the "Red Lamp," the readable little monthly of photographic doings in the North of England issued gratuitously by Messrs. Mawson and Swan, 15, Mosley Street, Newcastle-on-Tyne, appears the following account of a recent demonstration before the Whitley Bay Camera Club.

A simple method for transforming an ordinary bromide enlargement into a negative from which excellent prints can be obtained was demonstrated by Mr. W. Coats, jun., before the members of the Whitley Bay Camera Club on January 25. Mr. Coats' procedure was to make an ordinary bromide enlargement on a rapid and smooth bromide paper, giving a short exposure so as to keep the shadows clear. He developed this enlargement with amidol, and then washed it for two minutes without fixing. The print was then immersed for at least seven minutes in the following uranium toning bath:—

Toning Bath.

No. 1.

| | |
|---|---|
| Potassium ferricyanide | 40 grs. |
| Glacial acetic acid | ½ oz. |
| Water | 10 oz. |

No. 2.

| | |
|---|---|
| Uranium nitrate | 40 grs. |
| Glacial acetic acid | ½ oz. |
| Water | 10 oz. |

These solutions will keep indefinitely by themselves. Take equal parts of each just before required for use.

When toning is complete, the print is again washed in several changes of water and immersed for one minute in a solution composed of 20 grs. ammonium sulphocyanide dissolved in 10 fluid oz. of water. The print is then again well washed for two minutes and then exposed to the light given from burning 4½ in. magnesium ribbon at a distance of about one foot. The print is then rinsed and redeveloped in the original developer, after which it is fixed in hypo and washed.

Rufus of the "Red Lamp" adds:—It forms an easy and interesting method for producing large paper negatives suitable for gum, oil, or carbon prints. I venture to suggest that the use of a metol and hydroquinone developer in place of amidol would be an improvement, for whilst the particular tone of the original enlargement is of no consequence, the alkalinity of the M. and H. developer would destroy the uranium image much more rapidly than the comparative neutral solution of amidol.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2653. Vol. LVIII. FRIDAY, MARCH 10, 1911. Price Twopence.

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## SUMMARY.

The next Professional Congress.—We publish this week particulars of the attractive programme which the Professional Photographers' Association has in preparation for the Congress to be held from May 15 to 19. Demonstrations of electric light work, lectures on studio equipment, the optics of portraiture, etc., in addition to visits to the works of leading manufacturers, will be features of the Congress. (P. 177.)

In a leading article we comment on the modern practice in the use of studio screens and reflectors. (P. 170.)

The opportunity for business in the publication by a photographer of local guides is the subject of a note on page 170.

A recent paper in "Camera Craft" deals with some aspects of "Commercial Photography," in the course of which the writer records his experience in photographing shop windows, articles of manufacture, etc., and in preparing photographs illustrative of factories, and concludes with some hints on the avoidance of halation other than by backing. (P. 171.)

At the Northern Exhibition, opened at Liverpool last week, and reviewed at length on page 178, an exceptional course was taken by the judges in selecting a quite limited number of photographs (identified as their choice by labels), and leaving the hanging committee to choose sufficient others as required by the wall space.

In a recent paper before the Optical Society, Mr. C. F. Lan-Davis has elaborated the mathematical calculation of the form and construction of iris diaphragms; his results leading him to some advantageous forms of iris diaphragm from a practical point of view. (P. 174.)

Camera cases, daylight development of plates, etc., figure under "Patent News." (P. 180.)

Those having any experience in iridescent markings caused by a coating of silicate on glass plates are asked to note the enquiry of Lord Rayleigh on this subject. (P. 185.)

Further letters on tank development, Sunday opening, etc., will be found in our "Correspondence" columns. (P. 184.)

Section II, of the R.P.S. Exhibition, and a variety of practical matters, are dealt with under "Answers to Correspondents." (P. 186.)

A hint on the taking of large heads direct is given on page 170.

## EX CATHEDRA.

**The "B.J." Colonial Number.** Within three weeks from to-day the fourth Special Colonial and Foreign Number of the "British Journal" will be published, and will, we are able to say, maintain the interest and importance of the three previous issues. In consequence of the very considerable bulk of this number, we are compelled to make up portions of it much in advance of the day of publication, and we would, therefore, draw the attention of photographic firms to the fact that copy for advertisements should reach us not later than Friday, March 24, and articles for notice in the editorial columns by March 15.

* * *

**The P.P.A. Congress.** The Professional Photographers' Association has now published a preliminary announcement of the proceedings of the second Congress, which will be held at the forthcoming photographic exhibition at the Horticultural Hall from May 15 to 19. The evenings of Tuesday, Wednesday, and Friday will be devoted to papers, lectures, etc. Mr. T. C. Turner, of Hull, will deal with the use of artificial light for studio, printing, and other purposes; Mr. Drinkwater Butt will deliver an illustrated lecture on the decoration and arrangement of photographers' studios and premises; Mr. Edgar Clifton will lecture on the practical optics of portrait photography, and a paper by Mr. Pirie MacDonald, of New York, will also be included in the programme. The afternoons of each of the above days will be occupied by visits to the factories of leading manufacturers, and members of the Congress will thus enjoy the hospitality of Messrs. Kodak, Ltd., Houghtons Ltd., and the Platinotype Company, at each of which firm's factories very complete arrangements are being made in the way of tours of inspection, demonstrations, etc. The Association's dinner will be held on the Thursday evening at the Criterion restaurant, to which function manufacturers, dealers, and others interested in the business side of photography, whether taking part in the Congress or not, are invited. Further details of the Congress programme will be found upon another page, but we may here call to the recollection of our readers the notable success of last year's Congress and the satisfaction, expressed upon every hand, with which the papers and demonstrations, and still more, the discussions which followed them, were received. This year's Congress is planned throughout upon thoroughly practical lines, and we cannot imagine a more remunerative investment of money on the part of any professional worker than the comparatively small sum which he need spend in attending the meetings of the Congress. Quite apart from the formal papers, the advantage to himself in meeting his confrères from other places and of exchanging views upon matters of common difficulty is one which cannot be over-rated. Further particulars of the Congress and of membership of the P.P.A. (which latter is a necessary condition of attendance) may be obtained from the honorary secretary, Mr. A. Mackie, 89, Albany Street, London, N.W.

* * *

**Local Guides.** In many holiday resorts, and also in the outlying suburbs of London, illustrated guide books, showing the advantages of the district as a health resort or a desirable place for residence, have been issued under the auspices of the local authorities, the production having been in the hands of a London company who have in some cases engaged the local photographer to take the necessary views. There are, however, many districts which are open to treatment in this way, and the local photographer ought to be able to get not only cash but kudos by putting such a booklet into circulation. It would be too much, in the majority of cases, to expect him to produce the volume at his own expense and risk, but an alliance with the proprietor of the leading local newspaper, who is usually a printer as well, would probably make matters easier. Advertisements could be secured from nearly all the leading tradesmen, not forgetting the builders and house agents, and these should not only cover the cost but yield a satisfactory profit. Not the least valuable part of the advertisement, from the photographer's point of view, comes in the semi-official way in which he can approach the various officials, clergymen, and the like in the course of photographing their institutions. Of course, if possible, the brochure should be issued by authority of the local board or council. In connection with this class of work it may be said that as a rule the local photographer does not get his full share of the business that is being done in the production of process blocks. There is no reason why he should not create a trade in blocks and even in prints therefrom in his district, to the exclusion of the semi-amateur so often employed by the printer, whose only aim is to get a photograph of a sort at the lowest possible price.

* * *

**Newspaper Portraits.** It is doubtful whether any useful purpose is served by the publication of portraits of people more or less concerned in cases which attract public notice, and certainly in many cases such publication is extremely objectionable to the victims and likely to deter important witnesses from coming forward except under *subpœna*. The ordeal of the witness box is quite enough to try the nerves of the average Briton, without having to contemplate running the gauntlet of half-a-dozen cameras. Until recently cameras were tabooed within the court itself, but now we are treated to pictures of the principal actors in any cause célèbre, who are depicted in a building which is apparently on the point of disintegration by an earthquake. It is far from our desire to put a limit on photographic enterprise, but it seems that snapshots of unoffending and unwilling witnesses can only be placed in the same category with those of bathers, the perpetrators of which have more than once met with well-merited punishment. Parties concerned in trials and civil suits might well claim to be placed under the protection of the court during the period of actual proceedings: they would then be relieved from the necessity of dodging the photographer, and the newspapers would lose very little.

* * *

**Large Heads Direct.** There is nothing like the tendency nowadays to take large direct heads that there was in the later wet collodion days. No doubt the ease and simplicity of the bromide enlarging methods is responsible for this, for in the sixties enlargements were usually made in the solar enlarging camera, which required sunlight, and the process of printing on to a print-out silver paper was a somewhat tedious one. The principal objection to large direct heads was the violent perspective obtained, the nose and other parts of the head nearest to the camera being represented on a scale much too large. We may take it as a rule that the lens should never be nearer than ten feet from the sitter, and fifteen is certainly better for a head and shoulder portrait. But if we are producing a life-sized head, then a distance of fifteen feet means a camera extension of fifteen feet and a lens with a focal length of seven feet six inches. Working at an aperture of F. 6, the diameter of the stop would be roughly fifteen inches! There is nothing impossible in this, but it is certainly unpractical, and even with such an aperture as this, the effective aperture to be taken for purposes of exposure would be F. 12, owing to the extra focal distance being equal to the focal length of the lens. Probably half life-size, that is a four-inch head, represents the greatest size to which it is wise to go, and it is worth noting that with, say, a lens of twenty inches focal length the camera extension will be something approaching thirty inches, so that stops marked F. 6 and F. 8 become actually about F. 8 and F. 11 respectively, and allowance must be made for this when exposing.

## SCREENS AND REFLECTORS.

From the number of enquiries which we receive concerning studio construction, the arrangement of blinds and the lighting of the sitter generally, it is evident that the subject is one which gives trouble to many of our readers. Many do not seem to have been able to get any control over the illumination of the studio, except by accident, when, having succeeded in getting a fair average "three-quarter" light, they have perforce kept their work in a groove to suit it, leaving the subtler effects to abler hands. Now this weakness may be due to many causes. Foremost among these we must consider the varying surroundings amidst which studios have to be built, these often rendering all text-book instructions and lighting formulæ worse than useless. Some years ago we were consulted with reference to a single-slant studio constructed strictly upon the lines laid down by Mr. H. P. Robinson. Satisfactory work could not be done in it, the effect being that of using top-light alone. Upon inspection we found a tarred wall, eight feet high, about five feet from the side-light! This was, of course, an extreme case, but there are many others in which a chimney stack or even a tree at some distance will exercise a considerable effect upon the lighting without the fact being recognised. Another lighting trouble arises from the use of too large, or, rather, too lofty a studio. Here the difficulty is to obtain any brilliancy or sparkle in the negative, a monotonous effect resulting from the distance of the dominant light, which is spread over a comparatively large area by the time it reaches the sitter. Under such circumstances the system adopted by the late Mr. Slingsby will be found efficacious. This consists of a tall frame upon castors with a second frame fixed at a slight angle above it. Curtains are fixed upon both frames, so that both top and side lights are perfectly under control; it is, in fact, what Mr. Slingsby himself termed it, "a studio within a studio." Since his time the same idea has been carried out in a more portable and less expensive form by Mr. Whaley. In the majority of cases the photographer will find some of the smaller light controllers such as the "Freckleton" screen quite sufficient for all ordinary requirements. This screen is composed of two blinds, one opaque and one translucent, running upwards from spring rollers fixed to a base, a telescopic rod serving to keep the blinds at the desired elevation. As the whole arrangement is very light it can easily be moved about so as to obtain the best result. Even more portable are the circular head-screens of American design, which may be covered either with white muslin or opaque material. A great variety of fine effects in lighting may be obtained by using a pair of such screens, one opaque and one translucent, with hardly any re-arrangement of the studio blinds. Some American photographers use a small hand screen fixed at the end of a long bamboo, only bringing it into position just before the moment of exposure. This would, we fear, be rather disconcerting to the average British sitter, who would feel rather apprehensive if he saw such an appliance being flourished about.

Second only in importance to screens or diffusers is the choice and use of suitable reflectors. The old type still in use in many studios, consisting of two large pivoted frames, fixed in a heavy stand, is at once the most cumbrous and least effective. It cannot always be placed in the most advantageous position, and its unwieldiness often deters the operator from shifting it when required. Its large size also has a tendency to give a flat effect, and often to cause actual fogging by reflecting light directly into the lens. A neater and more convenient way of working is to use a three-fold Japanese screen, one side of which is covered with a white material, and the other with a dark one. The advantage of this form is that one, two, or three of the panels may be used as required, and if an absorber instead of a reflector is needed it has only to be reversed. In many cases where the studio walls are light in colour a dark screen placed where the reflector usually stands is of great utility, especially when the sun strikes on the white blinds. Many of the screens which we have already mentioned answer equally well as reflectors, the Freckleton and circular screens being most adaptable.

Within the last few years several well-known workers, both in England and the United States, have advocated the use of screens with a circular opening, which allows a stronger beam of light to be directed upon the head of the sitter, while the surroundings are more softly illuminated. Examples of the successful use of this device may be found in the work of Mr. Essenhigh Corke on this side and Mr. Dudley Hoyt across the water.

# COMMERCIAL PHOTOGRAPHY.

[In the following article, which receives the monthly prize awarded by our San Francisco contemporary, "Camera Craft," the author, Mr. L. H. Smith, deals in a practical way with both the technical and business side of the many miscellaneous commissions which are classed together as "commercial photography." Since, by its very nature, this branch of photographic business more readily escapes the present-day evil of "cut prices" than does the regular line of portraiture, a series of notes from the experience of a practical worker should repay a careful study, for every photographer has opportunities for getting commercial work.—Eds. "B.J."]

Commercial photography, that branch which covers practically every line of endeavour with the camera except portraiture, has been woefully neglected in the articles that have so far been successful in winning the air-brushes already distributed by "Camera Craft." The commercial man needs help as much as does the one who confines himself to portraiture. A few suggestions, gathered from my own experience, may assist.

The term Commercial Photography, like charity, covers a multitude of sins. I know of no other two words that, in their full meaning, embrace so many lines of endeavour. Strictly speaking, I take the term to mean that division of professional photography which deals only with the manufactured articles, the results being used mainly for catalogues and cuts. In reality, every photographer, except the amateur, is a Commercial Photographer.

### Photographs for Commercial Purposes.

Most of the work of the commercial man is for intended advertising and reproduction purposes. The photographs furnished for this purpose are, in reality, silent salesmen; and, as such, should present the subject, not only with exact truthfulness, but in the most attractive and pleasing form possible. There are a thousand things to be remembered, and done, each time an exposure is made; things which, though small in themselves, will do much to make or mar the final result. Then, too, every firm has its own ideas as to what qualities go to make up an acceptable photograph, and their wishes must be followed or the other photographer will get the chance he has been waiting for; a chance to show how much better his work is than yours. This is one of the hardships to which you must accustom yourself. However, my advice is, let the other man have the work if the firm demands photographs that are not technically good; for no one wishes to let a photograph leave his studio that will not reflect credit on its maker. In this general outline there is just one more thing, and that is,—Don't cut prices. Make your prices reasonable when you start in business, and stick to them; always being sure that the work you turn out is worth the amount you charge, or, better still, worth a little more. This may make the beginnings a trifle slow, but you will find that it pays in the long run.

### Photographing Shop Windows.

One of the most interesting, though I cannot say it is the most pleasant, phases of commercial work is the photographing of show-windows. Unless properly handled, successes will be few and far between, and failures many. There is only one form of illumination with which I have found it possible to secure pictures of these windows without bad reflections. That is electricity. During the hours of daylight, a window picture without reflections is practically an impossibility; and, with them, the picture itself is worthless. The best results may be obtained when the windows are lighted with concealed incandescent lights. I never start an exposure until all the lights on the opposite side of the street are out, and although this makes it necessary to do the work after eleven o'clock, the improved results, and higher prices, more than repay me for the disagreeable features and loss of sleep. In a majority of cases it is advisable to have the glass of the window as nearly parallel to the plate as possible. If this is the case, and all of the illumination is inside the glass, the finished print will appear as if there was nothing between the lens and the objects in the window. The amount of exposure should never trouble one after the first attempt. In all such work as this I keep a careful record of plate used, time of exposure, and stop. In that way, when next I have to photograph a particular window, by referring to my record, all guesswork is eliminated, and I know just what is necessary to secure a fine picture. Of course, I always use non-halation plates for this work, and develop in a rather dilute solution. This is hardly necessary, though, with a window that is properly lighted; so little thought need be given this part of the work. The dilute developing solution is used more to help the detail than to prevent halation. With a plate the speed of Hammer's Blue Label or Seed's 26X, I find that ten or twelve minutes, with stop *f*/16, will show good detail, even in the backgrounds, which are usually a dark green. Owing to such pictures having to be taken late at night, the work is worth more than the usual run of daylight exposures; and I always charge double for such night negatives, furnishing the prints at my regular price.

### Articles of Manufacture.

Photographing manufactured products is another class of work that will give the beginner trouble until a few essentials are mastered. Taking cast-iron articles as an example, let us consider grate fronts and baskets. These will invariably be painted a dead black, and yet full detail must be obtained in order to show every little relief in the ornamental work. Needless to say, full exposure must be given. Still more important are the direction and quantity of illumination that the object receives. Plenty of good, strong light, not, however, that of the direct sun, should illuminate the object from such an angle that every detail of the raised work shows up prominently, and casts a shadow just a little blacker than the colour of the iron itself. An angle of about forty-five degrees is correct. Another thing that must be looked after very carefully in this work is levelling; not only the camera, but the object itself. See that the centre comes along a line which should be drawn down the middle of the ground glass. If it is impossible to secure this result by ordinary means, have recourse to the swing-back of the camera. Unless care is taken to have the object parallel with the plate, one end will be larger than the other, and a new negative will have to be made. A strong developer should be used to add to the very little contrast which such objects naturally show. The background in these negatives will have to be blocked out; and a ruling pen such as draughtsmen use, together with a transparent triangle for ruling the straight lines, will come in very handy. In fact, when a grate basket is the subject it is very hard to get every line true, in that part which is open, unless these helps are used. As an aid to blocking out, place a white or nearly white sheet under and behind the object to be photographed. This will, in the negative, show exactly where the parts are that must be blocked out, as well as those which must be left alone. To my mind, all such work should be printed on glossy paper and ferrotyped, whether for reproduction or not. This finish gives a depth and brilliance to the finished work that can be secured in no other way.

### The Importance of Natural Perspective.

While for this particular class of subjects I advise a direct-front view, you must not understand me to mean that all such work requires this view-point. In fact, almost everything, except flat objects, requires an angle of from forty-five to sixty degrees, to be presented in the most acceptable manner. Tables, chairs, trunks, and the like, would present a most unpleasant perspective, or lack of perspective, if photographed directly from the front. And this brings me to another important matter involving perspective. The use of lenses of short focus, or what are called wide-angle lenses, is to be discouraged in every case where a lens of normal or longer focus can be used. The shorter the focal length of the lens, the greater will be the difference between the parts of the object nearer the camera and those in the rear. The longer the focal length of the lens used, the more satisfying the perspective appears. This is especially true when photographing objects that contain prominent lines in different planes; furniture, for instance. The manufacturers of wagons and automobiles insist, and with good reason, that the four wheels appear as near the same size as possible, and will not accept photographs in which the difference in size is often so great as to seem ludicrous. The better result is secured by using a lens of greater focal length, and working at a greater distance from the object. If one does not happen to own a lens of suitable focal length for this class of work, he may resort to the back combination of his normal lens, using a smaller stop. The improvement in the drawing will be very noticeable.

### Illustrating Processes of Manufacture.

One of the most interesting branches of commercial work is the making of series of photographs showing the different processes in the manufacture of a certain product. One such, that I have just completed, shows the manufacture of hosiery, from the raw cotton, as it is shipped into the mills, through all the processes of cleaning, spinning, weaving, dyeing, packing, and the like; the last photograph showing the huge cases of the finished goods being loaded into the cars before the factory. While interesting, this branch of photography can present more difficulties to the square inch than any other which I know. Light, and the lack of light, will, in turn, confront the photographer. In all work of this kind, leave your camera at the studio the first trip you make. Look the ground over carefully with one of the officers of the concern, and have him explain just what is wanted and where each picture will have to be taken. Then go over it again, explaining to him, in detail, what will have to be done to prepare for your coming. Point out what windows it will be necessary to block up, and those that must be left open. Show how the goods and employees must be placed, and arranged to secure the best results. During this visit, decide just what you must bring with you to do the work. Be sure that you bring everything that is needed, and be just as sure that you leave behind everything that is not. Wherever practical, make time exposures, leaving the flashes till the last. Even when there are people in the picture, you will find that you can often avoid the use of the flash machine. Watch the people closely and give as much exposure as possible. In time, someone will be sure to laugh; but you can see it coming, and close the shutter in time to save the plate and get the maximum exposure. My reason for not using the flash more than I do in this work is that in each room there are generally several pictures to be made, and if you fill it up with smoke, it will be necessary to either wait until it becomes clear or go to another room to make the next exposure. Both plans are satisfactory. One of the most difficult features of this work is making the employees understand that the picture-taking is as much business as their daily work. Before an exposure I always explain to them what I want. I find the best plan is to be as pleasant as one's patience will allow, without becoming familiar. This last you will find to be as fatal to success as being cross and overbearing. And finally, good results will depend, more or less, on the printing, quite as much as in making the negatives. With the light uncontrolled, or nearly so, in spite of all you can do, some parts of almost all of your negatives will be much stronger than they should be, and others much weaker. After these have been worked on to the extent of your ability, you will find that much dodging will still be needed in the printing. Almost all such work that I do is printed on printing-out paper, as that seems to lend itself much more readily to shading than its cousins, the gas-light papers. This is the only occasion on which I use the printing-out paper, except for proofs.

### Dodging Negatives.

While I do not find it necessary to resort to any great amount of dodging, there are few negatives but what can be improved by a little work. A high-light may be too dense, or a shadow too dark. Ground-glass substitute, tissue paper of the onion skin variety, blue water-colour paint, vaseline, and a little dry yellow colour are the needful articles for this work. If I have a negative in which the contrasts are too pronounced, I flow the glass side of the negative with ground-glass substitute; and then, with a knife, or with a tuft of cotton dipped in alcohol, I remove it from the high-lights, allowing them to print deeper in proportion to the shadows than before. If some of the high-lights are still a little too dense, a little vaseline, rubbed on the tissue paper which should cover the frame in all such printing, will allow more light to reach the part that requires it. If the shadows still print too dark, a little dry yellow rubbed on the tissue will hold them back still more. If only a spot or two need holding back, it is not necessary to use the ground glass substitute; a little yellow, applied directly to the tissue over these spots, will achieve the desired result. Dense spots may be printed through a hole cut in a piece of cardboard, a piece large enough to protect the balance of the negative from the light. I should imagine that this work on the back of the negative could be done much better and more easily with an air-brush.

### Halation in Negatives.

The commercial photographer has one particular difficulty to avoid or overcome, that troubles the portraitist but little; and that is halation. It is claimed by some that this defect is present in all negatives made on ordinary plates, being more or less apparent in direct proportion to the contrasts of the picture. As we already know, the light penetrates through the film of the plate, strikes the glass support, and is reflected back into the emulsion; thus making what is, in reality, a double exposure of such parts. More halation will exist if the glass of the plate used is thick than if it is thin. This, on account of the increased angle of refraction, due to the thickness of the glass. Numerous methods have been advanced, by plate-makers and others, to overcome this difficulty. Almost every manufacturer now has a so-called non-halation plate on the market. In most cases it is double-coated; the coating next the glass being a slow emulsion, while that on the top is of the rapid variety. The contention is that the exposure can be completed before the strongest rays of light have time to penetrate the slow emulsion and be reflected back. These methods of preventing halation seem perfect in theory, but for myself, I have never been able to fully secure the results with non-halation plates that their makers claim. One great advantage that I find in their use lies in their latitude. The slow coating will take care of any reasonable over-exposure, while the fast upper emulsion will give satisfactory results with very short exposures. It is claimed, by some, that the ordinary non-halation plate is not as fast as the regular plate of the same listed speed, for the reason that the light reflected by the glass support is lost. Whether this is so or not, I would not attempt to say.

Almost as many methods of overcoming halation have been advanced as there are means of preventing it. Among them may be mentioned local reduction; reduction with persulphate of ammonia, which reduces the high-lights before attacking the shadows; and also a method discussed some time ago, called rehalogenisation. This last is defined as a "process for restoring a completed negative to nearly its original condition—before development," after which it is re-developed, stopping before the halated portions have had time to regain their former full density. As the silver which has received the action of this reflected light is deep in the emulsion, and next to the glass support, it seems foolish to attempt to remove it by means of reducers acting only on the surface of the film. Therefore, the latter remedy seems most rational.

### A Preventive of Halation—Over exposure.

All this work, though, is pure waste of time if ordinary care and thought be used while making the exposure, and during development. In reply to this, you may say, halation is bound to appear under certain conditions over which we have no control. My contention is that we *can* control these conditions, if we will. The method I employ, which, by the way, I do not claim as original, is, in a way, akin to rehalogenisation; but I get rid of the halation in the first development, and in that way avoid re-developing, re-fixing, re-washing, and re-drying; all these being necessary if the former method is used. When I have a picture to make, in which halation is likely to appear, I make it a point to over-expose the plate. In developing I use a concentrated developer; and, as soon as the first high-light appears on the back, stop development. Fixing and washing follow as usual. A good, strong negative, with plenty of detail, will result; but there will be absolutely no traces of halation. The use of non-halation plates is not essential to good results when using this method. I can secure better negatives on the regular plate, using this method, than I can on non-halation plates used in the ordinary way. However, I use the double-coated plates almost entirely, on account of their latitude, an advantage which was mentioned in a preceding paragraph.

A few words as to the whys and wherefores of this process may not be amiss, so I will give what I think are the causes of the combined action of exposure and development, as outlined above. It is a well-known fact that the more concentrated a developer is, the harder it will work; or, in other words, the more contrast it will give. This is proved, in a way, by the opposite fact, that a weak solution is always recommended for under-exposures and for those negatives in which undue contrast is apt to appear. Now, my theory is, that a certain amount of over-exposure, treated in a developer concentrated to a relative degree, will produce a certain amount of contrast. This degree of over-exposure, and the necessary concentration of the developer to produce the results desired, will have to be found out individually, but one's first exposure along this line should furnish the needed information. My regular developer, metol-hydroquinone, is composed of two parts stock solution and one part water; but for this special development I give from one-half to three-fourths more time, and use the stock solution without any water added. This gives me just the results I wish.

The over-exposure is to give full detail in the shadows. When the exposed plate is placed in the developer, the action starts almost immediately over its entire surface, all detail becoming apparent at about the same time. The strong developer acts very quickly, and density in the high-lights is gained very fast. When the first high-light shows through on the back, both the high-lights and the shadows will be sufficiently dense, and development must be stopped at once. If it proceeds longer, halation is very likely to show. The plate is, in reality, under-developed, but the over-exposure has taken care of the shadows, and the concentrated developer has given plenty of contrast, but it has worked so fast that the halated portions have not had time to build up enough to show in the finished result. There is no lack of printing quality in a negative developed in this way, in spite of the fact that it is under-developed. The point of kinship between this method and that in which rehalogenisation plays so prominent a part is that, in both cases, development is stopped before the halated portions appear. That is the main point in both methods, the other requirements being subordinate.

LAWRENCE HEYD SMITH.

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"PHOTOGRAPHISCHE KORRESPONDENZ," our Viennese contemporary, which for many years past has been issued by the Vienna Photographic Society, and under the editorship of its founder, the late Herr Ludwig Schrank, maintained the leading place among the Continental photographic journals, devotes its February issue to a review of the Vienna Society's fifty years of active life. In this celebration of a notable jubilee it reproduces a large number of photographs of personages, past and present, in Vienna photographic circles, as well as examples of their work in landscape, portrait, and colour photography. This issue of the "Korrespondenz" contains much of interest to those in any way photographically associated with the Austrian capital.

# ON THE THEORY OF THE IRIS DIAPHRAGM.

(A Paper read by Mr. Cyril F. Lan-Davis before the Optical Society, December 13, 1910, and reproduced by permission of the Society.)

The words "diaphragm" and "stop," whatever was the original distinction between them, are now used indiscriminately by many writers. I propose, therefore, treating them as synonymous.

The earliest stops, probably dating back to the introduction of the telescope, were plain circles, generally pierced with round holes, which acted satisfactorily for single lenses. They were also used in the early photographic Petzval lenses, being then placed between the combinations.

Their obvious disadvantage, the trouble involved in changing them, was removed by the invention of Waterhouse stops. As you know, these are also separate metal pieces, which are inserted in a slot in the lens mount. This type is still largely used for portrait lenses, designed for studio use only, and for process lenses.

Their defects are their size and weight and the inconvenience of carrying a number of separate parts. One method of removing this latter objection is to rivet the Waterhouse stops together at the top. Chevalier, in the middle of the last century, devised a method of hingeing the stops to the lens mount.

Another early form of diaphragm was the rotating type. A flat plate is fastened inside the lens tube, and a circular plate is pivoted near its outer edge. Holes of different diameters are pierced in this plate, each of which in turn can be brought between the lenses. A spring catch controls the exact position of each. This rotating form is excellent for wide-angle and stereoscopic lenses, where only a small range of apertures is wanted. It becomes bulky for large lenses, and cannot easily be made to give a sufficient range of apertures.

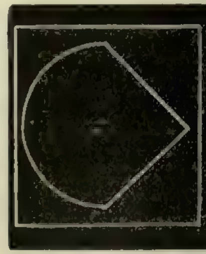

Fig. 1.

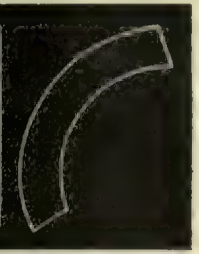

Fig. 2.

In these forms of diaphragm the actual opening could be circular, square, or any other shape, such as process workers use, but there was a sudden jump from one size to another. A form of adjustable stop with square openings was then invented by Noton, in 1856, and an adjustable circular stop patented by Pierre Maugey in 1858. The first consisted simply of two plates, with square openings cut at an angle of 45 deg., sliding together, and the second of a hollow rubber disc, the size of the hole in which was varied by stretching and relaxing the rubber.

I have made an adjustable form of diaphragm with square openings on the lines of Noton's diaphragm. It is worked by a rotating slotted plate, and at full aperture gives a circular opening, the shape of each leaf being as shown in Fig. 1. This may be of use in process work.

I have been unable to find exactly when and by whom the iris diaphragm was invented. According to Charles Fabre's "Photographic Encyclopædia," it was known to Niepce, and was probably invented by C. Kircher. Chevalier, in 1840, received a medal for exhibiting one in Paris. An iris of six leaves is shown in an illustration to Monckhoven's "Photographic Optics," published in 1867, and a patent was granted to Mr. W. J. Lancaster for a specific form of iris diaphragm in 1886. The patent claims of this specification were, however, amended, to show that it was not a master patent. Mr. Brothers states that two rings of metal, with rubber between, were first used to cover jam jars, and this developed into the iris.

The iris diaphragm was early used for the substages of microscopes, and is now generally adopted for photographic and other lenses. So far, however, as I can trace, there has been no mathematical explanation of its working, at all events in England.

In mounting a lens it is necessary to see that the diaphragm used is large enough to transmit the full beam of rays, and that this can also be varied to give apertures of $f/32$, $f/45$, $f/64$, etc. I have been endeavouring recently to standardise some of the tube sizes of Dallmeyer lenses, and have found that the first difficulty is to obtain an iris which would give the very large apertures required for Dallmeyer patent portrait lenses, and also the smallest apertures necessary for Dallmeyer Stigmatic and wide-angle lenses.

There appeared no method available for calculating these apertures. Previously a workman, at great trouble, worked out experimentally a set of leaves which gave fairly well what was required. At the same time, I was constantly met with the remark that one could not have both very large and small apertures—it was expecting too much in this ill-contrived world. I endeavoured, therefore, to work out the theory of these diaphragms, and obtained a series of formulæ which should allow future iris diaphragms to be rapidly calculated.

### THE IRIS DIAPHRAGM.

### CIRCULAR APERTURES.

As shown by a number of examples which makers have kindly lent me, the modern iris consists essentially of—

A fixed plate pierced with holes at its circumference,
A set of leaves with pins projecting from each end on opposite sides,
A circular tube or shell generally made in one with the lower plate,
A rotating plate with radial slots fitted to turn freely inside the shell, and held in this shell by a clamp ring or similar device,
A milled ring or handle on the outside of the shell, connected by a pin with the slotted plate.

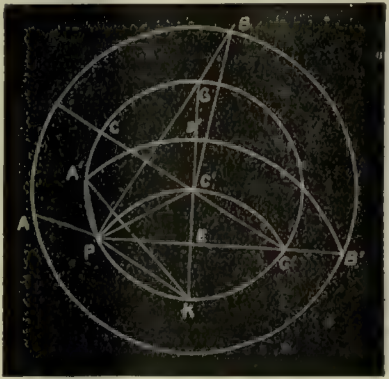

Fig. 3.

As is well known, one end of each leaf is fitted in the fixed plate and the other in the rotating plate. Rotation of the iris-handle then opens and closes the iris. I propose to ascertain the best form of this construction. In each case I consider that the exterior of the iris is circular, and that the apertures are also circular. The boundaries of each leaf must therefore be circles, one the same diameter as the exterior of the iris, the other as its full aperture, and the leaf must be roughly the shape shown in Fig. 2.

### POSITION OF LOWER PIN,

### I.E., PIN IN THE FIXED PLATE.

In Fig. 3, the larger circle ABB′ is the exterior of the iris, the smaller circle PGG′ is the full aperture of the iris, and C′ is their common centre.

The most important case to consider is that the iris should close from full aperture PGG′ to nothing. That is to say, the leaf PABG must rotate round some point as centre until its edge PG passes through the centre C′.

Considering that the diameter of the pin is small, we may say that the leaf PABG may rotate round any point of itself. Clearly, however, this point should be at one or other end. At any other position the leaf would be unable to turn.

If we take the two extreme cases, the pin on circle PGG′, that is, the pin at opening, and the pin on circle ABB′, that is the pin at the extremity of the leaf, the other cases will lie between.

In Fig. 3 the lower pin P is at opening; in Fig. 4 the lower pin A is at the extremity of the leaf.

In Fig 3, let P be the point around which the leaf PABG rotates, and let its new position, with edge passing through C′, be PA′B′G′. Now the end B of the leaf is carried round by the slot in the rotating plate, which is the shape of the zone BB′GG′—i.e., this point B must move within zone BBGG′. Therefore we must make PB as long as possible consistent with allowing the edge PG of leaf PABG to pass through C′.

I.e., in the new position PA′B′G′, B should lie on outer circle ABB′. Then PB′ is length of leaf.

Let PB′ meet circle PGG′ at G′. Draw C′K perpendicular to PB′ meeting circle PGG′ at K′,

∴ KG′ = KP.

Then centre of circle A′D′B′ lies on C′K,

∴ centre of circle PC′G′, which is concentric with circle A′D′B′, lies on C′K, and by construction this lies on circle PGG′,

∴ centre is at K, and PA′B′G′ is new position of leaf, and C′K is bisected at E.

Also $\triangle$ C′KP is equilateral, ∴ $C'\hat{P}K = 60°$ and $C'\hat{P}G = 30°$. In $\triangle^s$ C′GP, C′G′P, CP is common, C′G = C′G′ and PG = PG′,

∴ $G\hat{P}G' = 2\,C'\hat{P}G' = 60°$.

Again, $P\hat{A}'K = \frac{1}{2}\,PC'K = 30°$. We can therefore work out the following results by trigonometry.

### MAXIMUM APERTURE.

If we consider what is the greatest opening which an iris can have consistent with its closing, we see that the leaf must be sufficiently short to allow its inside edge to come to the centre of the iris, and at the same time the upper pin must at all times be in the zone BB′G′G (Fig. 4). That is to say, in the limiting case, the circle with A as centre and B as radius, which is the path of B, must touch the circle P′GG′.

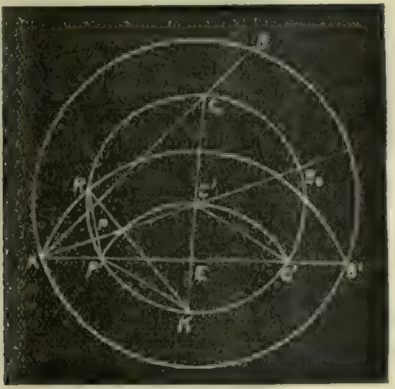

Fig 4.

That is, the length of the leaf AB must be equal to the radius AB„ of such circle, from which condition we can work out the results in each position of the lower pin.

### LOWER PIN AT OPENING (FIG. 3).

For maximum opening, the condition is then that 2C′P = PB,

$$\text{i.e., } 2b = \tfrac{1}{2}\left(b\sqrt{3} + \sqrt{4a^2 - b^2}\right)$$

$$\text{i.e., } 4a^2 = b^2(20 - 8\sqrt{3})$$

$$a^2 = b^2(5 - 2\sqrt{3}) = 1.536b^2$$

$$\therefore\ b = .807a \text{ and } a = 1.239b.$$

$$\text{Number of leaves required} = \frac{\pi}{\alpha}$$

$$\text{where } \alpha = \sin^{-1}\frac{a\sqrt{3} - a\sqrt{(.614)\,(2.614)}}{3.228a}$$

$$= \sin^{-1}\frac{1.732 - 1.267}{3.228} = {\cdot}145.$$

$$\text{Number of leaves} = \frac{3.142}{.145} = 21.66 = 22.$$

Width of leaf $= a - b = .193a$.

Separation of pinholes $=$ PA′ $= .233a$,

$$\text{or } = 2b\sin\frac{2\pi}{44} = .284b = .229a.$$

### LOWER PIN AT END OF LEAF (FIG. 4).

For maximum opening, the condition is

$$C'A + C'P' = A'B'$$

i.e., $a + b = \sqrt{4a^2 - b^2}$, from which

$$a = 1.215b, \text{ or } b = .823a.$$

Again,

$$\alpha = \sin^{-1}\frac{a\sqrt{3} - a\sqrt{(.646)\,(2.646)}}{3.292} = .129.$$

$$\therefore\ \text{Number of leaves} = \frac{3.142}{.129} = 24.3 = 25.$$

Width of leaf $= a - b = .177a$.

$$\text{Separation of pinholes} = 2a\sin\frac{2\pi}{50} = \tfrac{1}{4}a.$$

### CLOSING TO A KNOWN APERTURE.

Sometimes it is not necessary that the iris should give very small

### LOWER PIN AT OPENING (FIG. 3).

Iris diameter $= 2C'B' = 2a$ (say)

Iris aperture $= 2C'G' = 2b$ (say)

Length of leaf $= PB' = PE' + EB'$

$$= \tfrac{1}{2}\left(b\sqrt{3} + \sqrt{4a^2 - b^2}\right)$$

Minor length of leaf $= PG' = b\sqrt{3}$

Greatest width of leaf exposed $= PA'$

$$= \tfrac{1}{2}\left(a\sqrt{3} - \sqrt{4b^2 - a^2}\right)$$

Width of leaf $= a - b$

Distance between pinholes $= PA'$

$$= \tfrac{1}{2}\left(a\sqrt{3} - \sqrt{4b^2 - a^2}\right)$$

$$\text{If } PC'A' = 2\alpha = 2\sin^{-1}\frac{a\sqrt{3} - \sqrt{4b^2 - a^2}}{4b}$$

$$\text{Number of leaves required} = \frac{\pi}{\alpha}$$

$$= \frac{4b\pi}{a\sqrt{3} - \sqrt{4b^2 - a^2}} \text{ nearly}$$

Travel $= BB' =$ length of leaf

$$= \tfrac{1}{2}\left(b\sqrt{3} + \sqrt{4a^2 - b^2}\right)$$

### LOWER PIN AT EXTREMITY OF LEAF (FIG. 4).

$= 2\,C'B' = 2a$ (say)

$= 2\,C'G' = 2b$ (say)

$= AB'$

$$= \sqrt{4a^2 - b^2}$$

$$= AG' = \tfrac{1}{2}\left(b\sqrt{3} + \sqrt{4a^2 - b^2}\right)$$

$= P'R$

$$= \tfrac{1}{2}\left(a\sqrt{3} - \sqrt{4b^2 - a^2}\right)$$

$= a - b$

$$= \frac{\text{circumference}}{\text{number of leaves}}$$

$$= \frac{a}{2b}\left(a\sqrt{3} - \sqrt{4b^2 - a^2}\right)$$

$$\text{If } P'\hat{C}'R = 2\alpha = 2\sin^{-1}\frac{a\sqrt{3} - \sqrt{4b^2 - a^2}}{4b}$$

$$= \frac{\pi}{\alpha}$$

$$= \frac{4b\pi}{a\sqrt{3} - \sqrt{4b^2 - a^2}} \text{ nearly}$$

$$= \frac{b}{a}\sqrt{4a^2 - b^2}$$

openings. If it is only desired to stop down to opening, radius $C'D' = c$, as in Fig 5, we can also work out a set of formulæ. I here only work out the case of the lower pin at opening. The results for the pin at extremity of the leaf have been worked out in a similar way.

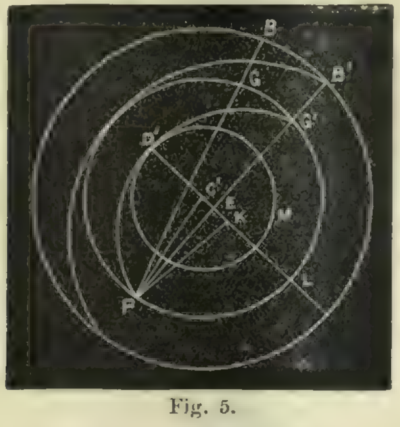

Fig. 5.

### LOWER PIN AT OPENING (FIG. 5).

By hypothesis, circle D′M touches edge PD′G′ of leaf,

∴ centre K of circle PD′G′ lies on C′D′ at distance $b$ from D′, and C′D′ bisects the common chord PG′ of circles PGG′, PD′G′.

Also from △ˢ C′PE, KPE,

$$C'E = EK = \tfrac{1}{2}C'K = \tfrac{1}{2}(b-c)$$

$$\therefore\ PE = \sqrt{C'P^2 - C'E^2} = \sqrt{b^2 - \frac{(b-c)^2}{4}}$$

$$\text{and } EB' = \sqrt{C'B'^2 - C'E^2} = \sqrt{a^2 - \frac{(b-c)^2}{4}}$$

We have then the following results:

| LOWER PIN AT OPENING (FIG. 5). | LOWER PIN AT EXTREMITY OF LEAF (FIG. 6). |
|---|---|
| Length of leaf $= PB' = PE + EB'$ | $= AB'$ |
| | $=(\sqrt{2a-b+c)\,(2a+b-c})$ |
| $=\frac{1}{2}\left\{\sqrt{(2a-b+c)(2a+b-c)} + \sqrt{(b+c)(3b-c)}\right\}$ | $= AG'$ |
| Minor length $= PG'$ | $=\frac{1}{2}\left\{\sqrt{(2a-b+c)(2a+b-c)} + \sqrt{(3b-c)(b+c)}\right\}$ |
| $= \sqrt{(b+c)(3b-c)}$ | $= BB'$ |
| Travel $= B\hat{B}' = 2\,PB' \sin CPB'$ | $= \frac{b-c}{a}\sqrt{(2a-b+c)(2a+b-c)}$ |
| $= \frac{b-c}{2b}\left\{\sqrt{(2a-b+c)(2a+b-c)} + \sqrt{(b+c)(3b-c)}\right\}$ | |
| Width of leaf $= a-b$ | $= a-b$ |
| Number of leaves $= \frac{2b\pi}{a-b}$ approximately, as | $= \frac{2b\pi}{a-b}$ approx. |
| $a-b$ is generally small. | |

If $c = o$, these results reduce to those already found.

### DISCUSSION OF RESULTS.

The aims in designing an iris diaphragm are, of course, to obtain the following:

The greatest aperture consistent with retaining the smallest opening. A long scale with equal divisions. Light weight, ease in working, freedom from failure, and reasonable cost.

The portions which can be varied are:—The position of the pin in the fixed plate, the position of the pin in the slotted plate, the width of the leaf, the length of the leaf, the number of leaves, and the angle of the slots.

It is of no importance whether the slotted plate or the pierced plate be moved over the scale. Most makers prefer the first method, but some have adopted the second.

### GREATEST APERTURE.

From the calculations for maximum opening we see that the pins should be placed at the opposite extremities of the leaves, and that twenty-five such leaves are required. The maximum aperture then obtainable is 82 per cent. of the total diameter of the iris. No increase in the number of leaves will help to give a greater opening.

If, however, the smallest apertures are not required, the number of leaves may be reduced, or an even greater aperture obtained.

### LONG SCALE.

The position of the pins is here all-important. As we see from the formulæ, the lower pin at opening gives a much greater length of travel.

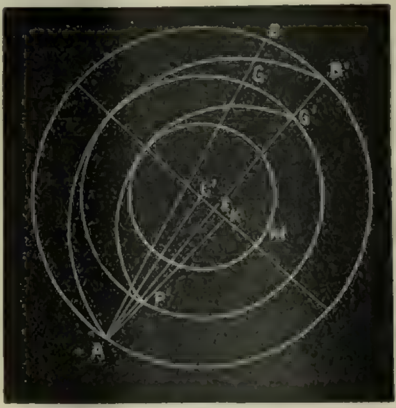

Fig 6.

Generally, to obtain a large aperture, it is necessary to have the upper pin which moves in the slotted plate at the extreme end of the leaf. When, however, it is not necessary, a small increase in the length of the scale may be obtained by placing this pin on the end of the inner edge.

I have here a pair of diaphragms, containing an equal number of leaves, and each leaf of the same width. In the first, the pins on each leaf are set at opposite extremities. In the second, each pin is set as near the opening as possible. Both give an equal range of apertures, but the length of scale of the second is considerably greater than that of the first.

### EQUAL DIVISIONS ON THE SCALE.

This depends, of course, how the apertures are calculated. For the f/Nos. scale of the Royal Photographic Society, the divisions are wide apart for apertures f/1, f/2, etc., but rapidly decrease until the markings are inconveniently crowded for f/32, f/45, f/64, etc.

In Fig. 7, P is the lower pin, as usual. We may take the upper pin, which moves in the slotted plate at the extreme end of the leaf at B. Then the travel of B is over the arc $BB_1B_2B'$ of circle with centre at P, and the scale is the arc $BR_1R_2B'$.

If the slots are cut radially as $CB'$, $C'R_1$, $C'R_2$, $C'B'$,

then div. of scale $BR_1$ corresponds to travel $BB_1$
,, $R_1R_2$ ,, ,, $B_1B_2$
,, $R_2B'$ ,, ,, $B_2B'$

and in this case the scale divisions are widest at the beginning, and become rapidly smaller.

If, however, the slots are cut at a constant angle to the radius, as $BQ$, $R_1Q_1$, $R_2Q_2$, $B'Q'$,

then div. of scale $BR_1$ corresponds to travel $BB'$
,, $R_1R_2$ ,, ,, $B'_1B'_2$
,, $R_2B'$ ,, ,, $B'_2B'$

i.e., for equal divisions of the scale compared with the last case, the travel is less at the beginning and greater at the end.

I have therefore been able to construct an iris in which the division

for $f/6.3$ to $f/8$ = division $f/32$ to $f/45$,
for $f/8$ to $f/11$ = division $f/22$ to $f/32$,
for $f/11$ to $f/16$ = division $f/16$ to $f/22$.

By altering the angle of the slot we can then increase or decrease the widths of the divisions without altering the total length of the scale. Unfortunately, however, the direction of the slot tends towards the tangent to the arc of travel of the pin. The iris in consequence is liable to give different apertures for the same position on the scale. Only small deviations of the slot from the radial direction are therefore practical.

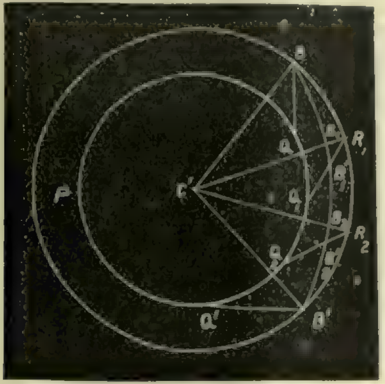

Fig. 7.

### Another Design of Iris.

The upper pin can be shifted quite close to the lower, and the leaf shortened to nearly half its length. A large aperture can, however, not be obtained, and, perhaps more important, the unsupported leaves are not rigid, and do not give the same aperture at each setting. The system answers admirably for shutters, where only the aperture at the beginning and end need be constant.

### Construction.

The actual construction of irises varies very much.

In the latest Dallmeyer patterns the pierced plate is made in one with the lens mount, and the slotted plate is rotated by a milled ring. Each slotted plate is actually cut by a milling tool, as this allows the full width of the ring to be used. When the plates are stamped there is always a portion of the width lost. The leaves are made of brass or steel, finished black, which keep their colour very fairly. The vulcanite often used is liable to get out of order when exposed to heat.

Cyril F. Lan-Davis.

## THE SECOND P.P.A. CONGRESS.

The current issue of the "Circular" of the Professional Photographers' Association contains the following particulars of the forthcoming Congress:—

At the conclusion of the Congress last year it was the almost unanimous opinion of those forgathered that another Congress should be held in the following year. The holding of the Photographic Arts and Crafts Exhibition at the Royal Horticultural Hall, Westminster, again this year having afforded the opportunity, the Committee have arranged with the Exhibition authorities for the Second Congress of the P.P.A. to be held from Monday, May 15, to Friday, May 19, inclusive.

Mr. A. C. Brookes, the Secretary of the Arts and Crafts Exhibition, has kindly given us a little more accommodation this year, for in addition to the Congress room a small room adjoining has been placed at our disposal, which will be used as an office and committee room.

The Congress will be held on similar lines to those which were so successful last year. On Monday evening the President and Council will receive the members. Light refreshments will be served, and the early part of the evening will be devoted to greeting old friends and making new ones. The President will deliver an address, and probably there will be other speakers.

On the evenings of Tuesday, Wednesday, and Friday there will be lectures, etc. Those already arranged for are: A lecture and demonstration by Mr. T. C. Turner, of Hull, on "Artificial Light and Photography." The lecturer will deal not only with electric light in the studio, but more generally with light from other sources, and with the various applications of artificial light, such as for printing, etc. Mr. Pirie Macdonald, of New York, who has a world-wide reputation as a "Photographer of Men," has promised a paper, and it will probably be illustrated by numerous examples of his work. The decorative treatment and general arrangements of photographers' studios and business premises will form the subject of an evening. Mr. Drinkwater Butt, F.R.P.S., will give an illustrative lecture, and the Committee are endeavouring to get together a series of lantern slides, showing the features of some of the most typical and best-arranged studios. By special request, Mr. Edgar Clifton (lately connected with Messrs. J. L. Dallmeyer, Ltd.), whose lecture at last year's Congress upon the use of lenses was found so deeply interesting and valuable, will lecture again upon a subject connected with the practical optics of photography. These are the evening arrangements that so far have been decided upon, but possibly time may be found for a short paper or two upon some other subjects of professional interest. A meeting may be arranged also for the afternoon of the day upon which the dinner takes place. If so, it will be devoted to a discussion upon some of the burning questions of the trading side of photography.

On the Thursday evening the dinner will be held at the Criterion Restaurant, Piccadilly, S.W., when the Committee will be pleased to welcome all members of the Association, whether taking part in the Congress or not, and, following the precedent of last year, manufacturers, dealers, and all others interested in the business side of photography will be invited to be present. The arrangements for the dinner are in the experienced hands of Mr. Alfred Ellis, and that in itself is a guaranty that there will be a good dinner and a good entertainment afterwards. Tickets for the dinner, 6s.

Tuesday, Wednesday, and Friday afternoons will be available for visiting. The Kodak Co. invite the members of Congress to visit their works at Harrow. In the morning, saloon carriages will be provided free to take the party from Euston, L. and N.W.R., to Harrow. After lunch, the party will be shown over the works, and will be reconveyed to London in good time for the evening meeting at the Congress Hall. Similar invitations have been accepted from Messrs. Houghtons Ltd. to visit their wood-working manufactory at Walthamstow, and from the Platinotype Co. to visit their works at Penge.

In view of the fact that a few unauthorised persons obtained admission to last year's Congress, the Committee find it necessary to make stricter arrangements for admission this year. None but members of the Professional Photographers' Association, who have paid their subscription for the current year, will be eligible to take part in the Congress.

A numbered pass will be issued to each member making application. This will admit to the Photographic Arts and Crafts Exhibition from Friday, May 12, to Saturday, May 20, inclusive. It will also admit to the Congress Room, to the afternoon visits, and all events of the Congress. It must be shown on every occasion. In order to lighten the necessary expenses of the Congress a charge of two shillings and sixpence will be made for the pass, which will take the form of a numbered badge, conveniently fitted for wearing in the button hole of the coat.

A list of the members to whom badges have been issued, with the number of the badge, will be placed in the Congress Room, so that it will only be necessary to note a member's number and consult the list to discover his identity. The general feeling is that no introductions should be required between brethren who meet on the level. The good fellowship that prevailed at last year's Congress amply showed that it is quite a fallacy that professional photographers are unsociable.

A full programme of the Congress will be sent to every member of the Association early in May, but the essential particulars are mentioned above. Members who intend to be present are requested to communicate with the Hon. Secretary at as early a date as possible;

all those engaged in the arrangements will be busy at the last moment.

The Committee are earnestly striving to make the second Congress as successful as the first was; they hardly hope to do better. Several of the country members averred it had been the week of their lives. Let us hope that some of those who missed last year will come, and go back with the same happy experience, and that those who tasted the joys before will be tempted to take another sip.

# Photo-Mechanical Notes.

### Novelties in Half-tone Blocks.

Three new methods of making half-tone blocks, all hailing from Copenhagen, are at present seeking a market in London. The first is a secret process for turning out bright coarse-screen blocks for newspapers quickly. The examples shown and the speed claimed, however, in no respect surpass what is commonly done here already. The second process is for the production of newspaper blocks, which are said to have more contrast than the ordinary block, the effect being the same, apparently, as was arrived at by means of the discarded four-line screen. The reproduction is split up into both large and small dots: in the high-lights the small dots get etched away, thus enhancing brightness, while in the shadows they do not, but help to retain the detail. The drawback to all such blocks is that the screen is very visible; in fact, the reproduction always looks as if it had been made from a half-tone print as original, and, seeing the violent prejudice there is against the screen even when it is imperceptible, it is a fatal objection to make it more obvious. The third method is one by which lettering is reproduced on a patterned background, so that it appears to stand out in relief. This is done by making ordinary negatives and positives of the lettering and of the background, and then shifting these in relation to one another (or a piece of glass may be placed between them), so that various effects of relief are got when the register is imperfect. When the desired effect is attained, the screen-negative is made. The results, which are practically only suitable for advertisements, labels, etc., are often sufficiently striking, but they are seldom pleasing, and we can scarcely imagine any fastidious advertiser using them.

### Improved Printing of Newspaper Half-tones.

The Merten's newspaper photogravure is evidently stimulating some newspaper producers to get better results out of the ordinary relief half-tone. We have recently seen some pictures in the "Central Anzeiger," of Magdeburg, which at first sight looked like Merten's prints, as they were fine screen, and printed in a colour different from that of the text of the paper. But we were told that they were from relief blocks, either originals or electros being used, and printed separately from the text, either on a machine coupled up to the text rotary, or on an attachment to it that enables separate inking and impression to be availed of for the illustrations. The idea is not new, as, of course, it is the same principle that is used on all multi-colour rotaries, but we are not aware of its use before to secure fine results in ordinary monochrome illustration in the daily newspaper. The firm of Kœnig and Bauer, of Würzburg, have secured the concession for the introduction of the new system to newspaper proprietors.

The Professional Photographers' Association.—The following members have been duly nominated to serve as officers of the Association for the ensuing year:—President: F. P. Moffatt, F.R.P.S. (Edinburgh). Members of committee.—London: H. Gordon Chase, Alexander Corbett, C. F. Dickinson, Alfred Ellis, H. Herbert Fry, W. E. Gray, F.R.P.S., George Hana, E. O. Hoppé, Lang Sims, C. H. Skillman, R. N. Speaight, D. Knights Whittome; Country: T. Birtles (Warrington), H. A. Chapman, J.P. (Swansea), H. J. Comley (Stroud), W. H. Hawkings (Plymouth), W. Illingworth (Northampton), N. S. Kay (Manchester), Percy Lankester (Tunbridge Wells), L. R. Protheroe (Bristol), R. W. Robinson (Redhill), H. C. Spink (Brighton), T. C. Turner (Hull), H. J. Whitlock (Birmingham). Hon. Secretary: Alexander Mackie.

# Exhibitions.

## THE NORTHERN PHOTOGRAPHIC EXHIBITION.

### Liverpool, 1911.

The Liverpool Amateur Photographic Association, in conjunction with the Manchester Amateur Photographic Society, made a highly successful opening on Friday last. Once more, by the kind permission of the Arts and Exhibitions Sub-Committee of the Liverpool Corporation, some of the magnificent rooms of the Walker Art Gallery were placed at the photographers' disposal, and, under the presidency of the Lord Mayor of Liverpool, the Right Hon. Lord Redesdale opened the exhibition. The first of a nightly series of lectures, which by good chance we were able to hear, was delivered on Saturday evening by Mr. Fred. W. Saxby, upon "The Wonders of Light." By the help of costly and unique apparatus the lecturer threw upon the screen the most entertaining demonstrations of his lucid and popular explanations of colour phenomena. The audience was stirred to enthusiasm.

The "Northern" catalogue is, as usual, a fine production, well worth preserving, but its opening paragraph will probably astonish a good many, even as the appearance of a little blue label upon some of the pictures has already astonished the visitors to the galleries. The paragraph, which is entitled "Judges' Note," runs:—"The committee regret that the judges could not select pictures of sufficient merit to fill more than a part of our wall space; but as the selection was announced to be wholly in the hands of the judges, we were glad of their suggestion that the pictures they selected should be marked with a blue label, and that the committee should fill up the remaining wall space with their own selections from the rest of the prints sent in." It is, therefore, not a judges' note, but a committee's note, and we think that the peculiar circumstances which occasioned it may give rise to much discussion, not to say vexation of spirit, in future cases, if they are allowed to stand as a precedent. The judges, we should state, were Messrs. Fredk. H. Evans and Furley Lewis, and two more sincere and well-meaning authorities could not be found, but it is a question of art ethics as to whether exhibition judges should take with them their own previously formed standard, or whether they should derive their standard from the average merit of the mass of works submitted to them. In the present instance we have a number of works bearing blue dots, and these act upon the spectator's mind as a gratuitous bias or prejudice in favour of the prints thus distinguished. Awards, in principle, are bad enough, but a further wholesale peppering of invidious distinctions is, in our view, unhappy, to say the least of it. The committee, of course, could not be expected to do otherwise than fill up the empty space left by a too restricted selection of the judges. The result is, therefore, that the exhibition is only partly a judges' selection. But a further complication arises, by reason of a large number of works having been entered as not for competition, and these, obviously, could not be passed in judgment before the judges. Hence very many of the most important and excellent pictures are without the blue label distinction, in spite of the fact that they were the very kind to meet with the judges' commendation.

In these rather distressing circumstances of conflicting selections we can only, on our own part, make a selection of our own. Naturally, it will not coincide exactly with any other, but it will be an honest statement of conviction, and, as such, interesting, perhaps.

We are first attracted by two important bromoils, by W. C. S. Ferguson, "Dumbarton Rock" (6) and "The Rocks" (12). These are a pair in general treatment, and both have rare qualities of light. Perhaps the latter is the better. It gains great dignity and strength by a large bold mass of dark rock in the immediate foreground. Next, we are arrested by the stern of a boat, upon which three men are at work whilst suspended on a board over the water. This is by Bertram Cox, and is called "Brothers of the Brush" (20). Its charm lies in its design and the play of light upon the figures. By the same worker is "The Bure at Belaugh" (29), a much more traditional style of thing in landscape, but excellently in keeping and full of light. "The Old Mill" (42), by C. F. Inston, has a highly romantic mood. The building itself and the evening gloom that envelops it constitute its best parts. Perhaps a little more top light on the foreground would have relieved the rather solid left-hand corner. Another print by B. Cox, "In a Norfolk Valley" (40), suffers from too long and monotonous a foreground, but the upper half is finely treated. A capital sky over a broad, low-lying landscape, called "Old Dugort" (54), sent by F. H. Taylor, is much to his credit; and the richer, but no less tender, bromoil by Louis Dick, called "Auld Stirling Brig" (70), should find many admirers. It is an object lesson in the management of strong foreground objects for the setting off of an important feature in the middle distance. Two little Dutch girls, by A. Keith Dannatt, called "Evening on the Dunes" (71), has excellent quality. A pair of works by Mrs. Barton, both having good material, and one, "Sweet Highland Mary" (87), a charming design also, are, nevertheless, much handicapped by a tapestry-like flatness, which we think does not suit them. The former, "The First Communion" (73), entirely lacks effect, though the little maid is very sweet in her air and pose. There is also excellent material in J. W. Pullon's "Whitby Abbey" (102). The water is delightful, but the abbey and the sky are both in want of some treatment or other that would "pull them together," as the saying goes. An old German, smoking and drinking in a mediæval interior, is sent by Jas. Shaw, who calls it "The Dinner Hour" (108). Direct and reflected light are its real theme, and make it a delightful subject. C. F. Stuart's "Across the Moor" (107) gives, as usual, a good open-air effect. We must also mention C. D. Blakeman's "Intent" (106)—a girl looking out of a curtained window—as a nice example of lighting well managed. "The Reaper" (118), by T. Murray Shaw, is also true and very pleasing. Miss Edith L. Willis sends "The Waterfall" (120), which is a fine piece of treatment, upon which she may be highly complimented. A capital portrait of "A. H. Blake, Esq., M.A." (135), comes from Alfred and Marie Bracewell, who have done even better still in the quite captivating "Portrait of Miss Pauline Bracewell" (140). One of the most tender nocturnes in the galleries is "Broadstairs at Night" (139), by Gideon Clark. It has only one defect, namely, the unwarrantable darkening of all the right edge of the print; the gradated light in the sky points to the sun having set behind Bleak House, which is a trifle of topographical falsity. A youngster who puts his tongue out whilst at work on a toy boat is the subject of a happy shot by Douglas Campbell, called "The Boat Builder" (138), and a little nude, which Jas. Shaw names "A Water Nymph" (144), shows pretty lighting. Reginald Craigie's "Portrait of the Right Hon. the Earl of Crawford, K.T., F.R.S., etc." (162), fills its space beautifully, and is in all ways well treated, except in the matter of a shininess of the skin, where the high-lights "jump." "Dorothy" (176) is a pleasing portrait of a girl in a sun bonnet, by A. M. Poole. In "The Sandblast" (179) we have an excellently composed little view of sand dunes, with a sky absolutely first rate in its tones, and its general harmony with the rest. This is by J. MacSymon. "Grapes" (182), by E. Seymour, is a still-life group that includes apples, and both the fruits and the glass bowl they lie in are cleverly managed as to textures. The steps and columns of a building, where a stone lion rests upon a plinth, form the subject of what ought to have been a more imposing thing than it is. The title is "The Monarch of the Night" (185). E. F. H. Crouch might have given it more mystery and a more interesting sky. The same criticism applies to the piece called "Twilight" (197), by K. C. Goodyear. It is not rich enough in effect, and what should be mystery is very much an ashy sort of emptiness, but it has the makings of an excellent picture. There is much that is promising, too, in Basil Schön's "Guildford" (207), which just misses success in its present print. A vigorous head study, called "The Ballad Singer" (206), shows rather a new vein in subject matter for Mrs. Barton. We commend S. D. Middleton's "On the Ground, White Snow; and in the Air, Silence" (245), and also C. Thurstan Holland's "Alpine Study" (270). Dennis W. Moss shows a print called "Evening (273), that likewise wins our approval, which is shared by Bertram Cox's "To the Sea" (290), a bromoil print of much feeling.

In a separate room there are a mass of works of great merit, sent by invitation from the newly formed London Secession. We have treated of them before, when reviewing the London Salon. They are as charming as ever when seen in new surroundings and after many months. Space forbids particular reference to them, nor do we think it desirable to let this review degenerate into a mere catalogue. Our object is to point out to readers the salient points of works that are new, and more especially those that are indigenous to Liverpool or Manchester. We, therefore, pass over many examples of great skill and beauty which add to the attractiveness of the exhibition, for the reason that they have been dealt with already. Nos. 296 to 342 are largely London Salon pictures, many of them now well known. They are, of course, without the order of merit of the blue label. The Coburns were exhibited at the Goupil Gallery, the Cockses at the Camera Club, and the Whiteheads at the R.P.S. But there are, nevertheless, one or two we do not remember to have seen before, for example, J. Dudley Johnston's "Bridge" (301), which is dark beyond occasion, but a fine rich print of a little arch over a shaded stream. Likewise M. Arbuthnot's "Sunshine in the House" (321), a child and doll in a sunny corner, seems to us to be new, as well as his "Furley Lewis, Esq." (331), nursing his dog Terence. Mr. Lewis's eye-pupils are "beady," and suggest retouching, and, by contrast, the modelling immediately near lacks sharpness. In other respects this is a capital and fully characteristic likeness.

The forbidding aspect of "The Restless Sea" (355) is feelingly caught in a skilful oil print by J. H. Anderson. Smoke and the reflections of masts have made an effective subject in John Currie's "Fishing Boats in Harbour" (362). In "Adrienne" (366) we have a fine type of girl's head by Thos. Petty. J. MacSymon shows how the most delicate gradations of a short scale of tones may make a beautiful effect in his "Chill November" (373), a foggy landscape, with a few horses snorting out their steaming breath. Near it hangs another modest but good piece of work, called "An Upland House" (374), by H. A. Crawford. It has only an inch of sky, but that is of the right quality. Dr. Evershed's beautiful "St. Paul's—June" (381), seen from across the river, and with piles in the foreground, will undoubtedly enhance his reputation, and the same may be said of J. B. Portway's efforts. His "Shambles" (384) is perhaps the nicest of many versions here of that much favoured street. A fine queenly pose distinguishes H. Mills's capital "Lina" (425), and the selection of J. McKissack's "Edinburgh Castle" (433) is also noteworthy. Better still is his "Scarborough" (442), where a large steamer funnel has an important place in the foreground. The scene is one of bustle, veiled in the mystery of steam, and its tones are charming. "As Daylight Dies" (437) is a beautiful bromoil by C. F. Inston, having all his usual charm and something of his usual suppression of brightness.

A well composed view of a Romanesque church, finely situated on a hill, and with a good sky, comes from C. J. Bryden, and is called "The Church on the Hill" (454). Another church, of Moorish architecture, is the subject of a small but richly pigmented bromoil, called "Across the Aisle" (465), by S. L. Coulthurst, who has other works here of much interest. We must allude, too, to the capital series of portraits by John Smith of local celebrities. They all have clean tones and good modelling. Thos. Wright shows a very pleasant harmony in greys of a snow scene, where a black and a grey horse stand together in "Sympathy" (497). Their forms culminate the contrast of tones in the print. Two more snow scenes of excellent quality hang near, by Miss Gladys Openshaw. The better is called "Workers in the Snow" (506), and shows a pleasing subject of a shady lane, in the depths of which two dark little figures are placed with good effect.

The exhibition gains very considerably by a consignment of foreign work of unusually high merit. We can but refer to one or two of the very best. One is a magnificent "Portrait of a Lady" (516), the bust at front view, but the face in profile, with a charming poise of the head. This is by Olga Maté, who gives, with a rare sense of tone, the juxtaposition of white lacy drapery against the flesh. There is also a "Portrait à la Van Dyck" (527), by E. Gaidusdek, of a little maiden in the costume of the time of Charles I.; another, "Mrs. Goldin" (536), by the same, where the profile figure is in a soft tone against a background of gleaming quality; and still another, called "Portrait à la Robbia" (544), of a charming mother and child in an oval.

As to the coloured prints, we are still in a position of patient waiting for something good. Nothing here really justifies the section, since nothing surpasses the results already arrived at in former shows. The nearest approach to pictorial effectiveness in the latest examples is "Sunlight and Shadow" (596), by Geo.

Hidderley, a coloured gum print, which is, nevertheless, far beneath the standard of the Hofmeister results of years back.

A fairly full and very interesting natural history and scientific section occupies Room 5, amongst which is a selection of C. Thurstan Holland's imposing Alpine scenes.

The lantern slides are very numerous and very effectively shown, whilst the Autochromes are ingeniously arranged in a square formation of screens, so placed in the middle of a room that visitors can pass round the gangway left between it and the walls. This passage is, of course, roofed in, whilst the centre of the square is open to the skylight of the room. Thus, by day as well as by night, ample light is available. The show includes many excellent examples, not the least good of which are those by H. Essenhigh Corke. A selection of bright, if rather hard, plates comes also from the makers, Messrs. Lumière and Co. In the first room stereoscopes are set up with slides by Miss Hilda Stevenson and T. D. Mason.

### Trade Section.

Room 4 is devoted to trade exhibitions, and its leading features are the two well-designed, well-made, and tasteful stands of Messrs. Wellington and Ward, and Messrs. Johnson and Sons, London. The former takes the shape of a screened space or apartment, which the public can enter, and it leaves margin enough each side to form two alcoves between the walls of the room. In these, as well as in the central space, Messrs. Wellington and Ward show prints and enlargements made at their own works. They have also fitted up a dark-room, large enough to admit the demonstrator, and any inquiring customer who may be a prey to difficulties in the way of sulphide toning or other photographic processes. The design and construction of this stall reflects credit upon the firm, as being entirely the output of their own works. Messrs. Johnson and Sons are also busy demonstrating various processes in their handsome stall, chiefly by the aid of their "Azol" developer, and their "Scaloids." They are distributing, gratis, a convenient little card bearing a complete scale or table of times for stand, tank, and dish development by "Azol." This stand is made attractive by an illuminated sign advertising the flash powders, specially prepared for either the rapid needs of the press, or the more amenable requirements of the amateur. There is also a bowl upon a pedestal, already dubbed "the font" by the admiring Liverpudlians, which contains fabulous wealth in the shape of gold chloride crystals, illuminated by electric lamps.

Messrs. Evans, Sons, Lescher, and Webb, Ltd., content themselves with a central stand, containing, under glass, a special exhibit of "Hanover" cameras, fitted with Cooke lenses, the "Barts" cameras, and other apparatus and materials. The stall is unattended, but distributing boxes for "help-yourself" pamphlets, and an "inquiry box" will possibly keep the firm in touch with the visitors. The "Amateur Photographer and Photographic News" occupies a table spread with the literature published under its auspices. Upon the walls of the room the Autotype Company display a dozen carbon enlargements. Messrs. Gevaert, Ltd., show smaller work, but many more examples, including prints from negatives by the leading English and foreign works, Dührkoop among them. This display and that of Ilford, Ltd., are certainly very attractive advertisements, the latter showing some radiographs amongst the much more seductive figure studies upon the "Hyptona" paper, the tones of which show here to undoubted advantage. A few enlargements are also exhibited by Otto Looser, of 155, Duke Street, Liverpool.

In Room 5 Messrs. André and Sleigh, of Bushey, display three-colour reproduction and half-tone black and white blocks. Examples of colour prints in various stages will no doubt interest the public, and a set of illustration proofs to Mr. Essenhigh Corke's book on flowers will bring credit to all concerned, including Messrs. Cassell's, Ltd., the publishers.

We understand that the success of this exhibition has, in these first few days, already far surpassed that of four years since. The closing day is March 18.

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# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between February 20 to 25:—

Cameras.—No. 4,250. Attachment for cameras. Alfred Edward Swoyer.

Daylight Development.—No. 4,582. Daylight tank for the development of photographic films and plates. Hugh William Wilson.

Lenses.—No. 4,714. Photographic lenses. Conrad Beck and Horace Courthope Beck.

Projection Lantern.—No. 4,231. Automatic projecting lantern. J. Lizars and Joe Quigley.

Cinematographs.—No. 4,396. Synchronising devices for cinematograph apparatus. Charles Galloway and Ralph Ainsworth Holden.

Cinematographs.—No. 4,514. Means for preventing the combustion of the films in cinematograph and other similar appliances. James Ernest Tatham.

Cinematographs.—No. 4,643. Cinematograph apparatus. Arthur Hibbert Diggle.

### *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Developing Cinematograph Film.—No. 11,935, 1910 (May 13, 1910). The invention consists of apparatus (for developing films) consisting of a tray or lifter having vertical pins so arranged that the film can be wound edge uppermost upon the pins and held when so wound, the lifter being used with a developing tray. The tray or lifter is preferably square, and with a pierced bottom. On the inside of the tray is a number of pins in such a position that the strip carrying the film can be wound around the pins with the back or non-sensitive side next to them and edge uppermost in the tray, the pins being sufficiently far apart to enable the strip to be conveniently placed around them. At the same time the arrangement is such that the strip is sufficiently close to itself in the coils or windings to enable a very long length of it to be arranged in a small space. Any suitable means may be employed for holding the ends of the strip taut, but by preference two or more of the pins are made with small hook-like projections which are in such position on the pins as to be capable of being easily placed into the usual slots or holes which are made along the strip. William Kennedy-Laurie Dickson, 4, Denman Street, Piccadilly Circus, London, W.

Daylight Development of Plates.—No. 15,795, 1910 (July 1, 1910). The apparatus consists of a box divided into two compartments by a central partition, one compartment serving as a developing tank, and the second as a fixing tank. At the developing end of the box a plate magazine is provided which receives the plates from the camera by means of a light-tight bag. This magazine is hinged immediately below a slot in the box, and, when ready for loading, hangs down, leaving the open end exposed. After the plates have been transferred the magazine is turned up and secured with the open end over the tank slot. A slide at the bottom of the magazine provided with a convenient handle removes the plates one by one into the tank. The developing tank is provided with a cubical plate holder pivoted centrally and turned by means of a small folding handle. Each side of this holder is provided with small side clipping rollers and end stops which receive the plates as they are slid on to the top face. The plate holder is turned to bring successive plates into the liquid in the tank, and a ruby glass cover enables the plates to be watched as they are brought to the top side.

To remove the plates one by one into the fixing tank the upper part of the partition consists of a pivoted plate which can be turned from outside. When turned to a suitable angle the edge engages under the top photographic plate as the cubical carrier is turned, raising it from the clips and causing it to slide down the sloping face on to a plate rack in the fixing tank. Successive plates may be removed by means of a pivoted partition. The plate rack can be removed by handles at the side from the fixing tank when the plates are ready, the fixing tank having a sliding cover permitting of access. Herbert John Hodgson, 27, Cranbrook Street, Cathays, Cardiff.

Camera Cases.—No. 13,734, 1910 (June 7, 1910). According to the present invention a spare spool pocket open at one end is provided which is separate from the camera case and is removable bodily therefrom. This pocket is retained in the case by the strap or sling used for carrying the case. The strap is threaded through slots formed in the camera case and in the pocket. A hinged door or flap is provided in the side of the case, opposite the open end of the spool pocket, to admit of introducing and withdrawing the spare spool. This door is held in its closed position by means of the carrying strap or sling which is drawn tightly over the door when the case is being carried. A single strap thus suffices for carrying the case, and for closing the hinged door or flap covering the pocket aperture.

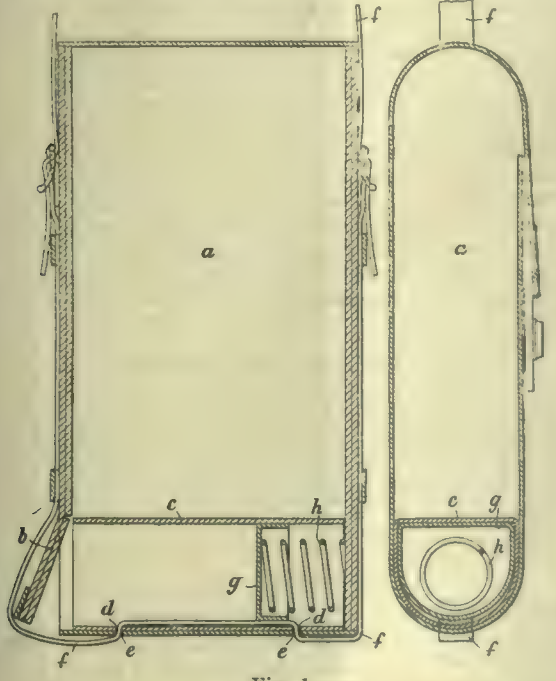

Fig. 1.

The spool pocket is preferably provided with a spring-pressed false bottom, arranged to thrust one end of the spool contained in the pocket a short distance out from the latter when the lid is open so that it can be readily grasped for removal.

As shown in the drawing, *a* is a camera case, one of the side walls of which is provided with a hinged door *b*. Within the case (at the bottom) is a spool pocket *c* which is separate from the case and can be inserted and removed through the door *b*. A strap or sling *f* used for carrying the case is threaded through slots *e*, *e* in the bottom of the case, and corresponding slots *d*, *d* in the spool pocket *c*, and is passed outside the case *a* over the hinged door *b*. This strap thus serves to hold the spool pocket in place and to keep the door *b* shut.

The spool pocket is furnished with a false bottom or end *g* thrust outwardly by a spring *h*, or this spring may be employed alone, so that when the hinged door *b* is opened the spool in the pocket will be partially ejected by the spring, and then can be readily grasped by the hand for removal. William Edward Colston Dickason, Eversley, Second Avenue, Hendon, Middlesex, and Howard Wall, Ltd., of 4 and 5, Love Lane, London, E.C.

Daylight Lantern Screen.—No. 15,661, 1910 (June 28, 1910). The claim is for a screen, consisting of a transparent plate, made in one piece or composite, with surface roughened by concave or convex lenticular granulation, and covered with a thin metallic or other translucent coating, adapted to scatter light on both sides of the screen so that pictures can be seen either by reflected or by transmitted light.

The screen thus comprises two elements—on the one hand, a transparent plate of suitable shape; and, on the other, a special treatment of the surface of the plate whereby the same acquires a translucent coating. The plate may consist of one piece, or be composite. The surface of the plate is roughened by means of concave or convex lenticular graining, or in other manner, and is covered with an extremely thin metallic or other coating, so that when used as a screen it both transmits and reflects scattered light, and thus exhibits an image which is, except in brilliant sunlight, visible on both sides of the screen. Only the image due to transmitted rays is visible in sunlight.

It is an essential feature of the invention that the screen is both translucent and dark—*i.e.*, has a dark-coloured coating. Non-translucent screens with meshes of diamond or other shape have heretofore been proposed for reflecting images by daylight, and also screens matted, etched, lined, etc., on one side and provided on the other with a reflecting layer. These screens are only suitable for reflection, whereas the improved screen also shows images visible on the side opposite the side exposed to the luminous object. Oswald Büchner and Hans Buol, 13, Kuttelgasse, Zurich.

The following complete specifications, etc., are open to public inspection, before acceptance, under the Patents Act, 1901:—

Dark-Slide Indicators.—No. 1,423. Indicators for photographic slides or containers for sensitised plates or films. Kunze.

Photographic Stencil Reproductions.—No. 3,988. Process for the production of photographic reproductions on stencils of wire netting or the like. Pindikowsky.

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## CATALOGUES AND TRADE NOTICES.

Kodak Professional Requisites.—A new list of 240 pages, and linen bound, has just been issued by Messrs. Kodak, Ltd., 57-61, Clerkenwell Road, London, E.C., "for the use of bonâ-fide professional photographers only." The catalogue describes and illustrates in full the many requisites for commercial photography supplied by Messrs. Kodak and to be inspected at their professional showrooms. These include studio and other cameras, lenses, tripods, retouching appliances, mounts, mounting machines, trimmers, etc., backgrounds, studio accessories, enlargers, and separate brass fittings (rackwork, hinges, etc.), for cameras. The list includes also the working formulæ for Kodak plates and papers. Particularly as regards mounts and backgrounds very full use is made of illustration, and the photographer at a distance has an excellent opportunity of judging from the list the styles most suited to his requirements. A valuable catalogue of reference, which can be obtained free on application.

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Messrs. Hunters, Ltd., have removed to new premises at 16-18, St. Bride Street, Ludgate Circus, E.C., opposite the end of Poppins Court. Their telephone number is now Holborn 2684.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### FRIDAY, MARCH 10.

Shotts Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.
Craven Naturalists' and Scientific Association, Skipton. "Noctona Gaslight Printing." Thos. Young.

### SATURDAY, MARCH 11.

Edinburgh Photographic Society. "The Cities of India—Ancient and Modern." J. Roberton Christie.

### MONDAY, MARCH 13.

Kidderminster and District Photographic Society. "Photography and Focus" Prize Slides.
Cleveland Camera Club. "Amateur Photographer and Photographic News" Prize Slides.
United Stereoscopic Society. "Stereoradiography and Stereophoto-micrography." G. H. Rodman.
Southampton Camera Club. Auction of Photographic Goods.
Erdington Photographic Society. Autotype Carbon Demonstration.
Denny Institute, Dumbarton. "Tramps Abroad with a Kodak." W. F. Slater.
Southport Photographic Society. "Noctona Gaslight Printing." A. Webb.
Scarborough and District Photographic Society. "In Birdland." Stanley Crook.

### TUESDAY, MARCH 14.

Royal Photographic Society. Ordinary Meeting. "The Theory of Section Shutter Blades and Iris Diaphragms." By C. F. Lan-Davis.
St. Helens Camera Club. "Kallitype Paper." H. S. Taylor.
Sheffield Photographic Society. "Photography Old and New." F. J. Stedman.
Manchester Amateur Photographic Society. "The Thames Colour Plate."
Halifax Camera Club. Yorkshire Photographic Union's Lantern Slides.
Leeds Photographic Society. "Simultaneous Exposure and Development." R. Stockdale.
Keighley and District Photographic Association. "The Making of Dry Plates." S. E. Bottomley.
Hackney Photographic Society. "Switzerland." A. D. Fort.
Paisley Philo. Institute. "Tramps Abroad with a Kodak." W. F. Slater.
Doncaster Camera Club. "Noctona Gaslight Printing." Thos. Young.

### WEDNESDAY, MARCH 15.

Croydon Camera Club. Exhibition of pictures selected for the Club exhibit at the Festival of Empire at the Crystal Palace.
South Suburban Photographic Society. "Interesting Carvings in Wood and Stone." E. W. Andrew.
West Surrey Photographic Society. Making of Slides by Members using Mr. Lovegrove's Apparatus.
Sale Photographic Society. "Photography of Children." H. Peddar.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. "Criticism of Prints." H. W. Bennett.
Balham Camera Club. Members' Night.
Leek Photographic Society. "Toning Printing Out Papers." F. Bradley.
Glasgow and West Scotland Photographic Association. Autotype Carbon Demonstration.
Harthill Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.
Borough Polytechnic Photographic Society. "Noctona Gaslight Printing." A. W. Green.
Ilkeston Arts Club. Autotype Carbon Demonstration.

### THURSDAY, MARCH 16.

Sutton Photographic Club. Open Evening.
Cleveland Camera Club. "Art and Photography." Rev. H. W. Dick.
London and Provincial Photographic Association. "Platinotype." E. A. Salt.
Handsworth Photographic Society. The Midland Photographic Federation Portfolio.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Platinotype." W. E. Fearnley.
Camera Club. "Selection of Autochromes." J. C. Warburg.
Midlothian Photographic Association. "My Trip to Venice, with Remarks on Photo Optical Equipment." W. Hume.
Glasgow Eastern Amateur Photographic Association. "Tramps Abroad with a Kodak." W. F. Slater.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, March 7, Dr. C. E. Kenneth Mees in the chair.

Mr. Chapman Jones, F.I.C., F.C.S., read a paper on "The Relationship Between the Size of the Particle and the Colour of the Image." He referred to past investigations and theories of colour produced by finely divided particles. Differences of colour had been attributed both to differences in the size of the particles and in their distances apart. He had carried out a series of experiments on new lines, the conclusion from which was that the colour due to finely divided particles varied with the size of the particles. He used silver particles embedded in gelatine-sensitive photographic plates developed to give a silver image. The particles in this image were then enlarged by repeated application of the mercury and ferrous oxalate intensifier. This gave a degree of enlargement up to fifteen times, and allowed of particles too small in the first instance being seen and measured in the microscope. He used bromide, chloride, chloro-bromide, and phosphate plates (obtaining developed images), and also phosphate plates and those with gelatino-citro chloride emulsion, for obtaining printed-out images. Throughout it was found that enlargement of the particles by the addition of mercury caused a change in the colour effect, and always in the same direction, namely, from yellow, through orange, brownish and pinkish colours, to grey. The lecturer fully described the methods used in measuring the size of the particle, and projected on the screen tables and diagrams summarising his results.

After some discussion, in which Mr. F. F. Renwick, the chairman, and others took part, a vote of thanks was passed to the lecturer for a paper which, when it is published in extenso in the Society's "Journal," will prove a valuable contribution to the little-known subject of the colour of photographic images.

BALHAM CAMERA CLUB.—A series of lectures by Mr. A. Kirkland, entitled "The Chemistry of Photography: Simple explanations of what happens; the why and the wherefore," is about to be given at the club's headquarters, 1, Balham Grove, S.W. The first of these lectures on "Light: Its nature; the chemical changes produced by light; the photographic image, latent and visible; the use of screens, etc.," will be delivered on Wednesday, March 22, at 8.30 p.m., when gentlemen interested in photography are invited to be present.

# Commercial & Legal Intelligence.

READING PHOTOGRAPHER'S FAILURE.—A first meeting of creditors in the failure of William Henry Dee, photographer, of Moorlight, Tilehurst, Berks, and lately carrying on business at 4, Cross Street, Reading, was called at Bedford Row, W.C., for March 2, but only the debtor appeared, and his affairs were left in the hands of the Official Receiver. The statement of affairs showed fifty-three unsecured creditors for £265, while the assets amounted to only a few pounds in the shape of doubtful book debts. In his observations the Official Receiver states that debtor, who has been adjudged bankrupt, commenced business at the above address in August, 1902, with £130 cash capital, and £120 borrowed from his uncle and still owing. This and trade debts contracted between 1907 and 1910 constituted the liabilities. In September last the landlord of the business premises distrained for rent upon debtor's trade furniture and utensils, but the whole realised insufficient to satisfy the claim for rent and costs. Debtor subsequently filed his own petition, two creditors having obtained judgments against him. Debtor first became aware he had not sufficient property to pay his debts in full about June last, and attributed his failure to illness and bad weather.

## NEW COMPANIES REGISTERED.

HOPPE, LTD.—This company was registered with a capital of £4,000 in £1 shares. Objects: To take over the business of photographers, photographic artists, etc., carried on by E. O. Hoppé, at 8, Margravine Gardens, Baron's Court, W. First directors, E. O. Hoppé and E. F. Griffin (both permanent). Qualification, £200. Remuneration, £200 per annum. Registered office, Cranbrook Chambers, Ilford. Private company.

GERMAN POSTCARD TRADE DEPRESSED.—According to Consular and other reports, there is considerable depression in the German picture postcard trade. Sales of the most popular pictorial postcards (writes "Morris's Trade Journal") can only be effected at extraordinarily low prices, which scarcely leave any profit. The tremendous diminution in price is to be attributed to the considerable advance of the import duties of Switzerland, Norway, Sweden, and the United States. The last-named country has advanced the Customs rate so much that the German manufactories work with a profit only if they establish branch factories in the United States. Such will be done by many German manufacturers in order to retain part of their American trade. The business in novelties and picture albums has diminished, and the prices have declined.

# News and Notes.

A "Mr. Harris," of Brighton, who has sent an order to the Halifax Photographic Co., without, however, stating his full address, is asked to remedy the omission.

Mr. C. M. Gibson, since 1902 London agent for Messrs. Gilmer and Co., has established himself as wholesale optician and photographic dealer at 24, Hatton Garden, London, E.C., from which address he is supplying optical and photographic goods of all descriptions.

Fire at Cardiff.—In reference to our note last week (page 165) Messrs. The Metropole Studios write:—The fire was caused by the fusing of an electric wire running alongside of a gas-pipe. The damage caused was very little, and did not amount to more than 30s., and no photographs or stock of any description was damaged.

The Twelfth Annual Exhibition of the City of London and Cripplegate Photographic Society will be held at the Cripplegate Institute, Golden Lane, E.C., from Monday, March 13, to Thursday, March 16 (1—10 p.m.). Admission sixpence. Pictorial photographs in all processes will be exhibited, and in addition there will be free demonstrations, exhibits of apparatus, lantern slides, colour photography; also a musical programme.

The Nature Photographic Society.—At the first annual meeting of the Nature Photographic Society, held at the Institute of Science, Leeds, Mr. John J. Ward, F.E.S. (of Coventry), was elected president in succession to Mr. Richard Kearton, F.Z.S., the well-known bird photographer. The vice-presidents for the coming year are Messrs. Richard Kearton, F.Z.S., Martin Duncan, F.R.P.S., Henry Irving, Oliver G. Pike, F.Z.S., and Herbert Lazenby.

The Rajar Monthly Competition.—The prizes offered by Messrs. Rajar, Ltd., Mobberley, Cheshire, for the best print on papers and postcards of their manufacture submitted for the competitions for the month of February have been awarded as follows:—Class 1 (open competition), to Rev. E. T. Clark, Belvedere, Teignmouth, South Devon, for a print on self-toning paper purchased from Messrs. Young and Sons, Photographic Stores, Teignmouth. Class 2 (for those who have never previously won a prize in any class of competition), to Miss Teevan, 65, Broadmead Road, Folkestone, for a print on P.O.P. paper purchased from Messrs. Wheeler and Haddock, photographic dealers, Church Street, Folkestone.

Berwick Photographer and K.O.S.B. Tunic.—An interesting case was heard at Berwick last week when a local photographer, Peter Calder, was charged with being in unlawful possession of a tunic and cap of the King's Own Scottish Borderers. The Chief Constable said the defendant exhibited in his window photo-cards of girls wearing this tunic and cap, and added, "If that's not bringing the King's uniform into contempt I don't know what is." A colour-sergeant of the regiment said the tunic was sold to a corporal at a kit sale. Before selling it outside the regiment the tunic should have been defaced and the buttons and badges removed. This had not been done. The Bench dismissed the case. The Chief Constable asked them to state a case, as the military authorities would carry the matter further.

South London Photographic Society.—The twenty-third annual exhibition will be opened by his Worship the Mayor of Camberwell on Saturday, March 11, at 8 p.m. The exhibition is held at the South London Art Gallery, Camberwell, S.E., from March 11 to April 8. The exhibits are arranged in members' classes and open classes. The entry has been large in both classes. In the open class, in addition to a very representative entry from the British Isles, exhibits have been sent from Paris, Berlin, Hamburg, Munich, Haarlem, Geneva, Russia, and South Africa. Lectures of interest to photographers will be given on Mondays, Thursdays, and Saturdays during the time the exhibition is open. On Thursday, March 16, the president and committee desire the pleasure of the company of all London and suburban photographers, when Mr. F. C. Boyes, chairman of the executive of the Affiliation, and president of the Ilford P.S., will lecture on "Pictorial Photography of To-day." The lecture hall, which is apart from the exhibition galleries, is capable of seating a very large audience. Enjoying the patronage and support of the Camberwell Borough Council, the Society is able to open its exhibition free of all admission charges, a concession which it is hoped will result in a record number of visitors.

The Scottish Federation.—On Saturday a meeting of the Council was held in Perth, Mr. W. H. Wilson, vice-president, presiding over a good attendance. Mr. Thomson intimated formally, as he did at the A.G.M., his resignation from the Council. Mr. Wm. Ellison, Perthshire, and Mr. James McKissack, Queen's Park, were appointed councillors. The chairman, as secretary of the 1911 Salon Committee, submitted a draft report on the finances of the Salon, showing a credit balance of £10; this was considered highly satisfactory; and the hearty thanks of the Council were accorded to all who had contributed to this result.

Mr. Henry Douglas, City Chambers, Perth, was appointed secretary of the 1912 Salon, which will be held in the Art Gallery of the Sandeman Library, in January or February. The Salon Committee appointed was Messrs. Vaness C. Baird, Wm. Ellison, and Henry Douglas, from the Council; Messrs. Wm. Barclay, J. Ritchie, G. F. Bates, B.Sc., A. W. Brown, R. G. Thomson, Kinnear, McCallum, and A. M. Rodger, from Perthshire Society. It was agreed, an invitation being forward from the Glasgow district, that the Federation excursion this year be on the second Saturday of June (June 10), to the Scottish National Exhibition at Kelvingrove, Glasgow, and arrangements were left to the Glasgow district. It was agreed to have a competition for photographs taken that day, and Mr. Penman (Midlothian) offered a print of "The Incense of Labour" (the Macdougald plaque print), as a prize.

Royal Institution.—The following are the lecture arrangements at the Royal Institution after Easter:—Mr. J. E. C. Bodley, three lectures on (1) "Cardinal Manning"; (2) "The Decay of Idealism in France, and of Tradition in England"; (3) "The Institute of France." Professor Frederick W. Mott, two lectures on "The Brain and the Hand"; Professor W. W. Watts, two lectures on (1) "The Ancient Volcano of Charnwood Forest (Leicestershire)"; (2) "Charnwood Forest and its Fossil Landscape"; Professor R. W. Wood, of the Johns Hopkins University, three lectures on "The Optical Properties of Metallic Vapours" (illustrated); Dr. W. N. Shaw, two lectures on Air and the Flying Machine: (1) "The Structure of the Atmosphere and the Texture of Air Currents"; (2) "Conditions of Safety for Floaters and Fliers"; Mr. T. Thorne-Baker, two lectures on (1) "Changes Effected by Light"; (2) "Practical Progress in Wireless Telegraphy" (illustrated); Professor Selwyn Image, three lectures on (1) "John Ruskin, or, the Seer and Art"; "William Morris; or, the Craftsman and Art"; (3) "Walter Pater; or, the Connoisseur and Art"; Mr. W. P. Pycraft, two lectures on "Phases of Bird Life: 1, Flight; 2, Migration"; and Mr. W. L. Courtney, two lectures on "Types of Greek Women; Nausicaa and the Homeric Women; Sappho and the Æolian Poets; Aspasia and Pericles." The Friday evening meetings will be resumed on April 28, when a discourse will be given by Professor W. M. Flinders Petrie, on "The Revolutions of Civilisation." Succeeding discourses will probably be given by Professor Martin O. Foster, Professor William Stirling, Professor R. W. Wood, Professor Gilbert Murray, Commendatore G. Marconi, Professor Svante Arrhenius, and other gentlemen.

Edinburgh Photographic Society.—The annual open exhibition of the Edinburgh Photographic Society closes to-morrow (11th inst.). The exhibition was preceded by the annual dinner—the tenth—of the Society, when Mr. R. C. Malcolm presided over a company of about eighty ladies and gentlemen in the Carlton Hotel. The croupiers were Messrs. J. C. McKechnie, exhibition secretary, and R. Berry. The toast of the "Edinburgh Society" was proposed by Mr. Thos. Calder, president of the Glasgow and West of Scotland; and the chairman, in reply, said the desire to make a picture was a natural instinct, and photography had special attractions from an artistic point of view. Mr. A. Eddington, in proposing "The Lord Provost, Magistrates, and Town Council of Edinburgh," said the Society had now in their possession nearly five hundred photographs of Old Edinburgh, and it was their intention to pass these on to the Corporation Museum. They aimed at making a complete selection of photographs of Edinburgh at the beginning of the twentieth century, which would be handed down to show Edinburgh at that time. This involved expenditure, and they hoped to receive some little financial assistance from the Corporation. Councillor McArthy replied. The exhibition consists of two classes for prints, one for colour photographs and one for lantern slides. A large entry was forward, and the goodly quality was maintained. The colour work was all transparencies. Messrs. Hippolyte J. Blanc, R.S.A., W. Marshall Brown, A.R.S.A., and Arch. Cochrane judged. The awards were as follows:—Portraiture and Figure (medals): John Moffat, B. B. Newburn; Landscape (medals): John Moffat, C. F. S. Burrows, C. D. Paton; Colour (medals): F. Busyard, J. C. Warburg; Lantern-slides: J. C. McKechnie, Thomas Calder, Thomas Carlyle, Robert Forbes.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SUNDAY WORK AND EXCESSIVE HOURS IN PHOTOGRAPHIC STUDIOS.

To the Editors.

Gentlemen,—I have followed with an intense and sympathetic interest the views of the various correspondents regarding Sunday work, and I think, judging from the expressions of opinion, that assistants are unanimous on this question. I myself have been a sufferer in the past, but I fervently hope never again to have to work seven days a week. Some assistants appear to have a little time off in the week as a sort of compensation, but I can assure you that some don't even get that; in some cases, as has been my experience, arrangements may have been made for this, but I regret to say that some unscrupulous employers are quite ready to ignore this when occasions arise, and the assistant only gets away when convenient to the firm. In other cases no time is allowed off at all, and the assistant is expected to keep a pleasant and satisfied demeanour! What a happy life! Also, if married, what a merry time for his wife, especially if, as in many cases, the assistant has to take a fresh situation and removes his home and family a hundred miles perhaps from all their friends and relatives.

Your correspondent, Mr. Haloran, to whom I extend my best wishes, states that in Dublin he knows of firms there working young girls until 7 or 8 on Sundays. This occurs in other cities and towns this side of the Irish Sea. I should much like to hear whether they have any time off in the week. Britons never shall be slaves! Where is the factory inspector? I have been in the business for twenty-seven years, and I affirm that during the whole of that time never once has an official visited any of the several places where I have been engaged, and a sanitary inspector only once. I have, however, heard of one calling elsewhere, and here in the town where I am at present engaged one very cheap photographer has been fined three times to my knowledge for working girls during prohibited hours. On the last occasion this gentleman, who was fined £1 and 13s. costs, naïvely observed, according to the local newspaper, that he "thought as he had cleared the girls out of the room upstairs, he would be inside the Act." The girl stated she started work Sunday about 10, and would finish about 5, and was spotting prints when the inspector entered. But for trespassing upon your valuable space I could give many instances which have come before my notice of scandalous infringements of the Factory Act, and, I regret to have to say it, paltry filching of assistants' time. What can the assistant do? Nothing! for the other party holds the whip hand. Some of us were so misguided as to think that with the advent of electric light in studios Sunday work would be obviated, but many find it increases their hours of labour, and their Sunday duties continue just the same. But, gentlemen, of what use is all this discussion? It will be quite unavailing to deal with this matter, and will, in all probability, be shortly closed, and then the discussion will drop. Those studios whose methods we detest will continue to start work Monday morning and continue through the week without any early closing until Sunday night. Knowing this, I determined to try if something of real service to the cause, and also, as I consider, to the interest of both employer and assistant, could not be done; so I wrote a letter to the Secretary of the Amalgamated Union of Shop Assistants, etc., of which I have been a member over thirteen years, and laid the matter before him, hoping the Union would try to influence the Government to include studios in their re-drafted "Shop Hours Bill." I have great pleasure in stating that I received a reply to the effect that my letter had been forwarded to a certain gentleman who would lay the matter before the Home Secretary, so I think there is a good prospect of us not being forgotten. What a pity it is that more photographic assistants do not join this Union! Its benefits are manifold.

It would, in my opinion, have very great weight if the P.P.A. would send a petition.

I sincerely hope this Shop Bill will be framed in such a manner as to admit of no evasion such as working behind closed doors.

Apologising for the length of this letter, I beg to remain, etc.,

Ajax Secundus.

## EXPRESSION IN CHILDREN'S PORTRAITS.

To the Editors.

Gentlemen,—Surely you are wrong when you say in this week's "J." that "it was found" that parents prefer a grave—i.e., in repose—expression for their children's photographs.

At the Congress I distinctly found the great majority thought that parents prefer—and ask for—the bright and animated expressions of childhood, and my own experience of upwards of thirty years in a good-class business is decidedly on that side. The reflex camera is a great help to natural poses and expressions. I am with you as to the evils of over-mechanical retouching, and find that my customers prefer that but little retouching is done in most cases, and especially so with children and old people.—With compliments, yours faithfully,

W. Shawcross.

Guildford.

## MARKINGS IN TANK DEVELOPMENT.

To the Editors.

Gentlemen,—With regard to Mr. Gordon Chase's letter in the "B.J." (January 20), no mention is made of the developer used. I had exactly similar trouble with a certain make of plates in using metol-hydroquinone developer; the undeveloped patches on my plates were similar to those you reproduced, including the crack-like lines across those patches. With the same batch, and make, of plates, *there were no such markings with pyro developer, nor with acid-diamidophenol.* I have found the latter by far the most satisfactory developer for the tank. It would be interesting to know in what way the metol-hydroquinone could affect the plates; I would be inclined to attribute it to the hydroquinone. As regards the failure being erratic with the same make of plates, the question of temperature might come in. The spoilt lot of plates were developed at about 66 deg. F., the successful ones (with metol-hydroquinone) at 72 deg. F. This is only a suggestion, as no further tests were made. I now use acid-diamidophenol, and have no trouble.—Yours truly,

Johannesburg, Harold Smith.

February 13, 1911.

To the Editors.

Gentlemen,—Mr. Renwick's letters on the cause of scum markings are extremely interesting to all process men who have had any experience in colour sensitising by bathing, but I think he rather upsets his theory by his second letter. Judging from my own experience, I think his first letter appears to account for the troubles I have met with better than the second one, as if pinacyanol is the cause, how does it account for the fact that I have frequently had scum markings on unbathed process plates which had no suspicion of contamination from that source? Also, a young friend of mine got these markings very badly on some X-ray plates. They mysteriously appeared and as mysteriously disappeared, without any change in his method of working, while he was quite innocent of any knowledge or use of pinacyanol. I have also got these markings on commercial panchromatic plates used for colour work. Of course, a cross-line screen negative does show the slightest trace of such a defect, which would probably not be seen on an ordinary negative. I have thought it was due to some impurity, either on the glass when coating or the substratum, but as I am not acquainted with the methods of coating, it is not fair to attribute it to that cause; but this I can say, that the trouble is occasionally met with on all the makes of plates that I have tried, and they are more than half a dozen.

Perhaps a short account of my own troubles and methods might be of interest. I have used both a tank and a flat porcelain dish for bathing, using erythrosine or pinacyanol in the same dish or tank, with a good rinsing in between. The plates were placed in the tank in red light, and the dye solution allowed to flow in through the holes at the top, so that it gradually travelled up the plate, but in no instance were straight markings obtained, such as might be the case from light action at the edge of the liquid in its flow, but the tank was covered so that the light could only enter at the holes in the end; it was an ordinary porcelain washing tank.

Using the flat dish, the plates were put in, and the dye flowed over as in developing, the dish covered immediately after the dye was put in, and then rocked. The plates were taken out of the dye in total darkness, and placed on a wooden rack with filter paper pinned on to take up the dye draining from the plates. They were not washed after bathing.

They were usually dry in less than two hours in a heated drying cupboard, and returned to the boxes in total darkness. When required for use they were backed in darkness, then exposed, and after exposure the backing was taken off with a damp sponge and the plates were then developed in glycin, using a red light for the erythrosine plates and a green light for the pinacyanol plates, keeping the plate away from the light as much as possible till the developer was seen to be all over it; then the dish was covered till the development was finished.

The erythrosine-bathed plates invariably showed a greater tendency to the scum markings than the pinacyanol plates, and, developing in the red light, this scum appeared *immediately the developer was applied*, and appears to go right through the film to the glass, for if the negative be reduced afterwards, the scum marking will remain till almost the last trace of the image produced by the light is gone. With pinacyanol the scum does not appear so strongly marked, but more diffused, as if a little fogging had arisen from some cause.

In conclusion, I think that Mr. Renwick deserves the thanks of the process men for his valuable contribution in the solution of this problem, and if some of those who are bathing their own plates would record their experiences it might help still further to get rid of this vexatious trouble. G. C. LAWS.

## "OLD PRO." AND "NEW PRO."

To the Editors.

Gentlemen,—May I trespass a little more on your space. Although what good can come of this passage of letters you are kind enough to insert in our "Journal" I know not. Things will go on more or less empirically in the old Darwinian way, and the public reap the sweated benefit, and not the wholesale houses who supply the working material. But this one thing is sure: it ventilates the matter, and even draws forth a leading article on page 154 of last week's issue dealing with the whole matter of proofs and re-sits and the modern mode of doing business, all of which is much more to the point than Mr. Neame's last letter. This leader deals in rather a drastic manner with Mr. Neame's position and theories. Mr. Neame thanks me for dubbing him a "New Pro." Well, I also arrogate the same title to myself, because I endeavour to be up to date in all methods that are creditable. Thus I am "New Pro." as well as "Old Pro.," which Mr. Neame cannot be yet. He says the successful man of to-day "makes a fine art of procuring work." May I ask, How? Is it by the insidious coupon or some such undignified scheme? "Anyone can do the work when once obtained." "If the staff cannot do it, give it to" (somebody else).

What becomes of individualism under such conditions? This question forms a text for another leading article. Mr. Neame uses the phrase "in the good old days," which is an admission from him that they were better than the present. Well, at any rate they were different both in men and methods, but I must curtail my truant pen and conclude with an extract from an article written by that worthy Whitby artist, Mr. Frank M. Sutcliffe, fifteen years ago, as follows:—

"If only one photographer in every town of Great Britain could afford to refuse to submit proofs, and charge for one portrait as much as most photographers charge for a dozen, that man would be looked up to and respected in a way undreamed of to-day. But we all know the hopelessness of that word 'if.'"—Yours faithfully,

W. BARRY.

Hull.

## IRIDESCENT MARKINGS WITH SILICATE SUBSTRATUM.

To the Editors.

Gentlemen,—Can you or any of your readers give me information on the iridescence to be sometimes seen on old plates, and which is connected with the use of a substratum containing silicate of soda? I have a number of old lantern plates which show this effect well. The iridescent film withstands ordinary cleaning and rubbing, but can be removed with putty powder.

I have been trying to reproduce these films on new glass, and have used the mixture of silicate and albumen described by Abney ("Instruction in Photography," 11th edition, p. 342; see also p. 168), but hitherto without success. As one would expect, the film washes off again at once. Does the emulsion (which I have not used) take part in the process? Or does the action upon the glass require a long time? My glasses have stood only a few weeks.—Yours faithfully, RAYLEIGH.

Testing Place, Witham, Essex,
March 7, 1911.

[We hope that any readers able to throw light on the subject of Lord Rayleigh's enquiry will communicate their knowledge.—EDS. "B.J."]

## PHOTOGRAPHING SHOP WINDOWS.

To the Editors.

Gentlemen,—There seems to have been a competition in window-dressing for grocers, arranged by two well-known firms engaged in the manufacture of meat extracts. The entire window has to be dressed with the specialities of the firm, and prizes are to be awarded for the best display, to be judged, I presume, from photographs taken of the window.

I anticipate that this has been general throughout the country, and my purpose in writing is to learn, if possible, of the experience of other photographers in photographing these windows, and of any special way of avoiding the reflections. I have had one or two to do, and have chosen the dullest day and time of day, had sheets put in front of windows on the other side of the road, etc., and yet the result has been that the display in window has been marred by reflections outside the shop. The defect is aggravated when there is a verandah over the shop, which has the effect almost of turning the window into a mirror. I remembered seeing in the Journal some time ago you advocated the use of a big black sheet, but it is hardly possible to adopt this method in a main street with traffic passing to and fro.

Any suggestions from anyone who has had the same experience may come in useful when next an order of this kind has to be undertaken.—Yours faithfully, REFLECTIONS.

[The chief thing is to avoid sun or strong light on the opposite buildings. Many photographers have found flashlight or the incandescent lamps in the window itself the only satisfactory method. See the article on "Commercial Photography" on another page. We shall be glad to hear further experience from our readers.—EDS. "B.J."]

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

F. R. and Son.—Yes. The lenses are capable of doing excellent work The focal lengths are very suitable for a studio of the length you name.

J. T. T.—We do not know the actual maker, but such cards are produced by Hood and Co., Ltd., St. Bride Works, Middlesbro'. A series is issued under the name on the card by the firm of F. G. O. Stuart, Southampton.

Artist Model.—1. A list is kept, for the use of artists, by the "Art Chronicle," 33, Chancery Lane, W.C., but we should advise you to apply to the school of art in your own town. 2. You do not render yourself liable to civil or criminal proceedings in taking the negatives and supplying prints to the customer.

J. Urhlgemut.—It is contrary to our custom to do work such as you ask for. We think the negative could be improved by reduction and then intensification, but we should say the best course would be to have a bromide enlargement made from it, have this worked up, and a second (copy) negative made from it. This would make the best job of it. We suggest you instruct us to send the negative to a good firm of enlargers.

Dyes for Colouring.—Is there anything I could mix with aniline dyes to make thin fast colours for tinting photographs, postcards, etc., so that when they are exposed to the light they do not fade so quickly?—A. R.

No, nothing that is of practical service. If you want greater permanence you should use water-colours, selecting them in accordance with the particulars given on page 783 of the "Almanac."

Salmon Scale.—I have been asked to take the photograph of a "salmon scale," so as to show the ring markings. What is the usual method pursued in carrying out this class of work?—J. R., Junr.

If we understand your question aright, this is a task for low-power photo-micrography, and the requirements are a very short-focus lens and a camera of very long extension. Ortho. plates and screens will also be required to bring out the markings.

"The Photographic Dealer."—I should be extremely obliged if you would kindly give me particulars with regard to "The Photographic Dealers' Trade Journal." I wish to take it up, and should be glad to know where I could obtain same, and what the subscription is per annum.—A. E. C. M.

You require the "Photographic Dealer," published monthly by Marshall, Brookes and Chalkley, Ltd., 15, Harp Alley, E.C. Price, single copies, 3d; annual subscription, 2s. 6d. post free.

Colours for Tinting.—Please inform me through the columns of your paper how and what name of colours to use for tinting glazed photographs so as to retain the gloss (especially on P.O.P. glossy P.C.s) after tinting.—E. M. Cowie.

You will be well advised to use the colours put up ready for use for this purpose. There is a variety of makes, among them the "Dunne," which are very simple to use. On page 783 of the "Almanac" you will find a guide as to permanence and transparency of water-colours.

Lantern Projection.—I find that the picture thrown on screen by lantern, though sharply focussed in centre, is quite blurred at edge. Can any simple means be adopted to make the picture sharp all over, as the defect seems to be rather pronounced?—A. Liddell.

This simply means that your lens is not a very good one. Sometimes matters can be improved by altering the separation of the back components, but this is a dodge that is seldom successful, and the only real remedy is to get a better lens.

Uranium Toner.—I am wanting to make an experiment by a formula I have of changing a landscape bromide print into two colours. To start with, the washed print has to be toned in an ordinary uranium bath. (1) Will you please tell me how to make this? Since nothing is said of bleaching, I presume this tones the print brown, like a single solution sulphuretting bath for sepia toning, and which does not require a ferricyanide-bromide bath. (2) Will a solution of potass. ferricyanide and bromide as a bleacher answer the same purpose as the ozobrome bleacher?—E. Graham.

(1) Use the formula given on page 770 of the "Almanac." (2) If you mean in the ozobrome process, no, it will not.

Fines for Unpunctuality.—I shall be greatly obliged to you if you will tell me, through the next issue of the "B.J.," if a firm can legally impose a fine upon their assistants for being late, and if the assistant can claim the same back upon leaving the firm, providing he has not signed agreeing to such fines.—Operator.

An employer cannot legally impose such fines unless they are accepted by the assistant as a condition of employment when taking the situation or subsequently. We are doubtful as to the possibility of recovering such deductions from wages. We should say much would depend upon the time over which they were spread, and upon the evidence producible of the assistants' repudiation of them.

Studio Lens.—I have a small studio, and would like to know of a suitable lens for use in same to cover ½-plate for portraiture groups and suitable for children. Can you recommend something cheaply that would answer my purpose?—T. L. Fuller.

You do not tell us a vital factor in the case—viz., the length of your studio. If you have a clear working space of 20 feet we advise you to get a 10 to 12 inch cabinet portrait lens as the best all-round instrument for head and shoulder portraits, full lengths, and quite small groups (children) in the studio. For outdoor groups you will usually want a lens of greater covering power. For this you can choose an anastigmat of *f*/6 or *f*/7 aperture from the lists of makers given on page 1343 of the "Almanac."

Enlarging Lens.—I have an anastigmat lens, 14 x 12, *f*/7.5, focus 14½ in. I wish to make enlargements by daylight from half-plate up to 20 x 16. Will this lens be the best to use (I will have plenty of room), or would it be better to have a smaller lens, say half-plate of the same or similar make, to get the best quality of enlargement?—J. M. M.

For the lens mentioned you want nearly 7 ft. from negative to easel, and if you have room enough the lens should work well. A shorter-focus lens of larger aperture might be more convenient, not merely in regard to room, but as regards exposure. One of about 10 in. focal length would be best, and we should not recommend anything under 8 in. Long focus is an advantage, and only gives trouble when a condenser is used as well.

Test for Potass. Cyanide.—I shall be much obliged if you would tell me what material I could use which would enable me to tell when I had completely destroyed the effects of potassium cyanide or completely eliminated same from other material. As an example, I want to mix potassium cyanide with powdered rock, then later to extract same, and I am anxious to put the powdered rock under a delicate test to assure myself that the cyanide has been destroyed or eliminated.—H. G. H.

Dissolve a little ferrous sulphate and ferric chloride in water, and add some of this solution to a portion of the extract to be tested. Make strongly alkaline with caustic potash, and boil in a test tube. Cool and make acid with hydrochloric acid. If cyanide is present, a deep blue precipitate of Prussian blue or bluish-green solution is obtained, the latter if the quantity of cyanide is minute. A much more delicate test has been recommended as follows:—Saturate filter paper with 4 per cent. alcoholic solution of guaiacum; allow the spirit to evaporate; moisten the paper with ¼ per cent. solution of copper sulphate, and allow solution to be tested to trickle over. Deep blue colour indicates cyanide.

Photographs on Metals.—Would you be kind enough to let us know if there is a process by which we can put photographs on metal, so that once the photograph is on the metal it will be permanent.—B. B.

You can, of course, use the double-transfer carbon process, or print from a positive direct on to the metal plate by the powder process. This latter method requires considerable skill and practice. The most suitable powders are those of silver or aluminium metal. The results, by either process, are perfectly permanent. The sensitiser in the powder process is a solution made as follows:—

| | |
|---|---|
| Gum arabic | 60 grs. |
| Glucose | 45 grs. |
| Glycerine | 10 mins. |
| Potass bichromate | 30 grs. |
| Water | 2 oz. |

The plates are coated with this mixture, dried by gentle heat, and printed under a positive transparency from ten to fifteen minutes in the shade. The picture is "developed" to full depth by dusting over the fine powder, first allowing the plate to stand for a few minutes in the air to absorb some moisture.

Studio.—I am offered an old building to utilise as a studio 16 ft. long, 13 ft. wide, and 14 ft. high, the roof being nearly flat. I can only alter to put in a N.E. window 8 ft. x 8 ft., which would have to be of ground glass, and a top window 12 ft. x 6 ft. of clear glass. Do you think I can obtain good photographs with this light? The walls are of stone. What colour would you advise me to use for colouring, and what blinds would suit me best?—Constant Reader.

The only drawback to the use of the room you describe is its shortness, otherwise it should answer well for portraiture. You will have to use a short focus lens (say 8 inches) for full-length cabinets, but larger lenses should be used for half-lengths and heads. We should not put in any top light, but be content with a high side light. If you could make your side light commence at 4 ft. 6 in. from the floor, and continue to the top of the side wall, it will correspond to Mr. H. P. Robinson's "Studio of the Future." If you cannot have the light so high, you will be able to do good work with the 8 ft., starting at 4 ft. or 4 ft. 6 in. from the floor. Having no top light, you will only require two sets of curtains—one set of close white muslin and one set of dark green sateen. The walls should be distempered in any quiet tint, sage green or dark buff being as good as any.

arious.—3. I have a stereo camera, lens separation 3⅜ in. Is not this too much? Will not the perspective be exaggerated and unreal? 4. Is there a cheap manual dealing with the optical side of stereoscopic photography?—Stanley Roberts.

1 and 2. A considerable amount of colour correction is given, but sometimes a light screen will further improve the results. Much depends on the subject. 3. It is too much for very near objects, but not out of the way for more distant ones. The best separation for a camera used for general work is from 3 in. to 3¼ in., but for near objects this must be reduced, not more than 2 in. being required for some subjects. For near work you want an adjustable separation. The perspective is not affected by the lens separation, but by the mounting separation of the prints. The idea that lens separation affects it is a myth of the textbooks. The real trouble is this: If the lens separation is too great for the distance of the object, then it is impossible to mount correctly in some cases, while in others the prints have to be cut down very much to get them the right distance apart. See the "Almanac" for rules with regard to mounting. 4. We know of no book that deals especially with the optical side in an accurate fashion, but a good little general book is No. 98 of the "Photo-Miniature." The optical side has been dealt with very fully lately in a series of articles in the last two volumes of "Photo Notes," and you may be able to obtain all the articles on the subject from the Rotary Company, Ropemaker Street, E.C.

Developers.—(1) I am wanting to use a pyro-metol developer from my usual pyro-soda developer. I keep the carbonate and sulphite together, and make a 10 per cent. pyro stock. Would you kindly tell me how much dry metol to mix when making the pyro stock, the correct way of mixing, and would it affect the metol if I used nitric acid for the pyro preservative instead of metabisulphite of potash? (2) In a metol hydroquinone developer, where caustic potash is mentioned, can this be replaced with satisfaction by using the same amount of carbonate soda? (3) Also kindly state if carbonate potash in a metol-hydro developer can be replaced with carbonate soda in the same amount, and what advantage can be gained by using carbonate potash. The formula in which carbonate potash is mentioned precedes sulphide toning, not the hypo-alum process.—C. Wallis.

(1) Replace about one-half of the pyro by metol. The metol will require sulphite or metabisulphite as preservative. Nitric acid is not a suitable preservative of metol. We have not tried making a pyro-metol stock solution so strong as 5 per cent. of each, and should expect the metol to give trouble by separating. If you require a pyro-metol formula, why not use that either of the Ilford or Imperial Company (pp. 805 and 811 of the "Almanac")? (2) No, you must use a greater quantity of the carbonate. (3) A greater quantity of soda carbonate cryst. must be used. Compare makers' formulæ. As regards results, there is no appreciable advantage in using potass. carbonate except that it is a little readier to dissolve; on the other hand, it varies in strength considerably more than soda carbonate cryst.

Reducing Bromide Prints, etc.—I have a number of prints to supply in bromide (toned), and certain of them are over-developed. Can you tell me how to reduce them? I have tried ferricyanide and hypo, and, while the result is quite good while they are black, they do not recover again in the toning. I enclose one as sample. the half-tones seem bleached out, yet if they had been wanted untoned they were quite satisfactory, and not reduced too much. I may have used too much ferricyanide potass., as I did not know the proportions. Can you say if it is possible to reduce them when they are to be toned, and give the directions? The toning is ferricyanide of potash and sodium sulphide. 2. Can you give me any hints on the use of "ortho." plates, and whether the yellow screen is fixed on the back or the front of the lens? Is there much advantage in using these plates for copying oil paintings and water-colour drawings? Some of them have not much colour in them. 3. I should be glad if you can tell me the cause of the bromide developer throwing down a deposit of a sort of crystal after standing a day or two. It is metol-hydroquinone two-solution developer, and made exactly to formula, with boiling water, as I have no distilled. Sometimes it remains clear, at others has this deposit.—Central.

1. The reduction of bromide prints is nearly always unsatisfactory, but your specimens strike us as being as good as possible. Naturally the colour is lightened, as some of the silver has been removed, but you cannot expect better results than those you have sent to us. 2. The yellow screen can be fixed at either the back or the front of the lens, but the latter is perhaps the best position, as the filter is less likely materially to upset the focus of the image. Certainly you want these plates for copying paintings; such work is one of the things for which they are most necessary. You had better study "The Photography of Coloured Objects," by Dr. C. E. K. Mees. This will give you all the information you want. 3. The deposit is probably only due to the use of hard water. Use water that has been boiled and allowed to stand until the deposit has settled down, or, if you have a hot water supply handy, draw the water from the hot water tap instead of from the cold supply.

Commencing Photography.—I shall be most grateful if you could kindly give me your advice in the following matter:—I have just come down from Cambridge, and am seriously thinking of taking up photography, or rather, I should say, only portraiture photography, as a profession. I have been a keen amateur for the last ten years, and quite think I have a bent towards that kind of work, and only enjoy doing it from an artistic point of view. As a profession, of course, I know nothing about it, but if I did decide to take it up I should go through a course of lessons. What I really want to know is, what are the prospects? I should not think of having a shop, but only a studio, and limit my work to portraiture. I imagine London would be the best place to start in, as all the work in the provinces is done by those who keep shops, I suppose. I rather thought of going through a course of lessons at the Polytechnic School of Photography, or would you advise me to go to a studio as an apprentice? I should be grateful if you could also give me an idea as to the amount of capital one would want to start upon. If, then, you could let me know (1) the prospects, (2) the best place to get a thorough training, and (3) about the amount of capital necessary for starting, I shall be very much obliged.—H. C. S.

You are in the position of many others who think that because they have talent for photographic portraiture on the artistic side that therefore they will do well to take it up as a living. We can tell you that unless you possess considerable business ability you are not likely to succeed. Whether you work in a semi-private way only in a studio or establish the usual premises, you will have to solve the problem of getting sitters. Answering your queries:—1. Not at all rosy. 2. Apply to the Photographic School, Regent Street Polytechnic, W. 3. Say, £100 to £200 for outfit for starting in a modest but nice way, and £100 as working capital. Our final advice to you is to obtain from our text and advertisement pages some further insight into the present condition of the photographic business before deciding to enter it.

R.P.S. Exhibition, Etc.—Your kind assistance in the following will be greatly valued:—(1) Re forthcoming Exhibition of R.P. Society. Sect. 1. Pictorial. No comment. Sect. 2. General, including Portraits, etc., "intended to show possibilities of craft, will be selected for technical excellence." You have no doubt seen the prospectus issued. Is it possible to give a definition or show the dividing-line between the two, so as to guide one in sending exhibits? Could you describe a style of portrait that shall be considered pictorial and one general, or may not a portrait, rather should it not—if pleasing—whether by lighting and dress, be effective coupled with correct exposure, good line in posing? Should that not be as much a picture ("Pictorial") as of general excellence, and can it have excellence of technique without the former? (2) How can such a portrait, combining both, be set against and judged with such work as landscapes, architecture, lantern slides, etc.? (3) Would such a portrait, known as sketch or pencil point, be considered as better placed in Section 1 or Section 2? (4) If exhibit is taken by electric light, would it be advisable to so describe? (5) A portrait taken by one who owns his own studio, but formerly an employee (in the position as manager). Could such a photograph be exhibited without his late master's consent and without the client's consent? (the latter's consent could be obtained).—J. Croot Tucker.

(1) We think it is not possible to draft a definition other than Section 2 aims to include exhibits which represent the craft of photography. Of late much of the excellence of the results in the pictorial section has been produced by purely hand methods, which are not photographic in their nature, and certainly the results have not been of a kind which are good photographically. You must consider what are the essential qualities of photography—rendering of detail, range of gradation, etc.—and aim to secure these in exhibits intended for Section II. Certainly the results may be as pictorial as those in Section I. Nobody ought to complain if they are, but we fear we cannot specify a type of portrait eligible for one class or the other more precisely than we have just done in answer to your general question. Certainly a portrait may be technically excellent without possessing any pictorial quality—*e.g.*, the portraits made in police departments for the registration of criminals. (2) We cannot see that the judges in Section II. will have greater difficulty in distinguishing exhibits (of miscellaneous subjects) for technical excellence than will those in Section I. in doing the same for pictorial excellence. (3) If the results depend upon non-photographic work, we should say Section I. (4) There would be no objection to describe the entries as examples of artificial light work. We should say that fact would be considered by the judges in selecting or making awards. (5) It matters not by whom the portrait was taken. No one but the sitter who paid for it in the ordinary way has the right to exhibit it or cause copies to be made for exhibition. Obviously a sitter may allow a former employé at the studio to exhibit the portrait, though whether the consent of the former would be necessary (for the former employé to do so) raises a question of contract. Such contract may be in writing or may be implied, and we should incline to the view that the former employé is not entitled to exhibit work done for his former master without that master's consent.

◆

Birmingham Young Men's Christian Association Photographic Club.—The above club has recently been formed, and has commenced operations with a strong membership. An interesting and varied programme is in course of preparation, embracing trips, lectures, demonstrations, etc. The support of a number of influential men as lecturers, etc., is promised, and the prospects of a successful season are exceedingly favourable. The honorary secretary is Mr. G. O. Smith, and communications addressed to him at the Y.M.C.A. Buildings, Dale End, Birmingham, will receive prompt attention. Offers of help in any photographic direction will be greatly appreciated.

Royal Photographs in Schools.—The Finchley Education Committee, at their last meeting, had before them a recommendation from a sub-committee that framed photographs of the King and Queen should be supplied to the schools at a cost of 12s. 6d. each. Councillor Eckert opposed the recommendation, because he could not see what educational advantages would follow.

Councillor Todd thought it was a good thing to teach children their present-day history, in preference to some of the past, musty history which they obtained in the schools.

Councillor M'Master said their object was to induce patriotism but he believed that photographs would have a contrary effect leading in later years to "Mafficking." He had another objection, on the ground that this was typical of a great deal of expense in connection with education, which was open to serious objection.

Councillor Royston thought the discussion was likely to cast a slur on the head of the State. Whilst England was governed by a King and Queen it was of educational value that photographs o the monarchs should be placed prominently before the children They respected King George and Queen Mary, not so much because they were ordinary man and woman, but because they happened to be the King and Queen of England to-day.

Councillor Rabbidge said every human being owed a duty to the nation. He was an admirer of the King, because he was the incarnation of the nation.

The committee agreed to the recommendation, but decided to purchase better frames for the photographs.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2654. Vol. LVIII. FRIDAY, MARCH 17, 1911. Price Twopence.

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## SUMMARY.

The last day for receiving advertisements for the "B.J." Colonial and Foreign Number is Friday next, March 24.

The annual report and the discussion thereon of the Professional Photographers' Association is published on page 197. The Association is sparing no pains to repeat the success of last year in the Congress to be held from May 15 to 19.

In a contributed article, Mr. D. Berlin deals with the practical use of the card-index in a photographer's business, describing an economical outfit and the methods to be followed in tracing orders to their completion and enabling the photographer readily to keep himself informed of the business done. (P. 191.)

In the production of coloured photographic portraits at the present time it is the most highly finished work which is most worth pushing. (P. 190.)

A cutting board, which does not blunt the trimming knife, is readily made from sheets of soft paper pasted down one on the other. Such a "board" will itself keep in use for a long time, and will not dull the edge of the trimming knife. (P. 190.)

The recent policy of the judges at the Northern Exhibition is the subject of "Correspondence" on page 205.

Dr. H. D'Arcy Power has published further particulars and working details of the method of producing lantern slides or other positive transparencies direct, either from other lantern slides or from originals photographed in the camera. (P. 194.)

Simple elementary instruction in the Bromoil process is given by a writer in the "Journal" of the Philadelphia Photographic Society. (P. 195.)

Writers of photographic and other text-books might advantageously take a hint from a recent book on a mathematical subject, to which reference is made in a leading article on page 190.

The South London Photographic Society's exhibition is now open until April 8, in the South London Art Gallery. (P. 199.)

Cameras for reproduction work, a stereoscope for X-ray photographs, etc., are among "Patents of the Week." (P. 200.)

The automatic etching of intaglio half-tone plates, the production of labels by photo-mechanical methods, etc., figure under "Photo-Mechanical Notes." (P. 198.)

Some hints on corks and stoppers for bottles are given in a note on page 190.

## EX CATHEDRA.

**The Exeter Convention.** The twenty-sixth annual meeting of the Photographic Convention of the United Kingdom will be held, under the presidency of Mr. J. B. B. Wellington, at Exeter, from July 10 to 15. Mr. F. A. Bridge, whose unceasing services to the Convention as honorary general secretary cannot be over-stated, sends us a preliminary prospectus, from which we see that excellent headquarters for the meetings have been secured at the Barnfield Hall, where will be held a trade exhibition, in addition to one of photographs contributed by the Exeter Camera Club, the Plymouth Photographic Society, and the Torbay Camera Society. A series of attractive excursions have been arranged, including one by special steamer from Totnes down the Dart to Dartmouth. Among the papers to be read will be one by Mr. Alfred Watkins on "The Undue Multiplicity of Brands of Plates"; another on "Some Curious Points in Photography," by A. W. Clayden, and a third by Messrs. J. Keane and S. J. Taylor on "Night Photography." Special facilities will be granted to the members in respect of photographing in the cathedral and in many of the unique churches of the city. Those who can make it convenient will find the Convention week an enjoyable holiday in itself, or a pleasant introduction to a further vacation among the many picturesque towns and villages of the West Country. Copies of the provisional prospectus may be obtained on application to Mr. Bridge, at Downshire House, Barry Road, London, S.E.

* * *

**The Colonial Number.** The issue of the "British Journal" for March 31 is now practically complete as regards its editorial contents, whilst one week only remains for the receipt of further advertisements. The last day for receiving displayed announcements is Friday next, March 24. The solid commercial value of these special issues of the "B.J." has, we are glad to say, been most emphatically endorsed by practically every firm in the trade. The "B.J." Colonial, No. 4, is already assured of offering to its Colonial and Foreign recipients a collection of announcements by British firms unequalled in the annals of photography. We may be excused for saying once again that every one of the individuals or firms in the 5,000-list to which this issue is posted direct is a buyer in quantity of photographic goods, either for use or re-sale. And we have been gratified by receiving numerous requests from photographic firms in all parts of the world for a copy of this issue to be sent them. This, in response to our publishers' offer made in the "B.J. Almanac" and elsewhere. The substantial return in orders from announcements in previous Colonial issues is now adequately recognised by manufacturers and factors, who realise that the number is speedily brought before an immense circle of buyers:

buyers, too, who are waiting to see what is the latest and best on the English market.

* * *

**Coloured Portraits.** Probably at no time since the introduction of photography has so much high-class coloured work been produced as at present. The suitability of the matt surface of platinum papers and the certainty of a permanent basis have encouraged really clever artists to take up the work, and we are glad to say at remunerative prices. Many of our best photographers are now paying more to the colourist than they would have asked for the complete picture a few years ago, but, fortunately, they have learned that there is "always room on top," and that there is a class of patrons willing to pay a first-class price for a first-class article. Not many years ago we knew a West End firm which charged five shillings for colouring a cabinet portrait, and paid the colourist *fourpence*. This seems profitable enough, but it is better business to pay the colourist one guinea and get four or five for the picture. Coloured work on opal glass has now almost disappeared from the photographer's showcase, why, it is difficult to say, since no basis, except ivory, is capable of giving such soft and delicate results. If the photograph be produced by the carbon process there is no doubt as to its permanence, and with an insoluble substratum there is little risk of the blistering or splitting which sometimes occurs when single transfer is used. Above all, only pigments of known permanency should be used for colouring high-priced photographs, and the tendency to save time by using washes of fugitive dyes avoided. A well-known miniature painter once said to us: "The flesh tints in my work will look as well as, or even better in a hundred years than they do now." That is the spirit in which the production of coloured photographs should be undertaken. It will bring its own reward to the man who does not expect to make his fortune in one year or in two.

* * *

**Corks and Stoppers.** Photographers are very apt to exercise a false economy in the matter of corks; any old cork being considered good enough for use, regardless of the fact that it may be contaminated with other chemicals, or possibly be a very bad fit. Good quality natural corks are expensive, but the artificial compressed or "Suberit" corks, now so largely used, are very cheap and often better than the natural variety. They are not so porous, and do not contain the large cavities that are often to be found in natural corks costing more than twice as much, and, therefore, they may be considered more reliable while their low price permits us to throw away stained corks without any compunction. A good "Suberit" cork is nearly as air-tight as a rubber cork, and far more so than the average stopper. Though stoppered bottles are much in favour with photographers it should be remembered that a stopper is never air-tight unless it is carefully ground into the bottle, and this is only the case with the best quality bottles. In cheap bottles the stoppers are merely selected as they seem to fit, and grinding in is only effected with misfits, and then not very well. It is quite an easy matter to grind a stopper into its bottle with the aid of some carborundum powder and water, provided a large stopper is selected that will only just enter the neck. For a perfectly air-tight fit nothing is so effective as a rubber cork, but, unfortunately, this cannot by permanently used as it has a habit of adhering to the bottle if left in for a long time. A cork soaked in melted paraffin wax is better for permanent use. Stoppers are, of course, necessary for some solutions, such as acids, ether, ammonia, etc., but they have an unpleasant habit of flying out of ammonia and ether bottles. The best remedy for this in the case of stock bottles that are little used is to squeeze a little rubber solution over the stopper. This forms an elastic film that is strong enough to keep the stopper down in ordinary circumstances, yet serves as a safety valve if the pressure becomes very great. The film is readily broken when the bottle is required for use, and quite readily replaced if a tube of solution is kept handy.

* * *

**Cutting Boards.** Now that so many excellent print trimmers are available, the cutting board is of less importance than it was, still it is useful to have one always available for extra work and for prints that may be too big for the trimmer. We must, however, advise readers to ignore glass or zinc for the purpose of cutting upon. Though both are often advocated, the one turns the edge of the knife at every cut, while the other most effectually blunts it. Zinc is, as a matter of fact, a very excellent substitute for a hone, and many carpenters use the metal in preference to a stone, as it lasts much longer. It is true it is generally used with oil, and sometimes with a little fine emery or carborundum powder as well, but without these it is still a very effective sharpener, and, therefore, also one of the most effective blunting materials when used as a cutting board. Cork has been recommended as a substitute, and also linoleum. Both these are very serviceable provided the knife is sharp and the paper thin, but for general use we know of nothing so good as a paper slab. The paper used must be soft, for hard strong papers, such as are used for drawing purposes, are nearly as effective in blunting a knife as is zinc. It is perhaps not generally known that a piece of Whatman paper is an excellent polishing material for metal, and even a fairly good knife sharpener if used like a razor strop. Such papers must therefore be avoided and something of softer type used instead. Damp a sheet and lay it down on a level surface, taking out all crinkles with a roller squeegee. Then paste it and lay down another sheet over it, squeegeeing this down in the same way. Continue until a slab about one-eighth inch thick is produced, and when dry the cutting board is ready for use. Thin card may be treated in the same way, and this will produce a stiffer board of a greater thickness in less time, but the card must be thin, otherwise the board will be too soft. Bristol board is also suitable, but expensive. When the surface becomes cut up and grooved by the knife it should be smoothed down with fine glass paper, and then a few more sheets of paper or a sheet of card pasted down makes the board as good as new. If gelatine or thin glue is used instead of paste an extremely stiff board is obtained that will stand a lot of wear and will not bend or crack.

## A MODEL TEXT-BOOK, AND SOME THOUGHTS ON OPTICAL AND CHEMICAL MANUALS IN GENERAL.

Our attention has recently been directed to a little book that fairly deserves the description of a model text-book, and may well be taken as such by other text-book writers. Its title is "The Calculus Made Easy," and the author, who signs himself simply F.R.S., has not only made the calculus easy but interesting and even amusing. To most students of elementary mathematics the calculus is an enigmatic nightmare. They do not know what it is or what it is useful for, and when they consult a book to find out, after an hour or so they give up in despair, for the author does not condescend to explain. It is quite the contrary with this new book, for at the start it gives a clear idea of the purposes the calculus fulfils, shows that it is an interesting subject, and grips the reader's attention so closely that he finds it difficult to put the book down. In an hour or so the most thick-headed student can gain a very good insight into the essentials of the differential calculus, and will find himself working with ease at problems which before were beyond his comprehension altogether. The book contains a prologue and an epilogue and apologue in which the author speaks his mind very plainly with regard to the general type of text-books on the subject. In an amusing but very telling fashion he suggests that subjects are often obscured and their natural difficulties emphasised in order that the writer may reveal his own cleverness. He frankly admits that in writing this book to show that the essential features of the differential and integral calculus are very simple and easy to understand he has committed the crime of giving away trade secrets, and will incur the wrath of fellow mathematical text-book writers if they find out his identity. Out of curiosity we have, after reading his book, referred to other text-books on the subject just for the sake of seeing how far his remarks appeared to be true in regard to his own particular subject, and the result was not only confirmatory but appallingly so. The facts that he explains so clearly in a dozen pages are buried in these other books in a mass of quite irrelevant talk, and to arrive at essentials one has to plough through page after page and chapter after chapter. The calculus is, of course, of great service to photographic investigators, for little can be done without its aid in either optical or chemical work. The book we have referred to is, however, not only of value to photography for its own sake, but also on account of the fact that its method of imparting information is one that might well be followed by writers in other subjects. One cause of the badness of general text-books on science is the malign influence of examinations. Those who wish to study either optics or chemistry will be well advised to shun any books which are ostensibly written for examination purposes, especially when the word matriculation appears on the title page. Such books, if dealing with chemistry, will ignore modern chemical theory altogether, while if they are devoted to optics they will consider only impossible lenses of infinite thinness and ignore all theory that is of real practical use. The cause of all this is, of course, the facts, first, that such books are only written to meet the demands of the syllabus of the examination, and, second, that the syllabus in question is hopelessly out of date. Unfortunately, however, English books which are not of necessity restricted by any syllabus are very little better. The more modern chemical text-books (we are referring to English ones alone) include a chapter on ionic dissociation, chemical equilibrium, and the physics of chemistry, but when that chapter is done all these modern theories are calmly ignored. The optical text-books do generally include some slight consideration of thick lenses and sometimes touch very diffidently on the theories of pupils, etc., but they do not apply these theories when they come to describe actual instruments. The fact seems to be that the books are the works of theoretical scientists who have little or no first-hand knowledge of the matters they deal with. The chemist has only read about the theory of dissociation, but has never applied it on his own work. The optical writer has learnt from others how lenses work, but never analysed the details of their working himself on the optical bench. Further than this, it is only too often evident that he has never used the majority of the instruments he describes. A most unfortunate characteristic of optical text-books is the manner in which so-called geometrical optics and physical optics have become dissociated. The wave theory of light is practically ignored in many books on geometrical optics, though, as a matter of fact, it is far easier to explain and understand the action of lenses upon real wave-fronts than it is to describe the manner in which they affect imaginary light rays. Writers on photographic optics might well bear this in mind: if they will only take the trouble to think the matter out they will find that the free use of the wave conception simplifies the whole subject of lenticular optics.

# THE CARD INDEX FOR PHOTOGRAPHERS.

Of all businesses to which the card system of keeping accounts and records lends itself with beneficial results, photography must be one of the most striking examples. And to none, probably, can it be more easily adapted without interfering with the existing routine. Naturally, before taking such a step as to start this system, a man will want to know the advantages, and something of the cost. Certain of the advantages have been already stated in previous articles; but I wish to show that the card index is the method above all others for the man who wants to avoid unnecessary work and trouble, either because he is unacquainted (as many photographers are) with the mysteries of "Dr. and Cr.," or because he believes that book-keeping is an unproductive part of the business.

In the first place, the customer's name, address, and order are written once, *and once only:* the most unbusinesslike of photographers does this much. Then the one special advantage to photographers is that for the frequent occasions on which one has need of referring to an order—numbering negatives, posting proofs, instructions to printer, etc., etc., etc.—the entry is found instantly, whether the order is a day or months old; moreover, in the case of re-orders, the entries can be found in a couple of minutes, however long ago the sitting may have been. Compare this with the hours of searching through old day-books for numbers under the old system. Note also that the customer *need not quote a number* from the back of mount, and thus all the work and trouble connected with numbering of prints and mounts is done away with. Besides this, one has always a complete record of the whole order in the same place.

### The Outfit and its Cost.

I need hardly describe an index box and cards, except to say that the size of card in most general use is 5 x 3, which is stocked either plain or ruled "oblong." Having decided on the size of card likely to be most useful (bearing in mind that both sides of the card are available), a box should be obtained about fifteen inches long, wide and deep enough to take the cards easily. For a cash business two sets of alphabetical index cards will be required, but where credit is given a third set is necessary, and if desired three separate boxes can be used with advantage.

These sets can be easily made, or they can be obtained in stock sizes from commercial stationers. Besides the alphabetical guide cards, a few others will be required, marked "Sittings," "Proofs Out," and so on, according to the nature of the business. The use of these will be seen shortly.

A useful accessory is a loose block of wood of the same dimensions as the cards and a couple of inches thick. This is pushed against the pile of cards, and prevents them slipping down. It is better weighted with lead, either nailed to the bottom or let in by boring holes.

Where many sittings are by appointment, a separate box with two sets of guide cards marked with days of the week will be an additional time-saver, as will be seen. These two sets should each have a larger guide card marked respectively "THIS WEEK" and "NEXT WEEK."

A dating stamp, to be changed every morning, is an inexpensive and almost indispensable part of the time-saving outfit.

### Card Equipment.

Before going to the expense of having cards specially ruled, I offer the following suggestion. Some plain cards should be obtained, and also a "cash-ruler," which is a device for ruling cash columns by hand, and consists of a small bone roller with three raised rings working against an ink pad. Held by the handle, and used like a pen with a straight-edge, it rules three lines at once. It costs a shilling. With it cards can be quickly ruled in various ways, until the most suitable arrangement is found for the general run of the business. A suitable ruling to start with is shown in "Mr. Harry Jones's" card (Fig. 1). A boy can rule a few hundreds like this in a very short time. When the ruling is finally decided on, it is a great convenience, if one cares to go to the expense, to have printed in suitable positions such words as "Proofs sent," "Account rendered," etc., etc., against which the dates can be printed with the dating stamp, or rubber stamps may be obtained with such wordings.

The prices of index cards are about 1s. per set in plain alphabetical, weekly, etc., while subdivided alphabetical sets cost proportionately more; but these will not be needed, except in a large business, or perhaps for the final box, where the "delivered and paid" cards are placed. The latest refinement in index guides is a slip of thin transparent celluloid folded over and fixed to the "tab" to protect it from wear. This idea was probably borrowed from "photo. buttons." Personally, I should think guides of thin aluminium, with embossed letters, would be a great improvement over cards.

The refill cards as sold for card indexes cost 4s. to 6s. per 1,000, plain; and from 6s. to 10s. per 1,000, ruled. The cost of ruling is regulated by the fact that each colour must be done separately each way of the card. I think that, if fair quantities be ordered, the cost can be greatly reduced by having the cards ruled in the sheet (25 x 20), and having them cut afterwards. Any commercial stationer or lithographer will undertake this.

### The Index in Use.

Having considered the outfit and material, let us now see how it works, and note carefully the time it saves "all along the line." The best way to do this will be, perhaps, to follow one or two orders through.

Let us suppose it is Thursday, June 1, 1911, and Mrs. William Smith (a not uncommon name) makes an appointment by letter or otherwise for "next Monday." A card is taken, and at the top is written:—

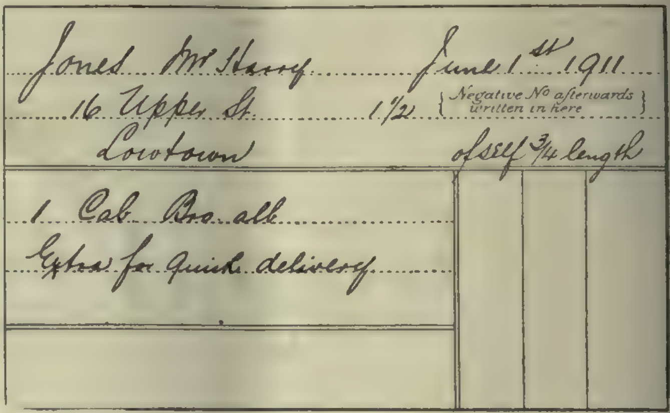
Smith, Mrs. William,
5, High Street,
Lowtown.

In pencil a note is made as to the time of sitting and any details of what the lady is likely to require.

The card is then placed in the small "appointment box" in the index for "Next Week" behind the guide card "Monday." This procedure is at least as quick as entering in a diary. We can now for a while forget Mrs. Smith, and attend to a cash customer.

Mr. Harry Jones wants his portrait taken, and a print tomorrow, if possible; he is applying for a situation, and has to send a photograph.

The up-to-date receptionist offers to have it ready the same night, or first thing next morning, for a small extra charge—Agreed. A card is made out as follows, and stamped with the date:—


Jones Mr Harry June 1st 1911
16 Upper St. 1/2 {Negative No afterwards written in here}
Lowtown of self 3/4 length
1 Cab. Bro. all
Extra for quick delivery

The card is then placed, as there is to be no proof, in the first index, the "day-book," behind guide J; the sitting is made, the negative and print put through without wasting time to number negative, print, or mount. When Mr. Jones calls at the stated time, and the print is handed to him, the card is immediately picked out and marked "Del.," meaning delivered, and the date stamp placed against this. The card is then placed aside to await the negative number with the sittings taken in the usual course, and which have been placed behind the first large guide card "Sittings."

It must here be noted that negatives can be satisfactorily stored only in numerical order; there is no other way of finding them readily when required. The man who tries to save time by storing negatives alphabetically, or in classifications, such as "Gents' ¾ length," is only storing up trouble.

Most numerical systems have a different series for each size, and in this method one should have a card marked "Next negative numbers," with a column for each size. On this one can jot down after each day's numbering the next number to go on with.

On the morning after the day we have been considering, the date-stamp having been changed to June 2, the "sitting" cards are taken and marked with the negative numbers as shown on Mr. Jones's card, the 1½ meaning "One half-plate number" so-and-so. Having numbered all the cards and negatives correspondingly, Mr. Jones's card will, of course, be placed in the final box for orders completed and paid, and his negative to be stored away in the usual course; the other cards will be put behind the next guide marked "Proofs," and the negatives sent to be proofed.

As the proofs are sent out, each card is marked "proofs shown," or "proofs posted," as the case may be, and the handy dating stamp again impressed against these words. The cards are then placed behind guide "Proofs Out."

It will be noted that as there will be comparatively few cards from day to day, an alphabetical index for each of these preliminary divisions might make more work than it would save, so in all but the very largest businesses the cards in each division can be kept in an unsorted pack until the proofs come back.

Supposing we now skip a few days to the next Monday morning. Having changed the date stamp to June 5, we reverse the guide cards in the appointment box, "This Week" and "Next Week." If by chance any of the previous week's appointments were not kept, we have the names and addresses before us to follow up. We then examine the cards which are now behind "This Week—Monday," and, of course, find the one of Mrs. William Smith.

When Mrs. Smith comes at (or probably a little after) the time stated, we have her name and address already written, and, after filling in details of the order and the date, the card is placed among the "Sittings"; next day the card and negatives are numbered and the card goes into "Proofs," and so on. When the work is delivered, the card is so marked and placed, if not paid up, in the "Ledger" index behind S.

Now there is no "ledgering up" to be continually put off, no "negative index book," etc., the card is just picked up from one place and put in another, with a word or two added; it is always quickly found and all details upon it.

When sending out accounts, there are no old paid-up orders to wade through, because as soon as a card is paid up it is transferred to the final box.

If an account should be disputed, all the details are instantly before one.

An order received by post should be marked W.O. (written order), and the date of the letter appended, so that the letter can be referred to easily.

Supposing that Mr. Jones in a year's time writes for extra copies, one has only to look in the final box among the J cards for Jones, among the Joneses for Mr. Harry Jones (just as quickly as finding a word in a dictionary); there you find the negative number and the usual abbreviated description of work previously supplied—in this case "One cabinet bromide on album mount."

Should Mrs. William Smith re-order, one has likewise all details of her order, besides such information as to how long she took to pay, etc., etc.—all this instantly, with no cross references, and *no cross words.*

For re-orders some will prefer to make out a new card, some to make the entry on the back of the old one. This must be decided by circumstances or by individual fancy.

### Time-saving in Tracing Orders.

It has still to be shown how the "day-book" box saves much time. In a business with an average of, say, six sitters per diem, and where it takes an average of, say, six weeks from sitting to final delivery of work, one would have to search, in the ordinary book, among some two hundred entries for details of any one order. It is not denied that one will have some idea of whereabouts among those two hundred the entry will be, but still it takes time. In the card index some of these orders will be in one or other of about twenty-seven divisions, and one knows for certain in which division the desired card is to be found. Generally speaking, in the case of the business under consideration, there will probably be seldom more than a dozen cards to look through in order to find one.

Of course, in the case of re-orders from a considerable time back, it will take slightly longer to find a card than amongst current orders; but any card, and with it the negative numbers, should be got at within two minutes easily.

### Cross Entries.

The only time there is likely to be any confusion is in the case of an institution or society where business is done with the secretary or other member on behalf of the whole. In such a case two cards will be desirable, one headed with the name of the society, etc., with a reference to the person with whom the business is done, the other with the man's name and details of the order. Both should bear the date and negative numbers. This is in order that if copies should be required at some future time and the name of the person who gave the original order be forgotten, there will be no difficulty in tracing the order and the negatives.

The writer remembers a case of a photographer in a small country town who had an order for prints from an old negative of a house, since demolished, which had also changed tenants several times. The order had been entered in the name of one of the tenants, whose name and the date had been forgotten. The photographer knew that the negative had been made at the same time as a certain event which "the vicar" would remember. An assistant was instructed to ask the parson for the year in which this particular event occurred, then to go to the house-agent who had had the letting of that house and find out the tenant's name for that particular year. On his return he would have had to search through a huge day-book for that man's order! It was found, however, that the vicar was abroad for six months! Result: loss of the order, and the photographer bullied that assistant for a fortnight. Had the name of that house been indexed, what an amount of worry and time would have been saved, to say nothing of the money lost through inability to find the negative number.

The card system is on all fours with that in vogue in public libraries, where there is a card-index catalogue. A new book (negative) being brought in, it is given a consecutive number; a card is made out for the author with title underneath, and another one *vice versâ.*

Both have the reference number. On examining the index for either author or title, both are found in either place, the number is noted, and the attendant goes straight to the shelf where the book (or negative) with that number is.

Books are divided into classes, of which fiction is usually the largest; negatives into sizes, of which half-plate is generally the most numerous.

In the case of institutions which bear the name of the locality, such as "Lowtown Conservative Club," the index-card would be written as "Conservative Club, Lowtown," unless the negative were merely one of a series of views, when a special card would be made for "Lowtown Views," and on this would be a list of such views and their respective negative numbers.

### Profit and Loss.

Some will now ask how a record is to be kept of business done. The answer is by a cash-book, which, being naturally entered chronologically, may be a bound book and requires no index. A book should be kept on the desk, in which an entry is made of each account as it is paid—merely the name and amount. This may well be a counterfoil receipt book, taking care to date each entry and to label the cover of book, when filled, with the first and last dates. An ordinary cash-book would perhaps be preferable, in which under each date the studio receipts would be entered as above on one side and the petty cash expenses on the other. These items would be totted up each day and the totals entered in the private cash-book under the headings "Studio Receipts" and "Petty Cash" respectively.

The "takings" during any given period can thus easily be seen. The cash owing can be reckoned from an examination of the card-ledger in much quicker time than in the old description, while those accounts which are overdue can be picked out and placed in a small box for "special treatment"; thus none are overlooked.

Should it be desired to dispose of the business, and a prospective purchaser wish to test the accuracy of the reputed takings, he can be invited to pick out any week's receipts in the "private cash book," referring from this to the detailed list of such takings in the "Studio Receipts," of which any or all of the entries can be quickly found in the card-index. Each card will have a corresponding date and amount paid; further, the negatives can be looked out, and on these or their envelopes will be found the number and description of the prints corresponding to the index-cards.

The accounts of a business which will stand half an hour of such investigation as is here outlined can hardly have been "cooked," and confidence is thus inspired. Not only that, but it is found that ordinary customers are pleased, and a good impression is made on them if they are shown how quickly the details of their orders are found without any of the usual vexatious delays experienced where the old-fashioned day-books, etc., are used.

D. Berlin.

# DUPLICATING LANTERN-SLIDES DIRECT BY REVERSAL.

[In our issue of January 13 we published a short paper by Dr. H. D'Arcy Power, in which he described the *modus operandi* of producing positives direct, as, for example, lantern-slides from other lantern-slides, by contact or in the camera, from originals. In the following later paper, also published in "Camera Craft," Dr. Power details further items necessary in the process, which he has brought to a state of practical usefulness. Commenting upon it, our Californian contemporary vouches for the technical quality of the slides produced—a quality which, it states, "could not be improved upon by any other method of procedure."—Eds. "B.J."]

Old subscribers of "Camera Craft" will be aware that, during the past ten years, I have from time to time reported in my department, "A Photographic Digest," various proceedings for making negatives from negatives or positives from positives. Also that I have had to admit that in my hands these methods have failed. There are various reasons why a process of this nature is very desirable. First, there might be a saving of time; secondly, a saving of expense by the elimination of the intermediate negative or positive; and, thirdly, the much more important advantage of retaining a perfect reproduction of the gradation of the original negative. For it must be admitted that it is very rare for a duplicate or enlarged negative to have the full scale of the original, and the same is true of lantern-slides made from lantern-slides or prints. Most efforts to solve the problem revolved around one or the other of two well-known principles: First, if a plate be greatly over-exposed in the camera, the image on development will reverse and finally appear as of the same character as its original. Much experimental work has been done to apply this fact in practice, but with little success. One part of an image reverses before the rest, and the high-lights may commence to re-reverse before the reversal of the shadows is complete, weak and foggy pictures being the usual result. Secondly, if the image produced by development, which consists of metallic silver, be dissolved by a solvent of that metal, and the unchanged residual emulsion be exposed to light and re-developed, a reversed image is produced. In practice this always fails, for the reason that all plates are coated with a film of emulsion much thicker in the aggregate than the part affected by light in ordinary exposure and development, so that even the dense deposit caused by the high-lights of the image does not utilise all the silver bromide of the parts of the plate whereon they fall. This unutilised silver, after exposure to light, develops up into fog and spoils the reversed image. Only when the film of emulsion is of extreme tenuity, as it is in the Autochrome and other colour plates, is it possible to get a satisfactory reversal.

Shortly before his death in 1909, Mr. Douglas Carnegie published* a method of making lantern-slides direct, by taking the photograph through the glass, reversing with acid bichromate and re-developing, but it was only recommended for line subjects. Last year, M. Balagny† suggested a modification of the technique that more than half solved the difficulty. In place of dissolving out the first image, exposing, and re-developing, he washed the plate after the first development and exposed it to the light so that the rays had to traverse the silver deposit of the negative image before that could reach the underlying unchanged emulsion; in this way the dense deposits corresponding to the high-lights effectively protected the underlying silver bromide. After an exposure sufficient to give full density in the shadows, the plate was taken back to the dark-room, the negative image dissolved by acid bichromate, and, after washing out the latter, re-developed. There now remained the unchanged emulsion, which in previous methods had been the source of the fogging. This was easily removed by the fixing bath. Such in outline is Balagny's proposal, and experiment showed me that it gave results far in advance of previous methods; but, notwithstanding the precaution of backing the plate with black paper, there was still some fog. Furthermore, the outlines of the image were laterally reversed. The fog seemed to be behind the image, and could not be removed by Farmer's reducer without first attacking the same. I reasoned that if the picture were taken through the glass, as Mr. Carnegie had advised, although I had forgotten his technique at the time I experimented, the lateral reversal would be avoided, halation from the glass would be impossible, and any surface fog that might form would be accessible to a reducer without interfering with the deposit of the image.

It so happened that just at this time I had occasion to make a number of lantern-slides to illustrate a lecture on photography as a fine art, and most were to be copies of carbon prints, photogravures, and good half-tones. I needed a most exact reproduction of the tonality of the originals, and a process that would give me copies by one step, instead of two, promised a saving of at least one-half the usual deterioration. I started in, and for a while results were beyond all expectation. But presently troubles appeared; some slides were too dark, and others too thin. Some showed very marked yellow coloration. It was evident that the factors of each stage needed study. There were the following points to consider:—1. The length or strength of the first exposure. 2. The depth of the first development. 3. The second exposure. 4. The nature of the reversing bath. 5. The clearing bath.

The first two factors are best considered together. It must be remembered that the first or negative image is to be removed, after which the residual silver will form the permanent positive image. If the first image is too dense, it will leave, on removal, too little emulsion wherewith to form the second, and the resulting positive will be too thin. If, on the other hand, the first image is too thin, the final positive will be dense and dull. This is the problem of the Autochrome development, and every colour plate worker is familiar with it. In lantern-slides, such as Lumière's and Seed's, the correct development is that which shall give a full detailed picture on the emulsion side (being exposed through the glass, the image builds from the glass upward). But it is not only necessary to have correct development; there must be equally correct exposure. If the exposure is too short, the final result will be hard; if too long, matters will be still worse, for, though we cease developing when the image has attained a certain density, there will remain over a residuum of undeveloped, but light affected silver bromide, which will not be removed by the reversing bath; and, on the second development, it will appear and cause fogginess and a mixed image. Theory and practice alike demand that the exposure shall be so timed that the development shall tend to stop at the attainment of full density. Of the two evils, it had better be under-exposed than over. In practice, the worker soon acquires the necessary experience; that is, if he understands the why and the wherefore.

Next, let us consider the demands of the second exposure. We have a plate, covered, for the most part, with unchanged emulsion, but being a negative image next the glass, and we expose it to light through the glass. Where the heavy deposit, made by the high-lights, lies, the light penetrates with difficulty; yet in time it will penetrate, and so affect any unchanged emulsion then present, which, on re-development, will fog the image. This is what always happened before Balagny suggested using the negative deposit as a screen. If we under-expose, the detail in the high-lights will be lost, and the resulting image will be weak. In my practice, I find that, with a well-graded and fully developed negative image, about three minutes in bright, diffused light will give a good deposit in the half-tones and not fog the high-lights. I have not found artificial light satisfactory. In regard to the reversing bath, I have found the acid bichromate better than an acid permanganate bath, but the bath should not be used more than twice in succession. It is very inexpensive and easily mixed, and repeated use of the bath leads to yellow staining of the gelatine. The redevelopment may be done with the portion of developer used for the first development; but on no account again use a developer that has been on a reversed plate, or strong staining of the gelatine will ensue. It required not a little experimentation to confirm these facts; but, once determined, I had no more trouble.

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* "B J." July 9, 1909, p 528.
† "B.J." August 12, 1910 p. 699.

Whether I work direct from nature, from pictures, or make slide from slide (without unbinding), I get perfect reproduction of the original gradation. On the other hand, if I require a modification, it is within my reach by an application of the principles I have explained.

I will now give in order the working details:—1. Expose *glass side outwards*, so that full development may be obtained without fogging. 2. Develop for greater density than usual in a negative. 3. Wash for from three to five minutes. 4. Turn film side down in a pan of water, with a piece of black paper next the film, and remove into full daylight for from three to five minutes. 5. Return to dark-room, remove plate, face up, to a bath of one-half per cent. ammonium bichromate, acidulated with one per cent. nitric acid. In three minutes the image will have disappeared. 6. Wash, in dark-room, for fifteen minutes. 7. Re-develop to rather more than required density. 8. Fix in hypo. 9. Should, as is often the case, the surface be soiled by a slight deposit, one much like that on the surface of glossy developing papers, wash over with a little weak Farmer's reducer, and it readily disappears. 10. Wash. The resulting slide should be identical in gradation with its subject. It can be reduced, intensified, or toned, like any other lantern-slide.

H. D'Arcy Power, M.D.

# THE BROMOIL PROCESS.

[The following paper, communicated to the current issue of the "Journal of the Photographic Society of Philadelphia," though evidently written for those quite unacquainted with Bromoil printing, nevertheless contains such a number of notes on the practice of the process that we reprint it in an abridged form. It gives clear and practical elementary instruction in the Bromoil process, which in some respects may usefully be read in connection with existing text-books—viz., that by S. L. Coulthurst and F. J. Mortimer, No. 106 of the "Photo-Miniature," and the chapter on Bromoil by C. H. Hewitt in the "Sinclair Handbook of Photography."—Eds. "B.J."]

The Bromoil process is a modification of the oil process, and, as its name implies, requires the use of bromide paper. This process was discovered and made practical by Mr. C. Welborne Piper.

In the oil process a sheet of paper is evenly coated with gelatine, sensitised in a bichromate solution, either ammonium or potassium, and dried, away from the light. When dry it is placed behind a negative in a printing-frame and exposed to light. The action of light upon a bichromated gelatine is to render the gelatine insoluble in proportion to the amount of light which acts upon it. Applying this theory to our process, we readily understand that the light which filters through our negative renders the gelatine insoluble in the shadow or thin portions and fails to act upon the high-light portions. When the print is placed in water the gelatine representing the high-lights of our picture being unacted upon absorb water, while the hardened or shadow parts have little or no absorbing powers. As a result, there is an image produced in which the shadow parts appear sunken and the high-lights raised, or there is an image in sunken relief—Intaglio. Under the application of a greasy ink to this gelatine surface, the gelatine, representing the high-lights, being swollen with moisture, resists the ink, while the other parts take it up in proportion to the degree of their insolubility. In this way the image is gradually built up.

The bromoil process is quite similar in theory, but in practice several chemical reactions must take place in order to produce the chromated gelatine surface. The exact nature of these chemical reaction is not known. In a general way we may review the chemical changes which take place. Three salts of potassium are used in the bleaching bath, viz.: Ferricyanide, bichromate, and bromide. In addition, ground alum and citric acid are necessary. When the bromide print is placed in the bleaching bath, it loses its black colour and becomes russet in colour. In other words, there has been a reaction, which bleaches the silver image and converts it into a state which permits the action of the bichromate. After washing the print is placed in a sulphuric acid bath, which not only tans the gelatine image, but removes the bichromate and softens the gelatine not acted upon, i.e., the high-lights. The remaining silver in the gelatine image is removed by a fixing bath.

With this very general review of the theoretical side of both processes we may again turn to the practical side, and say a few words concerning the advantages and disadvantages of both. The oil process presupposes the possession of large negatives if work of any size is to be done. It requires sensitising and drying in the dark and the use of daylight for printing. Among the advantages of its use are its cheapness and the ease with which it may be worked. On the other hand, the worker who has little time at his disposal during the daylight hours will find the bromoil process possesses great advantages. All work may be done during evening hours. The prints may be made one evening and the balance of the process carried out on another. Small negatives can be used, doing away with the trouble and expense incident to the making of the enlarged negative. The great disadvantage of the process lies in the chance of failure during some of the chemical reactions which take place. After a few experiments, however, the chance of failure is reduced to a minimum, and you will get a workable image in nearly every print.

Let us assume that the reader, for various reasons, has determined to use the bromoil process. We will consider this process step by step, from the production of the bromide print to the finished bromoil.

The materials needed are few, and, with the exception of the brushes, will be found to be very cheap.

You will, of course, need a negative, and as much depends upon the quality of the negative as in any other photographic process. Especially is this true so far as the beginner is concerned. After the reader has become proficient in the use of the materials he will find that there are few negatives which will not yield good results. At first the negative should be one which will give a rather contrasty bromide print. Remember that it is much easier to tone or ink down a print than it is to remove the ink when once placed upon the print. In other words, a finished print in which the whites have been reserved is much better than one in which the ink has been removed either by hopping or some other means.

Secondly: A sheet of bromide paper is needed. The paper must have sufficient body to withstand considerable soaking in water and chemicals, and also to withstand brush work. It must be well coated with a fairly tough emulsion. A smooth surface is much easier to work upon than a rough surface, and should be chosen by the beginner. Almost any brand of bromide paper will answer the purpose. Experience is the best teacher, and a few trials will soon convince the worker of the workable qualities of his special brand of paper. Some brands and surfaces will not work. It may be due to the hard gelatine used by the manufacturer. The writer's greatest success has been in the use of Eastman's Royal Bromide (smooth). This paper possesses greater body than most, and the emulsion seems to be just right to withstand a rather vigorous brushing.

Thirdly: The chemicals needed are few and inexpensive.

Potassium bichromate,
Potassium ferricyanide,
Potassium bromide,
Powdered alum,
Citric acid,
Sulphuric acid.

The first five of these are used in the bleaching bath, while the sulphuric acid is used in the acid bath. The sulphuric acid is the only one that needs special care in handling. The potassium bichromate is used so infrequently and in such small quantities that there is little to fear of poisoning.

Fourthly: The question of pigments is most important. Upon your pigments more than upon anything else depends, not only the obtaining of a result, but the quality of the result. The pigment must be pure and very finely ground in a medium to a tacky consistency. After considerable experience with home-made pigments and the so-called stiff oil paints, the writer obtained from the F. E. Okie Company, ink manufacturers, in Philadelphia, a few samples of high quality printing inks. A considerable number of experiments with these proved successful, and these inks have been used ever since. Bear in mind that the ink must be tacky and the pigment finely ground. It is softened or thinned quite easily by the use of a small quantity of Robertson's Medium. It should have sufficient dryer in it to dry it in from one to forty-eight hours. Any printers' supply house can furnish a high grade printers' ink in almost any colour.

The photographer is not limited so far as colours are concerned. There are at least forty or fifty colours which can be used. The following list has been found to be the most useful, and a number of them can be dispensed with. Mixtures of these colours will give infinite varieties of tone.

Black,
Sepia,
Warm Sepia,
Ultramarine,
Burnt Sienna,
Burnt Umber,
Dark Green.

Before leaving the question of pigments, it is desired to call the reader's attention to the fact that too much study cannot be given to the inks and their action. A thick, tacky ink will give contrast and a soft ink flatness. Keep the inks tacky.

The brushes are the most expensive of all the materials, and yet this need not deter the photographer from a trial of the process. If proper care is taken of the brushes, the expense is small compared with the amount of use and the length of life of the brush. Good brushes are necessary to do good work, and the best are the cheapest in the long run. The best, and, in the writer's opinion, the only brushes to use, are the genuine French Fitch Stipplers, deerfoot shape, such as are used extensively by china painters. In England special brushes are placed upon the market for the use of oil printers. For general use, where the prints are not larger than 8 x 10, brushes Nos. 5 and 10 are quite large enough. Several brushes should be purchased. It is always well to have several in hand when working, as a clean one is often wanted to take off pigment, or, in other words, to lighten certain portions of the print. Use large brushes wherever possible.

It may be well to write at this time of the care of the brushes. If your work is to be worth anything, and if your brushes are to last, it is necessary to take proper care of them. Do not subject your brushes to hard or rough treatment, and do not let others use them. After finishing your work a dip into turpentine will nearly always be sufficient. If, however, the bristles have become clogged, it may be necessary to wash them with soap and water. After cleaning, the brush should be placed in a paper cone, in order to keep the bristles in proper shape. If the brush is carefully handled and cleaned, there is no reason why it should not last a lifetime.

For the benefit of those readers who are unable to obtain genuine fitch stipplers, a few words may be said concerning the making, or, rather, the adapting of a brush to the process. If a good quality camel-hair brush, round, and about one inch in diameter, be obtained and dipped into a pot of glue and the glue permitted to harden, a file can be used to shape the bristles to the proper angle, say 60 degrees. The glue can then be dissolved out by means of warm water, and when all has been removed the brush will be found to be excellent for the process. The main objection to the use of camel-hair brushes lies in the lack of springiness, which is ofttimes needed for the proper application of the inks.

In addition to the above materials, you will need a piece of glass upon which to mix the pigments, a palette knife for mixing, some good quality fluffless blotting-paper, a tube of Robertson's Medium for softening or thinning the ink, a piece of glass upon which to work, and a small quantity of rags.

### Making the Bromide Print.

The selection of a proper bromide paper is very important. This matter has been touched upon in a previous paragraph, and little need be said further on the subject. Experiment with the different standard makes until you find one that answers the purpose, and use that one only until you have mastered the process of printing in oil. If the reader has little time to spend in experimenting, let him adopt the paper used by the writer after a number of experiments on the different papers. The paper, surface, and coating of Eastman's Royal Bromide are all that can be desired of each.

The print must be the best that can be obtained from the negative; it therefore follows that the exposure must be nearly correct and the development properly carried out. At this stage of the work considerable correction can be made, depending upon the skill of the man. Bromide paper is a much more pliable medium than is supposed by the average worker. Give as near the correct exposure as is possible, bearing in mind that the print is to be slightly blacker than you would ordinarily require in a bromide print.

There is no best developer, but there are right and wrong developers. Use either amidol or hydroquinone-metol. Some workers recommend rodinal, but, as a general rule, other developers do not give results. I have found this to be true, though I am unable to give a reason for it at this time. The writer uses the following metol-hydroquinone developer, because in his hands it has given much better results than any other tried:—

| | |
|---|---|
| Water, hot | 25 ozs. |
| Metol | $\frac{1}{8}$ oz. |
| Hydroquinone | $\frac{1}{2}$ oz. |
| Sulphite of soda | $1\frac{7}{8}$ oz. |
| Carbonate of soda | $3\frac{1}{8}$ ozs. |
| Potass. bromide | 30 grs. |

This is a stock solution, and for use one part should be added to six parts of water. In practice the developer should be used weaker, as this seems to bring out detail, and gives a print that yields better results and takes the ink more readily. A saturated solution of potassium bromide is always within reach, as it is often found to give results that could not be otherwise obtained. This is especially true if the negative from which the print or enlargement is to be made be very thin.

After the print has been carefully developed, it is rinsed in water and transferred to a plain hypo-fixing bath. The fixing bath is often a cause of failure, and an acid bath should never be used. The acid and alum used seem to cause certain changes in the gelatine that lead to failure. In addition to hardening the gelatine, it causes, through this hardening, an uneven bleaching, and this results in uneven pigmenting. The gelatine is required to be in a softened state, and a plain bath is imperative, and its use eliminates a great chance of failure.

After the print has been thoroughly fixed it should be washed until all traces of hypo are removed. If even a slight trace remains in the print when it is placed in the bleaching bath, a chemical reaction takes place, due to the potassium ferricyanide, and failure results. After the last trace of hypo has been removed the print is hung up to dry. Drying of the print seems to bring out in the finished oil print a better quality in the half-tones and high-lights. Be careful not to handle the face of the print with hands that are unclean or oily. This warning applies as much to other after-manipulations of bromide prints as to the bromoil process.

H. Crowell Pepper.

*(To be continued.)*

## THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

The annual general meeting of the Association was held at the Royal Photographic Society, 35, Russell Square, on the evening of Friday, 10th inst. Mr. William Gill, F.R.P.S., President, in the chair.

The minutes of the last annual general meeting having been read and confirmed, the Hon. Secretary read the report of the committee as follows:—

"It is satisfactory to report that an unusual number of new members were enrolled during the past year, viz., 102. This is doubtless in some measure due to the extensive advertisement the holding of its first Congress gave to the Association. Unfortunately the loss through death, resignation, or removal from the register on account of non-payment of subscriptions, has prevented this being a large net increase. The number of members now is 553.

"During the year a third conference was held between representatives of this Association and of the Newspaper Society, with the result that the constitution of a joint Board of Arbitration was settled, but unfortunately the representatives of the Newspaper Society have reopened one of the articles previously agreed upon, that relating to the publication of the photographer's name under the reproduction. Our representatives have not been able to accept the modified article proposed by the representatives of the Newspaper Society, but negotiations are still being carried on, and it is hoped that a satisfactory understanding will be arrived at, and that at an early date a formal deed of agreement will be drawn up and signed by the representatives of both sides.

"The first Congress of professional photographers, under the auspices of the Association, was held from April 9 to 16 last, in connection with the Photographic Arts and Crafts Exhibition at the Royal Horticultural Hall, Westminster, and was generally acknowledged to have been a complete success. The committee wish to tender their thanks to all those within and without the Association who contributed to that happy result. Their thanks are due particularly to Mr. Arthur C. Brookes, secretary of the Arts and Crafts Exhibition, for placing a meeting-room at their disposal, and in other ways assisting them; to Messrs. Marion and Co., for fitting up a studio, and also for an electric light installation; and to Messrs. Griffin and the Westminster Engineering Company for electric light installations. They also warmly appreciated the hospitality of Messrs. Marion, Messrs. Griffin, and the Autotype Company, who entertained those attending the Congress at their respective works.

"The Government Copyright Bill, introduced last session, which will probably be reintroduced during this session, has been carefully studied by the committee, who do not find in it any provision that would seem to be injurious to photographers, and to which they could take reasonable objection.

"The committee regret to find that there is some falling off in the insurances effected by members with the Fine Art and General Insurance Company. This may to some extent arise from the influence the Association's arrangement has had on the tariff offices, which now often accept terms under their usual rates to avoid losing business. The Association's arrangement with the Fine Art and General Insurance Company, under which any existing fire policy may be transferred at 20 per cent. less premium, however, still maintains its advantage.

"That part of the business of the Association which consists in advising members in their business difficulties has been carried on with continued usefulness. Inquiries are often made that do not strictly come within the scope of the Association as a purely trade organisation, but every reasonable application has been attended to. The number of infringement of copyright cases brought to the Association is decreasing, mainly owing to the subsidence of the postcard craze. A better acquaintance with copyright law by the Press may also have contributed to this result.

"The committee deeply regret the loss of their colleague, Mr. Ernest C. Elliott. His extensive knowledge of copyright law, and great experience in the business relationship between photographers and the Press, were of the utmost value to the Association. He held a seat on the committee from the foundation of the Association.

"The thanks of the Association are due to the Royal Photographic Society for allowing the meetings to take place at their house, and to the Editor of the "British Journal of Photography" for publishing notices, reports, and other information relating to the Association. The committee also wish to express their indebtedness to the hon. solicitor, Mr. Percy E. Marshall, for valuable assistance rendered.

"By order of the Committee,
"Alexander Mackie.
"Hon. Secretary."

In moving its adoption, Mr. Alfred Ellis said he considered that the record of the year's work had been a good one. The membership, though not largely increased, still showed an increase, and that was satisfactory. It was to be regretted that the negotiations with the Newspaper Society had not yet been brought to a successful issue. The Committee thought all the points under discussion had been thrashed out, and an agreement come to, but there appeared to have arisen a difficulty with regard to the publication of the photographer's name under the reproduction on the part of a few of the newspapers represented by the Newspaper Society, and the Committee of the P.P.A. had not felt it their duty to the members to give way, so that there was at present a deadlock. They were about to take the individual opinions of the principal photographers who furnished the photographs in the illustrated papers, and he hoped that before long an agreement would be come to satisfactory to both parties.

With regard to last year's Congress, he believed there was not a dissentient voice to the declaration that it had been a complete success. The Committee were now engaged in organising the second Congress, to be held in May next, and the arrangements were in a forward state. There was every reason to believe it would be equally successful. After a short discussion the report was adopted.

Mr. Lang Sims, Hon. Treasurer, then read the statement of accounts. In commenting upon it, he said it would be noticed that the balance at the bankers showed a decrease of about £35 since the beginning of the year. That was partly accounted for by the expenses of the Congress, which amounted to about £27. He was glad to say that since the period included in the account, that is, since January 1, money had been coming in well, and that about £21 of the deposit had already been made up, so that, allowing for the expenses of the Congress, they were really better off than at this time last year. The statement of accounts was then accepted.

The President said the next business of the meeting was the election of a President and 24 members of committee to serve during the ensuing year. He explained that the number of members nominated to fill the offices was not in excess of the number required, so that no ballot would be necessary.

In reply to a question, the Hon. Secretary said that, by the rules, the Committee had to nominate a President and 24 members of Committee, and that every member had also a right to nominate, but no nominations had been received. He also explained that the reason Mr. Gill's name did not appear on the list was that on vacating the Presidential chair, he automatically became the Past President.

The President then asked the meeting to signify their acceptance of the following gentlemen as President and Committee, which was accorded with applause:—

*President:* F. P. Moffat, F.R.P.S. (Edinburgh).

*Members of Committee:*

| *London.* | *Country.* |
|---|---|
| Chase, H. Gordon. | Birtles, T. (Warrington). |
| Corbett, Alexander. | Chapman, H. A., J.P. (Swansea). |
| Dickinson, C. F. | Comley, H. J. (Stroud). |
| Ellis, Alfred. | Hawkings, W. H. (Plymouth). |
| Fry, S. Herbert. | Illingworth, W. (Northampton). |
| Gray, W. E., F.R.P.S. | Kay, N. S. (Manchester). |
| Hana, George. | Lankester, Percy (Tunbridge Wells). |
| Hoppe, E. O. | Protheroe, L. R. (Bristol). |
| Sims, Lang. | Robinson, R. W. (Redhill). |
| Skillman, C. H. | Spink, H. C. (Brighton). |
| Speaight, R. N. | Turner, T. C. (Hull). |
| Whittome, D. Knights. | Whitlock, H. J. (Birmingham). |

The President (Mr. Gill), in vacating the chair, said he would thank all concerned for their support during his year of office, and particularly he had to thank the officers and members of the Committee for their kindness and assistance. The proceedings at their meetings had been of a most harmonious character, and one and all had worked unselfishly for the benefit of the Association. His year of office had been a most pleasant one, and he trusted that Mr. Moffat, his successor, would have an equally agreeable experience.

Mr. Frank P. Moffat having been invested with the badge of office, then took the chair as President, receiving a very cordial reception. After thanking the members for the honour, he said as he lived about 400 miles away he should not be able to attend many of the meetings of Committee. He had raised that objection when the Presidency was offered him, but had been told that this would create no difficulty, as there were always one or more past-presidents present able and willing to act for him. He should, at any rate, be present at the Congress, when doubtless he should have several speeches to make, and on that account he would ask those present to excuse him making a speech on the present occasion.

Mr. Gill moved the resolution, of which notice had been given in the notice convening the meeting: "That the Committee of the Association be henceforward called the Council, and that in order to carry this into effect the word 'Council' be substituted for the word Committee whenever it occurs in the Rules." He explained that this made no actual difference to the work of the Association, but it was usual now to call the governing body of an institution such as the P.P.A. the Council, and the object of the change was only to bring themselves into line with similar organisations. The resolution, having been seconded, was put to the meeting and carried unanimously.

Messrs. C. St. J. Vaughan and F. Wiedhofft were elected auditors.

In moving a vote of thanks to Mr. Gill, who had just vacated the Presidential chair, Mr. Lang Sims said it would be in the recollection of those who had the privilege of listening to Mr. Gill's remarks on taking the chair on this occasion last year, that he expressed diffidence in his ability to fulfil all that was expected of him. Mr. Sims thought he might say for the members generally that Mr. Gill had not only done credit to himself, but had brought credit to the Association; also Mr. Gill's year of office would be a marked one in the annals of English professional photography, and those of the members who were fortunate enough to have taken part in the first Congress of the Association would, he was confident, ever retain an enjoyable recollection of it. It was an undoubted success from start to finsh. For this success much was due to Mr. Gill's conduct as President. None would readily forget his interesting and dignified address, or would have failed to admire his firm grip over affairs. His courtesy and kindness put everyone at ease, and they were all proud of him. He had expressed gratitude towards the officers and Committee for their help during his year of office. They, in return, were grateful to him for that acknowledgment, but would assure him that the success of their united efforts was largely due to the ability of his leadership. In conclusion, Mr. Sims trusted that Mr. Gill would ever remember with gratification his year of office as President of the P.P.A.

Mr. Gill suitably responded.

◆

Cardiff Photographic Society.—We read in the "Western Mail" that the Cardiff Photographic Society has been suspended. This fact will be regretted by local amateur photographers and that portion of the public which is aware of the valuable work achieved by the society during a number of years. It is to be hoped its resuscitation will not be long delayed.

Photographic Apparatus in Persia.—The demand for photographic accessories in Persia is gradually increasing. The favourable development of this trade was greatly prejudiced by the political disturbances of the last few years, as indeed political and economical crises of this kind usually affect articles of luxury first of all. As a rule, cheap box cameras, of a type generally manufactured in large quantities by German, French, and English factories, are chiefly in demand, but even in towns as remote as Yezd, Hamadan, etc., it is possible to find whole-plate stand cameras. On account of the climate only a small number of film cameras are bought, and dry plate cameras are chiefly in demand.—German Commercial Expert at Constantinople.

# Photo-Mechanical Notes.

### Automatic Etching of Half-tone Intaglio Plates.

According to a patent (No. 23,861, 1910) of Dr. Eduard Mertens, 60, Freiau Strasse, Freiberg, Germany, protection is granted for an improved process of preparing printing surfaces for deep intaglio etching, in which, after the usual preparation and preliminary etch, a resist is rolled in, and the surface is again etched. This process is repeated with accumulating quantities of resist until, first, the finer spaces and, successively, the wider interstices are filled in, and so protected against the etching fluid. The patentee first refers to the customary method employed in which, after the preliminary etching, it is usual to protect the unattacked parts of the picture by covering with grease, dusting over with asphalt, and melting the same together before the deep etching. After this covering with grease and asphalt, the deep etching takes place (both for high relief as also for intaglio printing) as far as requisite to give the depth necessary for the printing; or the etching is interrupted one or more times and the coating and fusing with asphalt repeated, taking care, however, to leave without a coating all the points or lines which are to be deepened for the printing, so that, after rolling-in, the metal remains visible. In special cases it is necessary to cover certain parts of the picture independently by means of a brush.

The new method is therefore distinguished from the methods previously known, especially by the feature that immediately after the preliminary etching (on rolling-in) the fine points or lines in the highest lights are not kept open but are entirely or almost entirely closed by the rolling-in, in order to obtain the lightest tones on the printing in consequence of the very slight etching of these respective points or lines. This closing up of the points or lines is gradually increased so that finally only the parts of the picture which appear quite dark on the printing are further deepened by the etching; whereas, on the contrary, in the processes hitherto used with the aid of rolling-in methods (that is, for etchings effected without coating by means of a brush) it was the endeavour of the operator to obtain all over equal depth, or as nearly equal as possible, and this was carried as far as the maintenance of the points and lines which were endangered by broad or under etching would allow.

It is thus claimed for the new method that it possesses the great advantage that the special preparation for etching effected by hand coating can be entirely dispensed with, and that the original, which was only subdivided into minute parts by the half-tone reproduction, but was otherwise reproduced in unaltered form, can be reproduced by etching without correcting by hand labour—that is to say, can be reproduced mechanically by more or less frequent rolling-in, in its respective original form and beauty, so that the etching can be effected more certainly and cheaply by mechanical means than by the method of coating by the brush, which depends upon the skill of the workmen.

### The Production of Labels.

We are often asked for information as to whether the little labels attached to various objects, generally to indicate their manufacturer, are produced photo-mechanically or not, and, if they are, how they are produced. The manufacture of these labels is kept a closely guarded trade secret, and there are very few firms engaged in the work in England; some of the best of it comes from Germany and America. Many of them, especially those on bone or thick celluloid, are not photographic, but are made by printing from a rubber stamp that has been made of the design, though sometimes silver nitrate enters into the composition of the printing ink used for this purpose. The design for the rubber stamp may be produced photographically, though more frequently it is only type cut the same size as the label lettering. Some of the labels done on thin celluloid are also not photographic, but are printed from type or lithographed either direct or by offset. It is, of course, obvious that such designs can be done photo-lithographically also.

The most important item in the production of these celluloid labels is the varnishing afterwards, which is done when the ink is thoroughly dry with celluloid varnish, thinned down with amyl acetate.

This enhances the appearance of the label, besides thoroughly protecting the work and rendering it waterproof.

### Metal Labels.

It is in the manufacture of small metal labels that process methods are employed. The simplest of these is the ordinary printing of an image in fish-glue enamel solution on to the brass, copper, or zinc, and then burning it in. This gives a rich brown-black image on the bright metal ground. It is only one step further to etch the design in relief, or the print may be made from a positive, when the design may be etched in intaglio. Sometimes the enamel is left on, and the ground left bright, but in most cases the resist is cleaned away and the ground darkened. This may be done by painting with black japan, but the best effects are obtained by electro-depositing the ground, whether it is to be black or white, some nice effects being obtained with nickel.

## Exhibitions.

### SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The Annual Exhibition of this society was opened on Saturday last by the Mayor of Camberwell in the handsome rooms in the South London Art Gallery which the Borough Council places at the disposal of the Society. It is a great concession, and one thoroughly appreciated, both by the photographers and by the public, who give very solid support. Indeed, the authorities have asked that the show should remain open for a month instead of for a fortnight as formerly, in order that the residents should have increased opportunities for profiting by this local attraction.

The quality of the display is not a little due to a very large "open class," and this includes exhibitors from all parts of Europe and the Colonies. The very first in the catalogue is an unusually smart print of a girl in a snowy street. It is called "White Weather" (1), and is by F. T. Fletcher, who has most cleverly arranged his material. H. Ziesemer sends several professional portraits of the homely sort. He works much in the manner of Dührkoop, and wins a bronze medal with his "Pastor Manchof" (33). A thin London tree in a charming setting of sunlight and shadow comes from F. C. Boyes in a view of "Pump Court" (53), and another London corner is happily shown with that gross misnomer "The Old Curiosity Shop" (54) in Lincoln's Inn Fields, which has a false Dickens reputation. This charming print comes from the Hon. Mrs. J. Pleydell-Bouverie, who has made artistic capital out of the van she introduces, the misty air, and the wet pavement. "To Love" (79) is the name of a beautiful print of a young mother and child, which gains for B. Zweers a silver medal. There are some queer titles in this Open Section—redolent of the dictionary in a foreigner's hands. For example: "Solitary Walker," "Bathing Geese," "To Draw upon a Ship," "A Girl," "Does He Come?" All this makes for amusement, so we do not complain. A capital little snow scene is sent by G. J. T. Walford, called "When Shadows Lengthen" (94), and a bronze medal rewards E. W. Taylor for "On the Murky Thames" (96)—a well-composed piece, with a barge as chief object. Another bronze goes to M. Fraser Black for "The Queue" (145), which we have reviewed before. One of the finest of the landscapes is Miss H. Oesterreich's "Play of Sunbeams" (162), a very delightful woodland scene which is honorably mentioned.

In the Members' Class, "A Portrait of Miss W." (191) is bronze-medalled. It is by R. Jamieson. We next come to a fine, large print of "Lilium Longiflorum" (196), by Miss M. A. Smart, honourably mentioned. The gold medal goes to W. E. Murray for a choice ecclesiastical interior named "A Norman Canopy" (224); the silver medal to E. W. Taylor for "The Mill at Eventide" (312); and another honourable mention to R. M. Davies for "A Golden Afternoon" (295). Besides these distinguished prints, we wish to recommend "Confidences" (195), a fine, fresh, and breezy shore scene, with two girls paddling, by C. Lucas; "To the Black Prince's Tomb" (212), by H. Pickwell; and a first-rate example of artificial lighting in a street, "Meeting House Lane, S.E." (233), wherein E. W. Taylor has wisely hidden the flaring arc-light behind a bend of the road, and has given proper tonality to the sky. Also "The Ambulatory, Abbeydore" (241), by C. H. Oakden, should be mentioned among the President's excellent architectural scenes. We should have been glad to see some award given to such a piece of proper photographic art as "The Man with the Muck-rake" (266), by G. S. Smith. This is a very beautiful example of street work under the light of a fog-thickened sun. The figures, in their simple tonality, the truth of the sky and its light on the road, make this quite one of the successes of the year in our opinion. Another good picture is "The Busy Thames" (277), where H. T. J. Hart gives a tug, throwing up a wash, that is full of movement. The sky is very luminous. W. E. White has also done well in "The Coming of Snow" (308), where a gate and a tree make a good selection.

There is a Members' Excursion Class which carries awards of its own. Its silver medal goes to Dr. A. R. F. Evershed for "River Pastures" (344), and its bronze to T. M. Bell's "Westminster" (352), whilst "Leigh" (336) and "Burnham Beeches" (355), both by Horace Wright, are highly commended. A further award is offered for the best portrait taken of a member during one of these excursions. In the present case the bronze medal falls to R. Jamieson for the portrait of "H. E. G., Esq." (328).

The lantern slides are not a strong feature of the club, which specialises more upon architecture, and it is to the credit of the club that the winning slides in the Open Classes are by members of the society—namely, W. E. Murray and G. J. T. Walford, both for a set of architectural subjects. In the Members' Slides Class the two winning sets—being architectural again—are by W. E. Murray and W. Llewellyn White. All four of these awards are bronze medals.

Lectures are held on Monday, Thursday, and Saturday evenings, and form an attractive list, running as far as April 8, the closing day, when a distribution of awards will take place.

The exhibition forms an interesting piece of evidence in the consideration of the sociology of amateur photography. Although not a show of the very first order, and probably containing a large number of prints that some judges would consider unworthy of inclusion, it yet provides entertainment for the people in so effectual a way as to prompt the local authorities to give it house room and lighting for a month, and, further, to provide the society with comfortable quarters in the fine building of the Central Library. Per contra, a society in the West End of London, claiming to show the most superior work, is unable to pay its way, and makes no appeal to those who pass its doors. Surely pictorial photography, of the mediocre kind if you will, justifies itself, proves the healthiness, the robustness of its being, and rightly fills its place in the general movement towards culture for all.

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**Streatham Photographic Portfolio.**—The members of this club will hold their fifth annual exhibition at The Geisha, 300, High Road, Streatham, from March 28 to April 8, to which admission will be free from 2 to 9 p.m., the hours during which the exhibition is announced to be open. A hearty invitation is extended to all amateur photographers, particularly those living in the district, and the hon. secretary, Mr. F. E. Huson, whose address is 56, Salford Road, Streatham Hill, will be pleased to furnish particulars of the objects, etc., of the club to any who may be interested.

**Malvern Camera Club.**—The annual exhibition will be held in the Lecture Hall of the Public Library, Malvern, from April 27 to May 4, inclusive. Of the five open classes one will be for colour photographs, including both prints and transparencies by any process, and one for prints by the Oil, Bromoil, Ozobrome, or Gum processes. Bronze plaques, bronze medals, and certificates will be placed at the disposal of the judge, the Rev. F. C. Lambert, for award in the open classes, with the addition of an art metal vase in Class A, for prints that have previously received an open award. Entries close April 17, by which date entry forms and fees must reach the hon. secretary, Mr. J. B. Nickolls, The Exchange, Malvern, from whom also the forms and full particulars can be obtained. Pictures exhibited at Worcester will, if desired, be conveyed to Malvern exhibition free of charge to the exhibitor.

## FORTHCOMING EXHIBITIONS.

March 3 to 18.—Northern Photographic Exhibition (Liverpool). Sec., C. F. Inston, 25, South John Street, Liverpool.

March 11 to April 8.—South London Photographic Society. Sec., Horace Wright, 180, Friern Road, East Dulwich, London, S.E.

March 15 to 16.—Bedford Camera Club. Sec., C. E. Craddock, 194, Castle Road, Bedford.

March 16 to 18.—Coventry Photographic Club. Sec., G. E. Band, 27, Allesley Old Road, Coventry.

March 20 to 21.—Folkestone and District Camera Club. Sec., Hamilton Smith, 20, Radnor Park Crescent, Folkestone.

March 23 to 25.—Beith and District Arts and Crafts Club. Sec., J. Peat Millar, 40, King's Road, Beith.

March 25 to April 1.—Sunderland Photographic Association. Sec., Wm. E. Kieffer, Stirling Road, Sunderland.

March 25 to April 20.—Worcestershire Camera Club and Photographic Survey Society. Sec., G. H. Haycox, St. Wulstan's Crescent, Worcester.

March 28 to April 1.—Sheffield Photographic Society. Sec., C. H. Parker, 67, Wadbrough Road, Sheffield.

March 28 to April 8.—Streatham Photographic Portfolio. Sec., F. E. Huson, 56, Salford Road, Streatham Hill, S.W.

March 29 to April 1.—Bolton Camera Club. Sec., J. E. Button, 491, St. Helens Road, Bolton.

March 29 to April 1.—Ilkeston Arts Club. Entries close March 22. Sec., A. Smith, 11, Graham Street, Ilkeston.

April 17 to 21.—Southend-on-Sea Photographic Society. Entries close April 3. Sec., C. A. E. Chandler, 29, St. Helen's Road, Westcliff-on-Sea.

April 25 to 29.—Barrhead Amateur Art Club. Entries close April 11. Sec., J. M'Grouther, Glenartney, Barrhead.

April 27 to May 4.—Malvern Camera Club. Entries close April 17. Sec., J. B. Nickolls, The Exchange, Malvern.

May 3 to 4.—Chelmsford Photographic Society. Sec., C. H. Wallis, Rosebank, Moulsham, Chelmsford.

May 8 to 31.—Royal Photographic Society. Latest date, carrier, April 24; hand, April 25. Sec., J. McIntosh, 35, Russell Square, London, W.C.

May 12 to 20.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

## Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between February 27 to March 4:—

LENSES.—No. 4,849. Photographic objectives. Carl Zeiss.

DISHES.—No. 4,959. Photographic dishes. Alfred Edwin Johns.

EXPOSURE CALCULATOR.—No. 5,291. Apparatus for obtaining successive equal exposures for photographic purposes. Henry Edmonds Hull and Sidney Guy Adams.

DEVELOPING APPARATUS.—No. 5,437. Device for developing, fixing, and washing photographic films. Robert Etlin.

ELECTRICAL TRANSMISSION OF PHOTOGRAPHS.—No. 5,486. Transmission of light pictures in electrical, telescopic, and similar apparatus. Boris Rosing.

CINEMATOGRAPHS.—No. 5,278. Cinematographic advertising and other apparatus. James Preston Cribb.

BIOSCOPES.—No. 4,973. Bioscopes and the like. Thomas Thorp.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

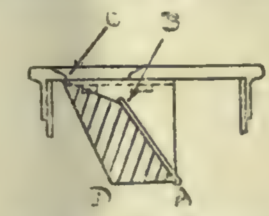
*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

REPRODUCTION CAMERA.—No. 19,995, 1910. The apparatus to which protection is granted is for the copying of books, manuscripts, etc., lying in a horizontal position. In the improved form of apparatus the camera rests on a telescopic frame, which can be shifted and fixed along a scale corresponding to the extension of the bellows, and which is carried by a rod adapted to be adjusted and fixed in a stand. This rod is provided with a pointer adapted to be adjusted along a scale—which is fixed on a sleeve fitted with an electric-illumination reflector and projecting fork-shaped prongs, and placed on a column on which it can be shifted and fixed. This is done after the sleeve has been so shifted and fixed that the fork-shaped prongs are set corresponding to the thickness of the object to be taken—for instance, a book, which is placed on the table on which the apparatus is mounted, whereby the photographic apparatus, which is fitted with a lens lying at right angles thereto, can be automatically adjusted independently of the thickness of the object to be taken, along a scale arranged to suit the distance between the lens and the object to be taken. The detailed description and six drawings in the full specification should be consulted. Heinrich Jantsch, 12, Barfussgasse, Leipsic, Germany.

CINEMATOGRAPH MECHANISM.—No. 19,148, 1910 (August 15, 1910). The present invention has reference to improvements in cinematograph apparatus in which the idle part of the film is received into and withdrawn from a chamber slightly greater in width than itself. The principal purpose of the invention is to enable an endless film of unlimited length to be used continuously by storing the idle part of the same in a compact manner which permits of continuous movement of the whole without the possibility of entanglement in a more effectual manner than heretofore. The idle part of the film is repeatedly folded or caused to fold upon itself, the sequence of the folds being maintained and crossing and consequent entanglement thereof being obviated by preventing lateral movement of the film. The method of folding is such that the stored portion of the film is free to be moved lengthwise by traction upon its free end. Josef Gassner and Herbert Victor Barnes, Post Office, Box 3447, Johannesburg, Transvaal.

CINEMATOGRAPH SPOOLS.—No. 6,812, 1910 (March 18, 1910). The invention relates to cinematograph spool allowing of the film being readily and quickly attached. One or both sides of the spool is divided approximately in the middle, the two parts being hinged together so that it is possible to fold a portion of the one face back upon the other part to allow the film being readily secured to the hub or sleeve. The free portion of the faces normally kept in line with the fixed part by means of a spring or other contrivance secured to the fixed portion of the side. William Ernest Jennings, 84, Oval Road, Gravelly Hill, near Birmingham.

X-RAY STEREOSCOPE.—No. 4,506, 1910 (February 23, 1910). The invention consists of a particular construction of stereoscope for large prints, such as X-ray stereographs, in which one view is seen directly and the other is optically superposed upon it by a pair of plane mirrors mounted opposite and slightly inclined to one another, so that the rays entering the eye suffer a double reflection. The instrument consists of a combination of a doubly-reflecting prism (see fig.) producing a suitable angular displacement for the purpose of combining and examining stereoscopic X-ray negatives or positives, with a binocular body formed of two metal tubes which are joined together by a connecting piece, one of these metal tubes containing the doubly-reflecting prism, whilst the other is a plain tube, only serving to exclude extraneous objects from view. A pair of lenses of suitable focus may be applied to the two tubes in order to adapt the instrument for comfortable vision under varying circumstances. W. Watson and Sons, Limited, and Geoffrey Pearce, both of 313, High Holborn, London, W.C.



CINEMATOGRAPH FILM-MAGAZINE.—No. 80,581, 1910 (April 4, 1910). The invention relates to improvements in fire-proof magazines for the protection of the films in cinematograph projecting machines, and more particularly to that class in which the cover is arranged as the deeper element and the part fixed to the arm carrying the magazine the shallow element. A spider or other suitable disc wheel attached to the reel arm of the projector in any convenient manner. This spider wheel carries the fire-trap, and also the hinge for the main or cover element of the magazine. The shallow element of the casing is fitted close up against the spider wheel and the reel against this on its spindle.

In place of the construction above described (to cheapen and simplify the same) the spider wheel may be dispensed with and the fixed or shallow element of the casing fixed to a straight arm in any convenient manner, the hinge and fire-trap being secured to the fixed element of the casing by rivets or in any other convenient manner. John Charles Chalmers and William Alexander Robertson, 10, Wemyss Place, Glasgow.

CONDENSERS.—No. 10,977, 1910 (May 3, 1910). The invention relates to improvements in cells for condenser lenses, enabling the lenses to be readily changed when necessary, and also obviating the great risk of breaking the lenses which arises when they are supported in a tightly fitting mount. The fact that the lenses of a condenser get very hot when projection takes place with a powerful arc lamp, such as is used in cinematograph projection, makes it very difficult to change the lens when it is broken, as it is necessary to wait until the condenser cools down. The complete condenser may be supported externally on the lantern, and the same replaced with an entirely new condenser, when any one lens breaks, but this method requires the replacement of the condenser complete with two lenses, as the mount of the condenser would be too hot to unscrew in order to replace a broken lens immediately.

To obviate these difficulties each lens is mounted in a separate slide or carrier. These slides are in the form of a flat plate with a circular hole of approximately the size of the lens to be carried, the plate being in halves and having a groove on the inside edge of the hole, enabling the halves of the plate to grip the lens when pressed together by means of a spring. These plates are conveniently made of metal. To one half of the plate is riveted on each side a channelled bar in which the other half of the plate is enabled to slide. A spring exerting a pressure on the upper half of the plate keeps the lens in position.

The lantern front or stage consists of a box with one side open, which is grooved on the inside to receive the sliding plates with the lenses which form the condenser. To keep the condenser lenses stationary springs are used on the inside of the box to press against the slides. Leo Kamm, 27, Powell Street, Goswell Road, London, E.C.

The following complete specifications, etc., are open to public inspection, before acceptance, under the Patents Act, 1901:—

CINEMATOGRAPHS.—No. 2,500. Cinematograph films with central coating of emulsion. Compagnie Generale de Phonographes, Cinematographes et Appareils de Precision.

CINEMATOGRAPHS.—No. 4,154. Means for preventing the combustion of the films in cinematograph and other similar appliances. Tatham.

# New Books.

"With Nature and a Camera." By Richard Kearton, F.Z.S. London: Cassell. 5s. net.

Truly the nature photographer deserves kind treatment at the hands of a reviewer. In the introduction to this popular edition of the volume, first issued in 1897, the author, writing of the travels of himself and his brother, draws a touching picture of the privations they have undergone together in setting forth upon the printed page the manners and customs of the wild inhabitants of these islands:—"We have slept for nights together in empty houses and old ruins, descended beetling cliffs, swung to isolated rocks, waded rivers and bogs, climbed lofty trees, lain in wet heather for hours at a stretch, tramped many weary miles in the dark, spent nights in the open air on lonely islands and solitary moors, endured the pangs of hunger and thirst and the torturing stings of insects, waited for days and days together, and been nearly drowned, both figuratively and literally." In this volume they first take us to the lonely island of St. Kilda and give the reader an intimate peep not only into the ways of the birds which make a home on these bare rocks, but also into many of the curious customs which still survive among the St. Kildans. In the later chapters they draw upon their travels in many parts of England and Scotland for the descriptions of the habits of wild fowl and animals and of the methods of trapping them. The concluding chapter on their methods of photography will be read with interest by the many workers who are now engaged in this fascinating branch of camera work, though it must be admitted that infinite patience and, often, daring usually far outweigh mere photographic expedients. Like other nature volumes by the same author, the newly issued volume is excellently produced, with scarcely a page lacking the reproduction of a photograph which most likely cost hours, if not days, to obtain. Messrs. Kearton surely deserve the thanks of the public not only for their own amazingly patient labours, but for the enthusiasm which they have aroused in other photographers.

"Life Histories of Familiar Plants." By John J. Ward. London: Cassell. 3s. 6d. net.

In this volume, also now appearing in a popular edition, we have a quite different, but no less fascinating, branch of nature study opened out to the photographer. While Mr. Kearton and his followers seek their subjects from the Land's End to the Hebrides, Mr. Ward and such as he find an equally wide field of study within the fences of their own gardens, or at any rate do not need to travel far among the hedgerows of almost any English county. Mr. Kearton in his photographs puts before us the wild animals of this kingdom better than any number of stuffed specimens could do; Mr. Ward shows us the history which lies about our doors in the characteristics of familiar garden and wild flowers, and he, perhaps, more than the photographer of timid beasts, gives us an insight into the methods of nature of adapting organisms to their surroundings. The author rightly seeks to dissuade the general reader from the idea that botany is a dry science of hard words. The chapters of the book prove that with the aid of photographic illustration the history and habits of the flowers form a most interesting study for people without any claim to rank as scientific botanists. His text and illustrations together provide a most lucid and readable account of the methods, such as cross-fertilisation, which go on in plant life, and they show the under world of interest which stands open to the careful student in any garden or meadow.

"Camera Work." No. XXXIII. New York: Alf. Stieglitz, 1111, Madison Avenue, New York.

The plates in this number of "Camera Work" are all devoted to the work of Herr Heinrich Kühn, of Innsbruck. They are reproduced by three different processes—hand-printed photogravure, machine-printed "mezzotint photogravure," and duplex-half-tone blocks (two printings). We do not hesitate to say that the first series are far and away the most satisfactory from all artistic points of view; but the second series show admirable qualities, nevertheless, and form, perhaps, the beau ideal of book illustration where expense is some object. As to the half-tones, all that could be done by a tint and a glossy surface has been done to make them look better than they are, and in this the printers have really succeeded. Herr Kühn is a varied worker. He is above the suspicion attaching to men who specialise on a class of work in order to make a short cut to reputation. "My Mother" is his finest thing here. The face in modelling, lighting, and expression is absolutely satisfactory, and the pose of the figure appears to be characteristic. The next plate, called "On the Shore," shows a decorative rather than a landscape feeling, and is a treatment of sunlight and a deep foreground shade. Next to the mother, we prefer a portrait of a man at three-quarter length standing before a closed door. This is animated, and it is the only print wherein the darks retain depth and richness and do not deteriorate into emptiness. "A Study" is a rather meaningless and unlovely study of a lady leaning against panelling; but as an arrangement of tones it is a luscious feast for the eye.

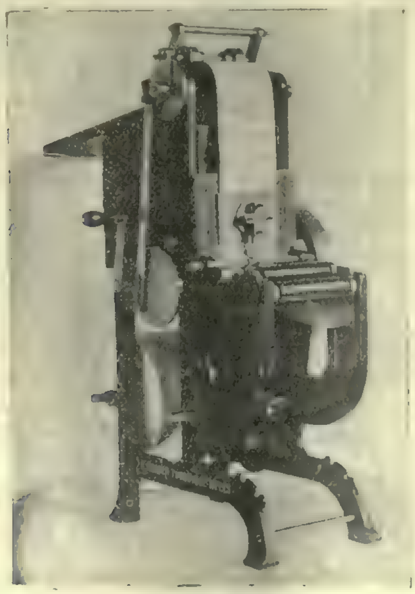
The letterpress is without its usual spice, except for a dialogue by J. B. Kerfoot, which is beyond our understanding. The rest is the same old puff, puff, puff of amateur photography to the disparagement of all else that calls itself art. We miss altogether the adulation of the Post-Impressionist painters that has breathed through recent volumes. Perhaps that is as well for English readers, in view of the first-hand knowledge they have recently acquired of those arch-quacks.

"The Woodworker and Art Craftsman" (threepence monthly) is an almost ideal magazine for the home woodworker and for handicraftsmen generally. The woodwork section predominates, and in practical and well-illustrated articles joinery, carpentry, cabinet work, wood carving, chip carving, etc., are dealt with. A special design supplement is provided each month, this including full-sized diagrams and details for carving patterns, cabinet work, etc., with occasional designs for inlaying, repoussé work and other art crafts. The magazine itself has also many designs which, with their details and accompanying directions, are practically working drawings. Apart from its woodwork chapters, the magazine is full of interest, dealing with silver work, enamelling, etc. Prominence is given to manual training, and the "Question Box" (illustrated replies to queries on practical subjects) is one of the special features of a magazine which everyone interested in handicrafts—and certainly every woodworker—should take in regularly.

# New Apparatus, &c.

**The Graber Automatic Exposing, Type-Printing and Cutting Machine. Made by E. Graber, 16, Newton Road, Tunbridge Wells.**

For the printer or publisher of photographic postcards or bromide prints upon a considerable, yet not the very largest, scale, this machine is one admirably adapted for excellent and rapid work. It is constructed to work from a single negative and to use sensitive paper or card, reels of which up to 15 in. diameter it accommodates. A feature of the machine is the special masking device, fitted to the negative carrier, and preparing the negative for taking off prints all identical with each other without loss of time. The same pressure which is used to ensure contact between the paper and the negative during exposure also produces the type-impression on the back of the card, the type used for this inscription being very readily changed in a few seconds without removing the card or paper.



Following this stage, that is after exposure and printing, the machine draws the card forward and automatically cuts it into lengths either of two, four, or six postcards, for hand development. All these movements are obtained simply by turning the handle of the machine, hand-power sufficing for this purpose, although motive power may be employed. The machine includes provision for adjusting exposure to suit any density of negative, and it is also adaptable for gas or electric light. For full specification as to the price, floor-space, etc., application should be made to the constructor, Mr. Graber, at the above address.

## CATALOGUES AND TRADE NOTICES.

"The Camera House Journal," No. 47, Vol. 5, which reaches us from Messrs. W. Butcher and Sons, Camera House, Farringdon Avenue, E.C., contains particulars of interest to dealers of Messrs. Butcher's new introductions in the way of cameras, etc., for the forthcoming season.

City Sale Bargains in Apparatus.—A large 16-page list of second-hand reflex and other hand-cameras, field cameras, lenses, enlargers, and sundries reaches us from the City Sale and Exchange, 90-94, Fleet Street, London, E.C. It includes all descriptions of apparatus by leading makers, offered at substantial reductions on the list prices. We can recommend those able to do so to pay a visit to the City Sale at the above address, when, even in the event of a particular item having been disposed of, they will undoubtedly still be able to suit themselves from the stock constantly held.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, March 17.

St. Andrews Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Monday, March 20.

Kidderminster and District Photographic Society. "Screens and their Advantages." H. W. West.
Scarborough and District Photographic Society. Members' Night, "Prints and Slides of Old Scarborough."
Catford and Forest Hill Photographic Society. Print and Lantern Slide Competition.
Bournemouth and District Camera Club. "X-Rays." Dr. Fowler.
Southampton Camera Club. "Orthochromatic Photography." W. R. Kay.
Stafford Photographic Society. Exhibition of Lantern Slides lent by the N.E. Railway Co.
Govan Y.M.C.A. Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Tuesday, March 21.

Royal Photographic Society. "Open Air Statues in London." F. W. Hill.
Hackney Photographic Society. "Unpictorial Photography." H. W. Fitch.
Keighley and District Photographic Association. Y.P.U. Slides.
Partick Camera Club. "Amateur Photographer and Photographic News" Prize Slides.
St. Helens Camera Club. "The Latest in Colour Photography." J. Critchley.
Worthing Camera Club. "Three Colour Photography." G. T. Short.
Leeds Photographic Society. "Some of the Causes which have Produced Beautiful Natural Scenery." J. J. Burton.
Rotherham Photographic Society. "From Button Pushing to Pot Hunting." W. C. Briggs.
Halifax Camera Club. "Mechanical Methods of Picture Producing." W. Denham.
Manchester Amateur Photographic Society. "Photography and Nature Study." Geo. M. Morris.
Glasgow Southern Photographic Association. "Tramps Abroad with a Kodak." W. F. Slater.

### Wednesday, March 22.

Croydon Camera Club. Annual Dinner.
South Suburban Photographic Society. Members' Slides.
Edinburgh Photographic Society. "The Camera in the Field." James Oliver.
Sale Photographic Society. "Tones by Development" J. Pilkington.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. "Printing Dodges." G. C. Weston.
Borough Polytechnic Photographic Society. "Art and Photography." J. J. McCarthy.
South Essex Camera Club. "Intensification and Reduction." J. McIntosh.
Balham Camera Club. "Light." A. Kirkland.
West Surrey Photographic Society. "Lantern Slides by Reduction." Mr. Butterworth.
Greenock Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

THURSDAY, MARCH 23.

Liverpool Amateur Photographic Association. "Wild Bird Life with a Camera." William Farren.
Leek Photographic Society. "A Visit to the North Cape." J. W. Sutton.
Camera Club. "Present Day Press Photography, with a few Experiences." B. Humfrey.
Handsworth Photographic Society. "Bromide Printing." G. G. Heaton.
Maidstone and Institute Camera Club. "Demonstration on the Thames Colour Plate." T. G. Woodrow.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Post Cards, by Reduction." Members' Night.
London and Provincial Photographic Association. "Cock-a-Doodle-Does, &c." F. J. S. Chatterton.
Oldham Photographic Society. "The Once Staple Trade of Oldham." J. Butterworth, Sen.
Coatbridge Photographic Association. "Tramps Abroad with a Kodak." W. F. Slater.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, March 14, Mr. Chapman Jones, vice-president, in the chair.

Mr. C. F. Lan-Davis read a paper on "The Theory of Section Shutter-blades and Iris Diaphragms," in which he discussed the most efficient form of leaf for the construction of sector or diaphragm shutters, illustrating the various types by diagrams and calculations on the blackboard. He pointed out that the greater the number of leaves the smaller it was possible to make the outside diameter of a shutter. He described a shutter of his own design, the aperture in which was a parallel slit opening outwards.

In the course of the discussion, Mr. T. Smith, of the National Physical Laboratory, expressed regret that the public should prefer smallness in bulk of shutters to high efficiency. The present tendency appeared to be in favour of very small shutters, with the sacrifice, however, in the direction of efficiency.

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# Commercial & Legal Intelligence.

THE PARTNERSHIP between Frederick John Cawsey and Peter Burtonwood, carrying on business as photographers at Morecambe under the style of Cawsey and Burtonwood, has been dissolved by mutual consent.

PHOTOGRAPHER'S GAS SUPPLY.—At the Old Street Police Court, on Thursday last, William Tod, a photographer, of Pimlico Walk, Hoxton, answered a summons issued at the instance of the Gas Light and Coke Co., for unlawfully laying a gas-pipe communicating with a pipe belonging to the company, without their consent, contrary to statute. Mr. Humphreys, solicitor, who appeared in support of the summons, said that a fitter in the employment of the company, on visiting the defendant's premises on February 6, noticed that the glass in front of the meter was broken, and, further, that the supply-pipe which connected the meter with the main, instead of being fitted with an elbow leading to the meter only, was fitted with a "tee" piece which connected the main, not only with the meter but with some other fittings. A further search showed that this connection supplied the defendant's photographic studios, in which there were fourteen lights, without the gas having passed through the meter. Both the "tee" piece and the pipe connecting it with the studios' fittings had been put in without the company's knowledge. When this was pointed out to the defendant he admitted that the connection had been made with his knowledge, but said that he had no idea that the gas used did not pass through the meter. The defendant was liable to a total fine of £300. The defendant, who pleaded guilty, said that he had no idea that the supply for his studio had been coming direct from the main. He used to photograph by gas light in his shop, but to save artificial light he built an outdoor studio, and only used the gas there of an evening. Before he did so his gas bill was £1 4s. 1d., and now it was only 17s. 10d. It was in making the alteration to light the outdoor studio that the illegal connection had been made. A penalty of £5 was imposed, and a month was allowed defendant in which to pay.

# News and Notes.

MOSCOW PHOTOGRAPHIC SOCIETY.—The Management Committee of the projected International Photographic Exhibition regret to announce that on account of a resolution passed at a specially convened general meeting, the exhibition has been postponed indefinitely.

THE MUNICH SCHOOL OF PHOTOGRAPHY.—The new buildings of the Munich School of Photography and Photo-Mechanical Processes, of which Herr. G. H. Emmerich is the director, are to be opened on May 9 by a series of ceremonies and addresses to occupy several days. The school provides accommodation for instruction in, and practice of, all branches of photography, and occupies a position which must excite the envy of the principals of similar institutions in this country.

SURVEY AND RECORD OF SURREY.—The annual general meeting will be held on Saturday, March 25, 1911, at 3.30 p.m., in the Surrey Archæological Museum, Castle Arch, Guildford. His Worship the Mayor of Guildford (W. T. Patrick, Esq.) will attend, and take the chair, supported by Lord Farrer, M.A., J.P. An exhibit of prints will be shown, and will remain on view to the public for the following week. At 7 p.m. and at 8 p.m. a short talk, illustrated by lantern-slides, will be given on the work being done by the Association.

DUTY ON PHOTOGRAPHS.—A correspondent writes to the "Evening Times":—"On December 9 last I sent two packets containing portraits by parcel post from the Knightsbridge Post Office to two addresses in Jamaica. In either case the postage prepaid, including insurance fee, was 1s. 4d. Declaration was made on the usual form, and the phrases 'Per Parcel Post,' 'Photographs Only' appeared in bold characters. Some time later I was informed by one of the addressees that a charge of 4s. 2d. had been levied on the parcel. Presumably addressee No. 2 had to pay a similar charge. At an interview with an official of the Knightsbridge Post Office I was made to understand that the prepaid postage was quite in order, and much surprise was expressed at the action of the Customs authorities in Jamaica. I was advised to communicate with the Postmaster-General here. This I did; and on the 22nd ult. a reply from the secretary pointed out that, 'As will be seen on reference to page 63 of the Post Office Guide, the contents of every parcel sent abroad by post are subject to the Customs regulations of the country of destination.' In a sense I have 'inwardly digested' the contents of the Post Office Guide, but, unfortunately, there seems to be no record where photographs to the British West Indies are dutiable."

PHOTOGRAPHIC SURVEY OF SUSSEX.—The annual report of the Photographic Record and Survey of Sussex for 1910 shows the difficulty of exciting interest among amateur photographers in the work of preparing and preserving records of the buildings, etc., in their districts. Although the Survey boasts an imposing list of vice-presidents, and enjoys the support of Sussex archæologists, the additions to its collection during the past year, if we except the contribution of its treasurer, Mr. J. C. Stenning, amount to only seven prints. Mr. Stenning raises this insignificant number to a total of 544 by his donation of fifty-three prints and 484 lantern-slides; but the support which is accorded to the Survey must be bitterly disappointing to the officers, particularly as the usefulness of the prints already accumulated in the Brighton Public Library appears to be appreciated by those engaged in a study of the antiquities and architectural remains in the county. It would seem that work such as this—which is itself the worker's only reward, and carries with it none of that ephemeral reputation to be secured in "pictorial" work—fails to appeal to the amateur worker. It is a pity, but none the less a hard fact. A remedy which may be suggested is the stimulation of interest in local antiquities by means of lectures, publications, etc., in which the past history of local buildings, etc., might be presented in a popular manner.

NORTH MIDDLESEX PHOTOGRAPHIC SOCIETY.—The annual dinner of the society was held on Saturday evening last, March 11, at the

Holborn Restaurant, the president, Mr. Louis Dick, in the chair. The presence of ladies (who for many years have been excluded from the annual dinner) greatly contributed to the enjoyment of the evening. The toast of the North Middlesex Society was proposed by Mr. George E. Brown, who congratulated the members upon the continued success which attended their policy of holding a meeting every week in the year, and of arranging a very full programme of excursions and competitions. If any accusation could be brought against them, it was that they did not court publicity, but he realised that their aim was the cultivation of the photographic skill of the members, and that was most effectively carried out by preserving the almost semi-private character of the meetings. Mr. Louis Dick, in responding, said that he considered that as a body of organisers they were most efficient, but he would urge upon the members greater enthusiasm in the production of high-class photography. Mr. Charles Beadle, in proposing the toast of the judge (Mr. F. C. Tilney), expressed the gratitude which they felt to Mr. Tilney for the valuable help which he had given them on many occasions in judging their exhibitions. Mr. Tilney, in his response, declared himself in favour of judging by means of a plebiscite of the members. He afterwards presented the certificates to the successful competitors in the society's competition and exhibition. The toast of the ladies, proposed by Mr. J. C. S. Mummery, was responded to in an extremely happy speech by Mr. G. E. Williams. Mr. W. Pringle proposed the toast of the visitors, which was responded to by Mr. A. H. Blake. Mr. E. A. Morgan proposed the toast of the artists and producers of the souvenirs of the exhibition presented with each programme, and Mr. Harry Barnard briefly replied. An interesting programme of songs and recitations occupied the company during the evening, the songs of Miss Ada Potter and Mr. Reginald Goode being especially enjoyed. One item in the evening's programme which should not be omitted was the presentation to the retiring president, Mr. H. W. Fincham, of a silver teapot and a cigarette case as an expression of the appreciation by the members of his services to the society during three years' occupancy of the presidency.

AN ERNEMANN PRIZE COMPETITION, for photographs taken with Ernemann cameras and Ernemann lenses, cash prizes amounting to £50, together with a number of consolation prizes, is offered by the well-known firm of Ernemann, Dresden. The competition is open to any amateur photographer.

The picture is not limited to any shape or size.

The photograph must have been taken with an Ernemann camera and an Ernemann lens. The award will be given according to the artistic and technical qualities. Any subject may be submitted—portrait, genre, landscape, sport, interior, balloon picture, or natural history subject.

The first prize will be awarded to a portrait or genre picture, the result of a rapid exposure showing strong evidence of the adaptability of the camera and of the perfection of the lens.

The competitors' names will not be known to the judges; the entries must be sent in without the name of the sender, but with a pseudonym written on the back, which must also be written on a sealed envelope, containing the name and address of the sender. All prints must be mounted.

The rights of reproduction and the picture, and the negative of the winning pictures, shall pass into the absolute possession of Messrs. Ernemann.

Messrs. Ernemann, in Dresden, further reserve the right of selecting any other copies sent in, and retaining both the print and the negative against a payment of 10s.

The pictures must arrive in Dresden at the latest by September 30, 1911. All such pictures as do not secure prizes will be returned to the sender, provided they are claimed by the owners at the conclusion of the competition and before April 1, 1912, the claim being accompanied by the necessary stamps for postage. All pictures not claimed by that date will become the absolute property of Messrs. Ernemann.

The selecting committee are: Professor R. Luther, Dresden; F. Mathies-Masuren, Halle; Hans Ilnger, artist, Dresden; Wolf-Czapek, editor, Berlin; Heinrich Ernemann, director, Dresden.

The result of the competition and the names of the prize-winners will be published in the leading photographic periodicals in all countries.

All inquiries as regards the decision must be sent to the firm: Messrs. Heinrich Ernemann A. G., Dresden, 48, Schandauerstrasse.

RELATIVE COST OF HEATING SYSTEMS.—We have on several occasions commented upon the economy and convenience of the closed slow-combustion stoves now obtainable in a great variety of patterns. All of these are well fitted for the warming of both the studio, reception-room, and other business portions of the photographer's premises, as well as of workrooms. In either case the money spent in heating is well laid out. No sitter can be expected to come through the ordeal of being photographed in a chilly studio with satisfaction to himself or the photographer, whilst it is surely an axiom of labour-employment that a cheese-paring economy in the matter of warming workrooms is, in the end, no economy at all. Apropos of this question, we may quote the letter to the "Times" of last week of a correspondent who has made comparative tests of the cost of heating by slow-combustion, gas-stoves, and electric radiators. The writer (Mr. J. D. Hamilton Dickson) records his experience as follows:—

> I have for some twenty years kept a weekly record of gas and electricity meter readings, and for the last few years a daily record. Anthracite coal costs me 39s. the ton, and gas is 2s. 8d. per 1,000 cu. ft. in Cambridge. Eighteen months ago, as an experiment, I put a gas fire, under expert advice, into my dining-room; its content is just under 2,500 cu. ft. On December 7 last I replaced this by an anthracite stove. The following readings of the meter will show the cost of the gas fire for four hours a day: On November 9, 1910, the meter read 298.80 thousands of cubic feet; four weeks later, on December 7, 1910, it read 306.40; here the gas fire was taken away, and two weeks later, on December 21, 1910, the reading was 307.92 (it should be stated that gas is used for lighting in the kitchen only, electricity being used elsewhere). Thus, gas fire + light used 2.01 thousand cu. ft.; light alone used 0.54 thousand cu. ft., leaving 1.47 thousand cu. ft. for a week's gas fire for four hours a day. The cost of this gas fire was therefore 47.04d. for four hours daily, or 141.12d. for 12 hours daily, for a week. The anthracite stove from February 2 to 20 consumed 3 cwt. of anthracite at 39s. per ton, or, for 12 hours' use daily (it burned all the 24 hours for the 3 cwt.), cost 1.95d. per day, or 13.65d. per week. Thus my actual experience is that the anthracite stove costs less than one-tenth of the gas fire.
>
> As to their efficiency, the gas fire used was 20 per cent. above the size which my adviser said was suitable for the room in question; nevertheless, it was unable to raise the temperature of the room more than some 4 deg. or 5 deg. F. The anthracite stove is suited for a 2,500 cu. ft. room. It is so efficient that the room becomes uncomfortably hot in an hour (quite independently of the ventilation, which is good) with regulator only half on. To-day, after the regulator had been for four hours at "slow," I placed a thermometer in the air-current passing round the stove, and it registered 70 deg. F. I turned the regulator half on, and in twelve minutes the thermometer registered 80 deg. F., and in 25 minutes 105 deg. F. The temperature of the room had meanwhile risen from 59 deg. F. to 63 deg. F., while the temperature of the garden was 46 deg.
>
> As an economical and efficient heater these experiences leave no doubt in my mind that a gas fire cannot compete with an anthracite stove.
>
> I have also tried one of the best electric radiators on the market in a room of 2,000 cu. ft. content, and sent to me as suitable for a room of this size. Half an hour after switching on the current no rise of temperature could be observed on a thermometer some 3 ft. away from the radiator. Meanwhile the radiator had consumed one B.T.U., as shown on the Electric Supply Company's meter. At 1d. per B.T.U., in 12 hours this radiator would have cost 24d. Thus the relative costs of my experiments for one week of seven days, 12 hours daily, would be—electricity, 168d.; gas, 141d.; anthracite, 14d.; and the rapidity with which the heat was generated and thrown into the room was unquestionably very much greater from the anthracite stove than from either of the other two sources.

# Correspondence.

*⁂ Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*⁂ We do not undertake responsibility for the opinions expressed by our correspondents.*

## PHOTOGRAPHING SHOP WINDOWS.

To the Editors.

Gentlemen,—These are often very troublesome, but with care and attention they can be overcome.

Some fourteen years ago I had a quantity of shop windows to photograph, 12 x 10 size, at Clapham Junction, and as anyone who knows that neighbourhood, the streets run all directions of the compass, and it is a pretty busy place.

All I asked of the shopkeeper was:

1. To build up the show *fairly well to the front*, and if much stock was at the back it must be light in colour.

2. Large white letters pasted on the top of the shop window have an excellent effect, and, failing this, the same letters on a muslin-stretched frame—this lets the light through; or even a board covered with white paper and black letters put on with a brush, all these dodges take off from the blank black usual at the top.

One successful window was draped at the top with a lace curtain stretched longways, caught up in two places with cord and tassels.

3. Much may be done by working on the negative covering with thin bank post and cutting out the high lights, and by boldly painting in lettering on this blank space, say the tradesman's name, occupation, and the address; do not forget this address.

In two cases, I remember, we made 20 x 24 enlargements, had them worked up and reproduced to 12 x 10, to our customers' great satisfaction, and in each case sold the enlargements to our satisfaction, so the speculation paid well.

One piece of advice: if in a crowded neighbourhood do not attempt the work during the dinner hour or just after the school children are released. Much of my best work in this line has been done early in the morning, before the people light their fires; this means long light mornings; it is the only way to obtain photographs of public houses in crowded neighbourhoods.

Last, but not least, after the windows have been cleaned, let at least one day pass, so that the dust may dim the high polish, and do not forget to *well expose*, using a fairly small stop *f* 16 or 22, a backed plate of a density-giving character and not a fast one, one of those plates with plenty of latitude. In development use plenty of diluted developer, pour this into the dish, rock it once or twice, then immerse the plate and see there is at least half an inch of developer over the plate, *cover it over*, rock once or twice, and look at it in ten minutes' time, develop well out even if it takes half an hour; a little veiling is a real advantage. P.O.P.

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To the Editors.

Gentlemen,—With reference to the letters in last week's "B.J.," I find the best method of reducing reflection in shop windows to a minimum is to use a ten-feet step ladder in lieu of a tripod, with a hinged table fitted to the top adjusted by means of lanern-tilting screws. This ladder cost me 12s. 6d., and is also very useful for street crowds and many other subjects. Mr. L. H. Smith's method would, in most cases, be quite impracticable.

I would like to take this opportunity of thanking those contributors to your paper who have given some useful and valuable hints, and would particularly refer to Dr. H. D'Arcy Power, for his description of a cupboard vertical daylight enlarger ("B.J.," June 18, 1909). ; Mr. H. E. Corke, for his helpful and valuable series of articles in March and April of last year; and Mr. H. Hinge, for his very ingenious method of hanging and changing backgrounds. I feel sure these gentlemen will be glad to know that their information has been useful to at least one of their humbler brethren.

I wonder if any of your readers can give further help by giving a reliable method of placing different sizes of films in the enlarger. I have tried a number of different unsatisfactory methods of doing this, and at present am using two half-plate glasses hinged together, with cut-out masks of suitable shape, and although this is the best method I can think of, I still find it very troublesome.

Why do not block-makers give a discount to photographers who get blocks made for their customers? I have had a number of blocks made for the rector of the parish and the Amusements Committee of the town, but have had to pay full list price *plus* carriage both ways, so I have latterly refused to handle this class of business at all; perhaps the P.P.A. might with advantage take this matter up at the Congress. I also hope that those gentlemen who are lecturing and demonstrating at the Congress will not forget a few hints on the lighting of full-length figures and groups, by electric light, as well as large heads.—Faithfully yours, B. K.

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To the Editors.

Gentlemen,—It has fallen to my lot to have several "Oxo" windows to photograph lately. Some of them were favourably situated for daylight, but in some cases where reflections by daylight would have spoiled the result magnesium ribbon has worked well. A yard of ribbon is burnt each side of the window, so that each corner is lighted, the ribbon being moved up and down and to and fro during the burning, to soften the shadows. By the help of a bicycle lamp, moved about by an assistant, it was found how close it was safe to bring the light to the window or camera, as, of course, if brought too much in front of the window the reflection of the burning magnesium would be seen in the photograph. Plate H.P. 250; lens, *f*/16, magnesium ribbon, 2 yards; results as good as daylight.—Yours truly, NIGHT-LIGHT.

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## SCUM MARKINGS IN TANK DEVELOPMENT.

To the Editors.

Gentlemen,—Mr. Law's letter on the scumlike markings which formed the subject of my contributions to your pages on February 10 and 17 last, gives some particulars of his experiences which make him doubtful about the validity of the explanation I gave in the second article. I fully appreciate Mr. Law's difficulty, but it is really due to the unusually strong tendency of dyes like pinacyanol to precipitate upon and cling to glass and earthenware vessels, and to the striking effects produced by excessively minute traces of these dyes.

I first encountered the trouble when developing X-ray plates in an open dish at a time when, like Mr. Law's friend, I was not using pinacyanol, and I never had any such markings again for well over two years. When I next saw them they occurred on plates bathed in erythrosine in a tank by one of my colleagues. In neither case could they be accounted for until the experiments I have described were made; but when I had arrived at the explanation already given, these two earlier appearances were seen to be explicable in the same way.

I found on looking into the matter that my dark room was being used by one of my colleagues about the time of the first appearance, for some bathing experiments with pinacyanol, and no doubt a trace of it had got into some of my apparatus. In the case of the first trouble with the tank, the same thing was true—the tank had previously been used for pinacyanol. I have little doubt that if Mr. Laws can trace the time when he first saw such markings, it will be found to be subsequent to the first introduction of one of these dyes into his laboratory.

In conclusion, I should like to thank Mr. Laws for his appreciative remarks, and to point out that the results of the experiments described in my first contribution are fully explained on the pinacyanol hypothesis, while those mentioned in the second contribution appear to me to make it the only probable explanation of all the phenomena, so that I certainly regard it as the true one.—Yours faithfully, F. F. RENWICK.

Ilford, E.

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## JUDGING AT THE "NORTHERN."

To the Editors.

Gentlemen,—Your critic of the Northern Exhibition has a most astounding sentence in his remarks on the judging departure made this year. He says: "It is a question of art ethics as to whether exhibition judges should take with them their own previously formed standard, or whether they should derive their standard from the average merit of the mass of works submitted to them."

To take this as applying to award-giving only; which is the best, the good and useful judging: to give awards to the merely relatively best or to the positively good in themselves, withholding awards if none are worthy of such distinction?

To apply the dictum to selecting, it is seen at once to be impossible. A picture is selected because it is good, because it is liked, not because it is relatively better than others. What sense is there in this comparison of one with another? To judge is to decide on the individual merits of a thing.

To attempt to "make a standard from the average merit of the mass submitted" would be most disastrous to exhibitors. All the value in the distinction of public hanging would be gone, as it would be meaningless, no positive verdict being given, but merely that this poor thing is possibly better than that bad or other poor thing. No wonder exhibition value is diminishing if this is ever the case outside your critic's fancy.

And what in the name of reason is the use of appointing a judge if he is not to take with him his own exhibition standard? If the personal value of the judge was not a question when he was invited, why give his name as the judge? If the local needs alone are to be considered, why not let the local committee do the work? If a stranger is thought desirable, why rob him of his individuality and ask him to lay aside all his critical training?

No honest critic can "make a standard from the average merit," &c. If he tries to he will be compelled to pass much of which he wholly disapproves—things that ought not to be given the distinction of the personal selection, and therefore approval, of Mr. So-and-so. Anything more unwise for the average worker I cannot imagine.

I sincerely hope it will come to be the rule in future that no one will consent to act as a mere awarder of medals, &c., but to make the hanging selection also; and if the supply is insufficient for gallery needs, to adopt the suggestion I made at Liverpool, which covers the ground all round, is fair to every exhibitor, and keeps the conscience of the judge uninjured.—Yours,

Frederick H. Evans.

32, Rosemont Road, Acton, W.,
March 3, 1911.

The writer of the review of the Northern Exhibition, to whom we sent proof of the above letter from Mr. Fredk. H. Evans, replies as follows:—

To the Editors.

Gentlemen,—*Vide* Para. 2 of Mr. Evans's letter, the "positively good in themselves" will get their awards safely enough in a system that adopts the relative standard. Para. 3: Again the relative standard is in force here, willy-nilly. Para. 4 refers to your critic's "fancy." It is no fancy of mine, Gentlemen, but fact. I have been judge often enough at photographic shows, and have possibly been glutted with the sort of things that Mr. Evans would think alone worthy. Nevertheless it has always been a matter for relative judgment in my experience. My own personal standard is no doubt as high as Mr. Evans's—regarding photographs it is possibly even higher; and, if I were to please *myself* in hanging or awarding, my shows would be even more select than his, no doubt. But what egotistical nonsense I should be guilty of if I divulged my own feelings. If a society does me the honour to invite my judgment on their work I give it them, knowing that it is not my personal judgment they want so much as a trustworthy outsider's selection, obviously for expediency's sake. They certainly do not wish me to tell them that in my opinion there are only two worth putting on the walls. I am quite sure that the passage in my review to which Mr. Evans takes such exception will meet with the endorsement of all other judges who know the requirements of exhibition organising. As to the "local needs" being considered, it seems to me that that need is the paramount one. Societies vary, as do individuals. Some are young and raw. They require a lower standard, or they would be ruled out entirely. They all improve in time, but the standard of perfection should no more be applied to them than we should apply the standard of an honours examination in literature to a schoolboy writing his "composition exercises" in his first year. The North Middlesex Society makes all its awards, apart from those of its annual show, by its own voting, and a better or fairer method I cannot imagine. I do not believe in the judgment of one man or of two. It is usually questioned, and must of necessity be, for we do not all see and feel alike. I deprecate the custom of outside judges for exhibitions utterly, as being unfair and demoralising; but while it remains the custom I shall observe it. I also deprecate awards which make the necessity for judges. It leads to pot-hunting and endless repetitions in the galleries. For all this, I cannot see that the judge, if he uses the comparative standard instead of the ideal standard, must "lay aside all his critical training." Surely he wants a little of that for his comparisons. I regret that I fail to see any force in Mr. Evans's penultimate paragraph; but it suggests to me that anything more exasperating both to visitor and exhibitor than the outrageous system of blue-labelling as adopted at Liverpool I cannot imagine.—Yours, etc., The Critic.

To the Editors.

Gentlemen,—May I congratulate you upon your critic's report of the Northern Photographic Exhibition now being held in Liverpool, which appeared in your last issue of the "B.J."? Both the choice and criticism of the pictures was excellent, and also the criticism of the new method of judging, which, as you say, will give rise to much discussion and vexation of spirit. The following note, which appeared in the catalogue, and which is entitled "Judge's Note," you rightly point out, is palpably a committee's note:—"The committee regret that the judges could not select pictures of sufficient merit to fill more than a part of our wall space; but as the selection was announced to be wholly in the hands of the judges, we were glad of their suggestion that the pictures they selected should be marked with a blue label, and that the committee should fill up the remaining wall space with their own selections from the rest of the prints sent in."

During my frequent visits to the exhibition I came in contact with many photographers who expressed their disgust at the utter selfishness of the committee, as the following analysis plainly shows:—Fourteen members of the exhibition committee have between them 101 exhibits, twenty-eight of which are distinguished by the blue label and nine of which are lantern slide exhibits, leaving a balance of sixty-four (committee's) pictures which are not, according to their own note, of sufficient merit; and yet, I am told, there are several rejected pictures of real merit. I certainly think the judges ought to do their duty and select pictures for the whole exhibition. So much for the new method.—Yours.

Fair Play.

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photograph Registered:

G. H. J. Burrows, 45 and 47, High Street, Amble, Northumberland. *Photograph of John Flint.*

J. Mills, 25, St. Paul's Road, Northampton. *Four Photographs of The Marchioness of Exeter.*

J. T. B.—We are sure as to the process, but we think if you send your specimen to the Leto Company they might be able to supply you with a paper that gives very similar results.

Anastigmat.—The camera which we think is most likely to fulfil your requirements is such a one as the Sinclair "Una," the

Houghton "Sanderson," the Thornton-Pickard "Ruby," or the Gandolfi "Universal." See descriptions in the "Almanac." We certainly advise you to pay the extra price for one or other of the two lenses you name.

WOOD MOUNTING PLAQUES.—I should be pleased if you would kindly tell me in the "B.J." where I may obtain wooden plaques on which to mount prints. Instead of a cardboard mount, I want to substitute a wooden one, on which the print can be dry-mounted.—WOOD.

You had best use the wood panels sold for painting. Try Roberson's, Long Acre, close to the corner of Drury Lane, W.C.

DRYING BROMIDE PRINTS.—Some months back you mentioned a method of drying bromide prints by laying them face up on blotting paper, blotting them off, and then laying over them a piece of linen and rolling the whole sheet of blotting paper into a tube with the print face out. Will you kindly tell me what is the name of the linen and where obtainable, as, of course, it must be fluffless.—E. J. SANDER.

The material is "longcloth" calico. See the "Almanac," p. 560.

"ALMANAC" LEADING ARTICLES.—Will you please inform me if it is possible to obtain any of the leading articles referred to on page 483 of this year's "Almanac"? If it is so, and you would kindly let me know, I should feel greatly obliged.—H. W. WICKS

Only by obtaining the respective issues of the "Almanac." You can perhaps obtain some of these by advertising for them, but many are now very scarce. All can be seen in the Library of the Patent Office, Southampton Buildings, Chancery Lane, W.C.

HAWKER'S LICENCE.—I wish to take photographs of different business houses and factories and make them into postcards so that I can dispose of them to the hands when they leave the premises. I have read one or two articles on hawkers' licences in the "Journal," and would like your advice on the subject.—A. SMALL.

Bearing in mind the prosecution a year or two ago by the Inland Revenue authorities at Worcester, we should say you will certainly require to take out a pedlar's licence.

DEVELOPING BATHED PLATES.—When developing erythrosine bathed plates I find the developer fogs them. I use metol and hydroquinone. Is this fogging the usual result with such plates, or would a different developer be better? I develop in absolute darkness.—W. TOWNER.

Metol-hydroquinone, is made up from the usual formula, is a very suitable developer. The fog is more likely to be caused in the drying, by exposure either to actinic light or to gas fumes. If you have not at disposal a proper cupboard, with a current of warm air, the best thing to do is to rack the plates in a large light-tight box, placing a dish of calcium chloride or quicklime at the top.

ACID HYPO BATH.—Could you advise and help us in this little matter? Acid hypo made up with acetic acid, alum, sulphite soda, etc., as per formula; by using ordinary care this is made up as clear as the water itself, but in twenty-four hours a thick creamy substance is formed. Can you suggest any cause for this; also a remedy? We have tried metabisulphite and hypo, but find this leaves a sediment on the cards of a brownish hue. Can you suggest any remedy for this?—PYRAX.

The creamy substance is sulphur, due to the addition of the acid; but the sediment found on the cards fixed in the other bath is unusual. Possibly you overwork the bath and carry too much developer into it with the prints. If you do not wash between developing and fixing you should have a new, fresh fixer made up each day.

HALF-TONE WORK.—1. I should be extremely obliged if you would kindly suggest me in your paper the best practical manual of half-tone process, line blocks, and specially for making quickly newspapers' blocks; and (2) if there is some place where I can learn the modern methods practically and quickly, paying, of course, the rate required and how it is. 3. What are accredited firms in London for production of half-tone blocks?—J. F.

1. "The Half-tone Process," by Julius Verfasser, 5s.; "Photo-mechanical Processes," by W. T. Wilkinson, 4s. from Penrose and Co. 2. The L.C.C. School of Photo-Engraving, Fleet Lane, Farringdon Street, E.C., and the Photographic School, Polytechnic, Regent Street, W. 3. Too numerous to specify; but, say, Carl Hentschel, Ltd., Fleet Street, E.C., and John Swain and Co., 89-90, Shoe Lane, E.C.

OVERCOMING REFLECTIONS.—I have been to photograph five overmantels, and I have tried two or three plates and can't get them to my satisfaction. I have hung a sheet to stop any reflection, but does not show up the bevel of the glass, and if I take it from an angle it reflects the turnings in the glass. If I take it from the front it does not show off the brackets. I should be much obliged if you would tell me how I could stop the reflection. Is there anything I could put on the glass. I tried soap rubbed on with cotton-wool, but it looked patchy.—S. B. R. C.

Soft putty rubbed on the glass is about the simplest thing to dull reflections, and if circumstances permit, burning magnesium ribbon so that the fumes deposit as a thin film on the glass may be tried; the deposit is easily wiped off where not required. Another suggestion we may make, though we have not tried it, is to spray on a very thin matt varnish (by means of an atomiser), removable with turpentine.

PRICES.—My usual charge for C.C. or bromide cabinet is 15s. dozen, giving two or at the most three positions, charging more for vignettes or better mounting, etc. I exposed nine plates (cabinet) on a baby of three years of age; seven proofs submitted; fourteen copies ordered in the proportion of 3—3—3—3—1—1 from six negatives. Would 25s. dozen be a fair charge for the 15s. quality, or should it be higher? What is usually the rate for extra negatives? For extra sittings I charge 1s. if I am satisfied with the proofs but the customer wishes to sit again, but this is not often required—as a rule, they are generally very pleased.—A YOUNG PRO.

We do not think that you are entitled to charge more than the ordinary dozen rate, unless you state on your price list or when submitting proofs that only three positions may be selected without extra charge. You might charge 1s. 6d. or 2s. each on the additional poses to cover cost of plates and retouching, but 25s. per dozen seems altogether too high a charge.

AUTOCHROMES OF ILLUMINATION.—At the forthcoming Coronation festivities in this town a very extensive electrical illumination is projected. I am anxious to make a record of this for the photographic Survey, and am inquiring whether it would be possible to render such an illumination of buildings, etc., after dark by means of Autochrome plates, and, if so, about what exposure would be required with a lens at *f*/6, and if the Autochrome filter would be required or not. The main illuminations consist of 8 or 16 c.p. incandescent electric lamps—red, blue, yellow—many hundreds being employed to outline the buildings. Any advice you could give me would be esteemed by DOLPHIN.

Yes, such a subject may be obtained on the Autochrome plate, providing you can secure a position where you will not be troubled by many passing lights in the field of view, as the exposure will be considerable. We should say an hour at *f*/6 or *f*/8 will not be too much. Although the Autochrome filter is adjusted for daylight, and special filters are supplied by Lumière for electric illumination, yet for such a subject as this, where there are no delicate gradations of colour, the usual filter should answer sufficiently well.

CINEMATOGRAPH REGULATIONS.—I recently purchased one of Messrs. Hughes' bioscopes, films, etc., at a sale, and if possible hope to make use of it in this part of the country. How can I ascertain particulars of new Act or regulations, with regard to safety, in case I wish to give an entertainment in village schools or small halls? I would have to use the oxy-hydrogen limelight with ether saturator. My query really is, What precautions must I take for the safety of the public and fulfil the conditions of the Act relating to bioscope entertainments?—D. B.

The regulations of the Home Office as to cinematograph exhibitions are now so strict that our candid advice to you is to leave this business alone, as you are more likely to land yourself in for an amount of trouble which will never repay you for the possible profit. We may, however, tell you that you must not use an ether saturator of any description. On proposing to give an entertainment, the parties to whom the hall belongs must notify both the local council and the police. If cinematograph shows are to be given in church buildings not more than five times a year, the cinematograph box may be placed in the auditorium, but none the less must be a fireproof erection. Even then, if the exits are not considered satisfactory the police may forbid the performance, or in the case of your proceeding with it may treat your act as an indictable offence.

**Colour Photography.**—Would you be good enough to give me particulars of the most successful attempts at colour photography in two colours? 1. Is the Urban process a two-colour one, and, if so, are the colours green and red, and then projected by green and red light, or are green and red stained films superimposed? 2. Some time ago in the "B.J." a writer recommended green and red, taking filters and then printing in red and green. He said that blue may be represented by a light grey, but where the grey comes from I don't know, do you? 3. Can the tricolour carbon films, as made by Autotype Co. and Rotary Co., be used for lantern slides? 4. Do you think carbon tissue carmine red would combine with an iron blue for lantern-slides, and would it be transparent enough? 5. If a stereoscopic pair are projected side by side by red and green light, can these be seen stereoscopically with red and green eyeglasses, or must pictures be superimposed? 6. Can any more transparent colours than red and green be used?—R. L. Boyd.

Undoubtedly the most successful results in transparency work have been obtained by the screen-plate processes, such as the Lumière Autochrome and other plates. With these, only one lantern is required for projection, as when showing ordinary slides. Speaking generally, it appears to us that you do not realise the difference between superposing coloured pigments and superposing coloured lights. If you take a red-green film and place one upon the other between two glasses, they will, when projected upon the screen, give an almost black patch, but if the same two films are put in two lanterns and their images made to coincide, the patch will be of a bright yellow colour. These two methods are known as the subtractive and additive combinations of colours. Replying to your specific queries:—1. In the Urban Smith Kinemacolor process the colour effect is obtained through persistence of vision. Sixteen red pictures alternate with sixteen green ones are projected on the screen in each second, the combination being in the observer's brain only. If the machine stopped at any time, there would be either a red or a green picture showing. 2. No process of printing in two colours will given even approximately correct results, Gurtner's process, the most practical yet introduced, failing to render red. 3. Tricolour carbon transparencies will answer well if the pigments are transparent, but not if such colours as chrome-yellow are used. The Sanger Shepherd system of three dyed films gives the best results, having the advantage of permitting the various colours to be accurately balanced. 4. The two pigments you mention are sufficiently transparent for slides, but we cannot see what advantage you would gain by combining them. 5. The stereoscopic pictures may either be superposed or shown side by side on the screen. When viewed through the coloured eye-pieces, however, the result will be a monochrome. 6. The nature of the colour and not the particular tint determines its transparency. Red and green are as transparent as any other colours.

**Blue Stains on Prints.**—Enclosed please find some postcards, which are fearfully blue stained. The method of working is as follows:—Developer used is diamadophenol. Fixing bath, plain hypo. Various acid fixers gave same results. Instead of cleaning the stress marks off in the usual manner by methylated spirits, the prints are rinsed with running water, then put through a weak bath of ferricyanide to remove the stresses, afterwards put a hypo solution to destroy the action of the ferricyanide. They are then given six changes of water to wash. Put through a soda destroyer, specially prepared by C. Winthorpe Somerville, for seven minutes, according to his instructions. Then they are given six more changes of water. The washing is done by changing from one dish to another, and clean water replaced after each change. After this they are bleached in equal parts of potass ferricyanide and potass bromide. Given four changes of water. When prints leave fourth water they are quite free from yellow stain, both back and front. Then they are toned in soda sulphide, rinsed in two changes of water, then put in a weak alum bath for a minute. They are then finally swabbed over with wool under running water and given six changes of water. They are glazed with "Ensign" solution. This stain is not caused by iron, as it appears at first sight. It is easily removed by a solution of salt, or a weak solution of ammonia, or by passing them through the sulphide solution again. The samples enclosed are, of course, the worst I could find. They are mostly like faded ink blots generally, but with this paper they are more or less as enclosed on the sheets affected. It is not of general occurrence, but I hate being baffled as I have been over this. They are not seen till after the final washing, but principally when dry. I at once blamed the ferricyanide and alum, but there is the sulphide between, also washing after bleaching, which the prints come out of quite clean, also the washing after the sulphide. I increased the time of washing, also tied muslin and wool on all taps, but still get it. There is no iodine used in the place. I notice when cleaning the stain off with ammonia the spots caused by iron turn to a bright green, sometimes to a purple. The alum bath gets quite a blue tinge in it. I should certainly substitute formalin for the alum, but cannot do so, owing to it bringing out sores on the girls' skins similar to broken eczema, on all unprotected parts. Do you think if I gave the two washes after sulphide, then passed them through a weak ammonia bath before aluming, it would prevent it? If you could tell me the cause of this, also its prevention, I should be much obliged by your kindness. The water, I may add, comes through iron mains and very old lead compo pipes inside the building, also through water meters of unknown date, which are no doubt well coated internally with all sorts of impurities. The filter rags are very brown after three days' use when they are changed. I am supposed to get a tone similar to one of the cards I enclose. I am under the impression that I will not get any nearer than I get, as their paper will be specially manufactured to produce this tone, which I believe is really hypo alum toned. I have tried different proportions of diamadophenol developers, also used ammonia bromide and salt with the ferricyanide, also ammon. sulphide, but get no difference. I can nearly match the tone from original negatives of similar studies, but this is the nearest I can get on copies of any kind.—Blue Stain.

Your trouble is undoubtedly due to iron, and the most probable source of iron is the alum, which often contains it as an impurity. We should advise you to test this. It would be safer to use chrome alum as a hardener, but we suggest that you would probably get on quite well without any alum. Your method seems unnecessarily complex and lengthy. Twelve changes of water for washing should be sufficient, without the use of any hypo eliminator, and the alum might be incorporated in the fixing bath. See formulæ in "Almanac." The tones you obtain seem to be good ones for the method, but we have no doubt the tones you wish to imitate are obtained with hypo-alum. Why not adopt this process? It is a very simple and satisfactory one if you have much work in hand.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2655. Vol. LVIII. FRIDAY, MARCH 24, 1911. Price Twopence.

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## SUMMARY.

The Colonial Number.—Except for small prepaid undisplayed advertisements, the columns of the "B.J." for Friday next close this evening (Friday) at six o'clock.

Situations Abroad.—A section, specially for assistants seeking situations abroad, will be a feature of next Friday's Colonial issue. In this connection a note emphasising the prospects for photographers in Canada appears on page 219.

A considerable degree of interest has been aroused in connection with the recent request of the jury in the Clapham murder trial for the prohibition of photographing in Court. As will be seen from the opinions expressed by a number of newspapers, the incident has also led to a discussion of the rights of the individual in respect to the reproduction of his photograph in the illustrated press. (P. 216.)

A portrait and a brief biography of Mr. F. P. Moffat, the newly elected president of the Professional Photographers' Association, appear on page 219.

Professional topics, such as coloured portraits, card indexes, anthracite stoves for studios, and photographing shop windows, figure, with other topics, under "Correspondence." (P. 224.)

A note on the advantageous use which can be made of a long-focus R.R. lens for portraiture appears on page 210.

A number of hints on artificial light photography with magnesium and a formula for a flashlight powder will be found in an article on page 212.

In an article on page 211, Mr. Thomas Manly gives instructions in the latest methods of working the Ozobrome process.

The conclusion of the article on the Bromoil process by Mr. H. C. Pepper will be found on pages 214-6.

Some practical hints on photographing line diagrams and preparing lantern slides of such subjects will be found in a leading article. (P. 210.)

Some notable books with photography as their subject are announced to appear shortly. (P. 213.)

Some conclusions by American photo-engravers as to the cost of line and half-tone plates will be found under "Photo-Mechanical Notes." (P. 219.)

## EX CATHEDRA.

**Next Friday.** To-day, March 24, the advertisement pages of the Colonial and Foreign number of the "B.J." are finally closed for the press. Any photographic firms still wishing to be represented in this mammoth issue must place their commissions with our publishers before six o'clock to-day. When next Friday's issue appears it will be found that the fourth "Colonial B.J." marks an even greater and more representative response on the part of the photographic trade to take advantage of the world-wide special circulation offered in this number. The section of the issue containing small undisplayed announcements will be made up, as usual, on Wednesday next, including those prepaid advertisements which reach our publishers by the first post on that day. But the huge proportions of the whole issue make it necessary to place a considerable part of it with the printers several days in advance of this section. On behalf of our publishers we therefore beg for the further friendly assistance of any advertisers who may have proofs in their possession at the time these lines appear: they will lighten the labours of the staff of the "B.J." by returning corrected sheets with convenient rapidity.

* * *

**The National Physical Laboratory.** A large number of visitors attended the laboratory on Friday, March 17, which was the annual visitation day, and they found many new features of interest, for new buildings are springing up in all directions, while the work of the institution is rapidly expanding. We regret, however, to see from the report that as regards photographic lens and shutter testing the laboratory is very little resorted to. Whether this means that manufacturers are afraid to submit their introductions to critical methods of testing, or whether they are simply neglectful of the opportunity, the fact is equally regrettable. Some very remarkable examples of shutter tests are shown in the testing-room, and from these it appears that one very serious defect is inconsistency. In some cases repeated tests of the same shutter under precisely the same conditions give quite different results. The efficiency in one trial may be all that can be expected, while in the next two cases it is next to nil, or just about as bad as it can be. Results such as these show what highly unsatisfactory instruments photographic shutters can be, and manufacturers who wish the public to have confidence in their workmanship would gain rather than lose by going to the trouble and slight expense of securing certificates. Many photographers would gladly pay a little extra for a so-called "Kew" certificate which would guarantee their purchase to be a reliable article. Though the shutter is such an important part of a photographic outfit, the purchaser never knows whether he is buying a really serviceable piece of apparatus or a complex mystery which will seize every opportunity of letting him down and spoiling his plates. An interesting item in the laboratory outfit is Lord Blythswood's ruling machine for making diffraction gratings. We understand it is hoped that this machine may be got into such perfect working order that the laboratory will be able to produce gratings of first-class quality; an event which the scientific world will no doubt look forward to with considerable eagerness, such gratings being great rarities at the present time.

* * *

**The Efficiency of Diaphragm Shutters.** Some very interesting points in regard to this matter were dealt with by Mr. Lan-Davis in his lecture at the R.P.S. on March 14. A diaphragm shutter is, as a rule, constructed more or less on the principle of an iris diaphragm, and Mr. Lan-Davis pointed out that the efficiency diminishes as the number of leaves is increased, while at the same time the outside diameter of the shutter becomes smaller. The highest efficiency is obtained with two leaves only, but the use of only two leaves involves the employment of a fairly large case to hold them. In making these statements we take it Mr. Davis was assuming the diameter of the shutter aperture to be constant; but there is another point of view that seems to us worth consideration. The efficiency which is of practical use is not that of the shutter alone, but of the shutter and lens combined, and an important factor is the ratio of the shutter aperture to that of the lens. The larger the former, the greater is the efficiency. Hence, given a shutter casing of a fixed size, it would appear that the greater the number of leaves used the greater should be the efficiency, because the shutter aperture increases with the number of leaves. From this it would seem that two separate sets of factors are involved in the consideration of the maximum efficiency possible with a shutter of given size and a lens of given aperture, and possibly an exact working out of the complete problem would result in finding that the particular number of leaves giving the best result will vary with the relative proportions of shutter casing and lens aperture. We are not sure whether this will be so or not, and only make the suggestion that it is a matter worth investigation. It is, of course, quite possible that the increased efficiency produced by increasing aperture is less than that produced by altering the shape of the aperture, which is the natural result of reducing the number of leaves. In this case Mr. Lan-Davis's formulæ cover the whole ground, but at any rate it is quite obvious that the use of a shutter of larger diameter is most desirable, and that the compact, small shutters now so popular are, as pointed out by Mr. T. Smith, of necessity of low efficiency.

* * *

**Rapid Rectilinears and Euryscopes.** A great deal of misconception still exists with regard to the suitability of certain lenses for portraiture. In the early days of photography the utmost rapidity was desirable owing to the comparative slowness of the wet collodion plate, and the Petzval lens was designed by the optician of that name to give good definition over a relatively small field at a large angular aperture. A lens of twelve inches focal length working at F. 4 was a very usual and favourite instrument. In addition to the lenses made by such leading firms as Dallmeyer, Voigtlander, and Ross, excellent lenses were made by various French and other firms, and the vogue of the portrait lens was firmly established. In the larger sizes stopping down was necessary in order to secure sufficient depth of definition. This being so, very little was to be gained by using the Petzval form, and so an improved form of rectilinear lens was introduced, working at about F. 6 and designated "Universal" because of its suitability for either portraiture, groups, or outdoor photography. There are many of these lenses still to be had, and although they are not now made to any extent owing to their supersession by the flat-field anastigmats, they are still extremely useful instruments. A universal lens of 18 or 20 inches focal length may be bought in excellent condition for a mere fraction of the cost of a modern anastigmat, but such a lens, when used at full aperture for cabinet or whole plate heads and 12 x 10 three-quarter figure portraits, will perform excellently. Of course, only the centre of the field is being used, and rarely will it be necessary to stop down below the maximum aperture of F. 6. Even if F. 8 is occasionally necessary, it will be to secure depth, and similar stopping would be required with an anastigmat of the same focal length.

* * *

**Getting Business.** This is one of the last things the average professional photographer thinks of. If the work comes his way he can do it, and generally do it very well, if we bear in mind the fact that in most cases he only gets the class of work which he is able to do, and which he caters for. But if insufficient work comes along he too often sits down and grumbles, blaming the Election, or the Budget, or the weather. The old adage that good wine needs no bush might be true when purveyors of wine were limited in numbers, but we opine the wine-sellers hung out the bush all the same. The professional worker who hides himself in a town, or who only gives the usual modest show-case indication of his presence in the midst of a community, is losing much business he ought to secure. Whatever his training, education, social position, or habits may be, he ought to mix amongst his fellows. Let him join a club where he will meet people whom he can meet on an equal footing. If he is young he may also join tennis, cricket, rowing, or football clubs, and if musical some choral society. In this way, without any appearance of undue pushfulness, he will enlarge his circle of friends, and in time make most of them customers. Further than this, he will get information as to what is going on around him and will see opportunities of which he would otherwise only hear when it was too late. It is much better business to get about the town a little, looking after work and to pay someone else to mount and spot the prints, than to acquire the habit of staying indoors fiddling with the details of work which really do not need the constant attention of what should be the master mind of the business.

## PHOTOGRAPHING DIAGRAMS.

It is a curious fact that many workers seem to find great difficulty in photographing plain black and white subjects, such as drawings or printed matter. Why this should be so it is difficult to undertand, for the operation is one of the simplest that can be attempted with a camera. Probably a frequent cause of failure is the use of the wrong plates. We know of some photographers who have attempted to produce negatives on fast ordinary plates quite unsuited to the purpose, but, given the right plates, and process plates should, of course, always be used, there should be no trouble at all. The essential characteristics of a perfect negative are complete opacity in the dark portion and perfectly clear lines. The first condition is secured by avoiding under-exposure, the second avoiding over-exposure, but between the two permissible extremes there is considerable latitude. If the exposure is long enough to permit of maximum density being attained, and yet not so long as to cause the lines to be obscured by halation, the result will be quite satisfactory;

it is, however, always best to err, if at all, on the side of short exposure, for a slight lack of density can be remedied with intensification, while halated lines permit of no remedy. The lines are invariably more or less greyed by surface fog, therefore a reducer is always advisable. This should be Farmer's reducer, and the best method of applying it is to use a cottonwool mop. Dip the mop in the reducer, then pass it rapidly over the lines in the direction of their length and immediately wash off under the tap. This is no cure for halated lines, but surface fog is removed instantly. For intensification mercury can be used if the negatives are not to be kept, but if it is required to preserve them, mercury methods should be restricted to mercury and ferrous oxalate, or else silver, chromium, or iodine intensification should be resorted to. The lead intensifier is very commonly used, but if such a powerful method is really necessary the exposure must be a very bad one, and it generally pays better to make a fresh negative.

In making the positives, which are usually lantern slides, the most usual mistakes are over-exposure and under-development. There is apparently a great latitude permissible in this operation also, but if a series of slides is made, varying the exposure from the very shortest that will give an image up to the longest that can be given without hopelessly fogging the slide, close examination will show that while each slide may look all right when studied by itself, yet the thickness of the lines varies enormously with the different exposures. Too long an exposure, of course, causes halation, that is, the lines show grey borders which fade away at the clear part of the film, but before this extreme effect is produced the lines show a marked widening as the exposure is increased, though no blurring or falling off in sharpness may be apparent. A very brief exposure is sufficient to give a good result, showing the finest possible lines, and as a general rule a longer exposure than is really necessary is given by most workers. Provided the exposure is not too short, there is no difficulty in securing black lines. This is merely a question of time of development, and full blackness should be aimed at, so that a weak Farmer's reducer may be afterwards used as a clearing bath. If no sign of grey fog can be detected on a critical examination, this reducing bath may be dispensed with, but the slide is always better for clearing with either chrome alum and citric acid or with dilute hydrochloric acid. Neither of these baths should be applied until the slide is fixed and washed, and their main purpose is to clear out the slight opalescence that generally exists in the gelatine after washing with hard tap water. As regards developer, hydroquinone and either caustic soda or potash is usually recommended, and we know of no more suitable one.

We have referred before to halation clouding the white lines in the negative or blurring the black ones in the positive. In both cases we had in mind the halation or side-spreading of direct over-exposure. The use of unbacked plates will lead to the much earlier appearance of halation due to reflection, and in this case the latitude of both the process plate and the positive is greatly reduced. Backing should be considered as absolutely essential in the case of both the negative and the slides, and neglect of this precaution is probably one of the most common causes of trouble among those who fail at simple black and white work.

# RECENT ADVANCES IN OZOBROME AND THE CHROMIUM PROCESS VIEWED IN A NEW LIGHT.

A SOMEWHAT close study of the chemical and physical reaction involved in the bichromated gelatine processes has resulted in several important improvements in Ozobrome. Since its introduction a separate acid bath has been devised, by which a considerable amount of control in depth and gradation of the image can be effected. The pigment plaster is now first soaked in the pigmenting bath, and forthwith immersed in a weak acid solution for a certain predetermined time. The shorter the immersion the deeper the colour of the resulting picture, while a longer immersion gives a better-tanned and more delicate image—provided always that the same amount of silver is acted upon.

In making bromide prints specially for the Ozobrome process, it should be borne in mind that the greater the mass of silver deposited the easier it is to regulate the extent of tanning and to control the gradation of the resulting picture. It may be useful here to describe what a good bromide print is. It is one that has received such an exposure that it will be fully developed in between one and two minutes. If the exposure has been too long, and the development stopped short, or if the exposure has been insufficient and the development forced or prolonged, the resulting image will be poor in silver. An excellent developer is a very old formula:—

| | |
|---|---|
| Metol | 35 grs. |
| Sodium sulphite (crystal) | 2 ozs. |
| Hydroquinone | 50 grs. |
| Sodium carbonate | 1½ oz. |
| Water to make | 20 ozs. |

For use dilute with an equal part of water. This developer contains no bromide, but a little may be used. It gives rich black images, and keeps well.

In the practice of Ozobrome the only point requiring the exercise of personal judgment is the estimation of the amount and quality of the metallic silver constituting the bromide image. The following facts may serve as a guide:—

A deep black print obtained by using a fairly strong developer without bromide is rich in silver, and will require an immersion of 15 to 20 seconds in the acid bath, and will give a very beautiful result with the Ozobrome pigment plasters.

A grey bromide print produced by a diluted developer to which a moderate amount of bromide has been added contains a fair amount of silver, and a shorter immersion in the acid bath—say, 10 to 12 seconds—will also give excellent results.

A green or brown bromide print, obtained by an overdose of bromide of potassium, or by an old and weakened developer, contains adulterated or debased silver, and an immersion of 5 or 7 seconds in the acid bath may produce a passable result.

With regard to chloro-bromide, or gaslight, papers, all that glitters is not gold, and all is not silver that shows fine blacks. These images should be treated as consisting of adulterated silver, and consequently require a short immersion in the acid bath, of, say, about 6 to 10 seconds. The results are perfect.

An improvement in the acid bath is another result of a better understanding of the principles at work. The acid sulphate of potash or soda called bisulphate of potash or soda* is found

---

* This must not be confounded with meta-bisulphite, which is quite a different compound.

(for a well-understood reason) to act much better than the free mineral acid. Chrome alum is also better than ordinary alum, inasmuch as it has no tendency to cause flatness. The object of citric acid is to prevent any undue adsorption complex. Excess of bisulphate produces strong tanning and consequent flatness. Excess of citric acid has a tendency to cause delicate details to wash away. Excess of chrome alum renders the gelatine film harder and more difficult to develop.

The acid bath now in use is:—

| | | | |
|---|---|---|---|
| Water | 25 ozs. | or | 1,000 ccs. |
| Chrome alum (pure) | 3 drams | or | 15 grammes |
| Bisulphate of potass. | 1 dram | or | 5 grammes |
| Citric acid | 25 grains | or | 2 grammes |

An exceedingly useful acid bath is one that contains chrome alum and citric acid only, the formula being:—

| | | | |
|---|---|---|---|
| Water | 25 ozs. | or | 1,000 ccs. |
| Chrome alum | 3 drams | or | 15 grammes |
| Citric acid | 1½ drams | or | 7.5 grammes |

and it is a pity it is not more generally used.

This bath might very appropriately be called the "Anti-Fog" bath, as clean and brilliant pictures may be obtained from slightly fogged or over-exposed bromide prints by an immersion of 15 to 20 seconds. In fact, so many slightly over-exposed bromide prints are turned out which do not at first sight appear to be over-printed, that it is advisable to keep on hand a stock solution of this very useful bath, which should not be used where there are any absolutely pure whites in the bromide print.

In hardening the bromide emulsion, formalin should be used, and not ordinary alum.

A plain fixing bath is the best, but a small quantity of metabisulphite or liquid bisulphite of soda will do no harm.

The number of Ozobrome copies that can be produced from a single bromide print depends upon the original deposit of silver, and upon the strength of the paper support. From a good bromide emulsion, coated upon a thick paper support, 8 or 10 good Ozobromes can be obtained with ordinary care; further copies may show a falling off in the very light details, but an increase of acid will very often correct this tendency.

The only stage in the operations that has to be done promptly is in bringing the plaster (after immersion in the acid bath) into contact with the bromide print, and the subsequent squeegeeing.

The reason is apparent. The action commences very soon after contact, and if by accident the papers (through fluting, etc.) are not in intimate contact, and there is a delay in squeegeeing, the solution will act on the image irrespective of the gelatine, and cause patchiness. There is no occasion whatever to hurry, but delay or hesitation should be avoided.

Also, after squeegeeing the plaster and bromide together, it is advisable to allow them to remain on the squeegee board, and not to attempt to lift them up until the chemical action is well forward—say, in about five minutes, or until another print is ready for squeegeeing.

In hot climates where the temperature of the water is 80 deg. to 85 deg. Fahr., the plaster should be immersed in the pigmenting bath for 30 seconds only, and laid face upwards upon blotting-paper until it becomes flat and limp (about one minute), then passed into the acid bath for 10 seconds only, and brought into contact with the bromide print under water, as usual. Sulphate of magnesia (Epsom salts) to the extent of 1 per cent. added to the working pigmenting bath will raise the melting point of the gelatine a few degrees, and give bright pictures.

THOMAS MANLY, F.R.P.S.

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# PORTRAITURE BY MAGNESIUM AND FLASH-POWDER.

[In the following article in a recent issue of the "Camera," the writer, Dr. George W. Betz, describes the satisfactory use of magnesium ribbon for artificial-light exposures, and, in dealing with flash-powder, gives a formula found to yield a safe and powerful light. We do not care to advise the home preparation of flash-powders, as accidents can happen even when every care is taken, but the formula and directions given by Dr. Betz appear to merit attention by those interested in this branch of work.—EDS. "B. J."]

THE "Danger" sign stands at the entrance of the flashlight domain. Nevertheless, many fools have rushed in and many accidents, some fatal, are the result. Danger lurks in the mixing of the powder and not in its use when handled with care. The average flash pistol is many times worse than its brother in iniquity, the toy pistol of Fourth of July fame. And the crop of flashlight pictures and flashlight accidents remains as large as ever. The object of this paper is to point out to those who are determined to take the risks the means at hand for reducing these to a minimum without compromising the results.

Where great speed is not required, as in still-life studies and interiors, magnesium ribbon stands pre-eminent. Here we have an illuminant of sufficient power, safe as a candle, and that can be placed like a candle at any point, even in the field of view, provided it be shaded from the lens. It is best held in a pair of pliers, and lights readily from a burning match. It is then, while burning, slowly moved about over a large area, so as to counteract its tendency to throw hard shadows, unless these very shadows are desired as in candle-light effects. As it burns rather slowly, and frequently goes out entirely, it is inefficient for portraits, but for pictures of interiors it is nearly ideal. One may use five or six pieces, each about 6in. long, to get a fair exposure. One piece is set off well above and to one side of the camera, one behind the camera and four pieces at the other side, all held high and kept moving. No reflector is required or even desirable; lighting up the entire room makes far softer and more natural effects. Used as described on page 60 of the "Camera" for February, 1909, or on pages 505-506 of the "British Journal" Almanac, 1910, ribbon is capable of the finest of fireside effects, burning [illegible] rapidly, but not with any sudden puff of smoke and flame, and with no danger to the draperies of those sitting close to it. This is also its best form if for any reason we wish to use it for portraiture. With such a sheet made up of eight pieces, each about 4in. long, we get a full exposure in quite a large room. This question of full exposure is a vital one in flashlight work, and the quantity of powder and ribbon recommended may seem excessive when compared with the doses mentioned by various manufacturers for their powders. A flashlight picture with over-exposed shadows is about as common a phenomenon as an over-exposed snap-shot.

Taken in the order of their relative safety, the blow-through flashlamp stands next. Here we enter the outskirts of the danger zone. The blow-through lamp consists in principle of an alcohol flame through which pure powdered magnesium is blown by means of a rubber bulb. This is the form of flash most in vogue with the professional photographer, and is fairly free from smoke and noise, though not as perfectly so as ribbon. Its chief disadvantage when used for portraits or groups is its relative slowness, the flame lasting in the neighbourhood of half a second: long enough to permit the model to blink at the unexpected, or, worse still, expected intense light, and so get that sleepy effect of the eyes so often seen. With it might be classed the flash sheet, both as to smoke development and speed. This latter fault makes necessary the explosive mixture capable of burning in less than one-thirtieth of a second as the reflex closing of the eyes is one of the quickest movements the body is capable of, and a flash to catch all the members of a group with their eyes open must be faster than this reflex, so that before the eyelids start to close from the shock of the sudden light the picture is taken.

Many formulæ for flashlight mixtures have been published, especially in the foreign papers. Some contain poisons, even phosphorus; some produce poisonous gases by their combustion; many explode at the least friction; all give more or less smoke. Right here it might be said that this smoke nuisance has its two sides. While to the housekeeper the smoke is undoubtedly objectional, it may, under certain circumstances, have advantages for the photographer. The high temperature at which the mixture burns renders the smoke particles incandescent, and greatly reinforces the light-giving power of the burning magnesium, the more so if these particles consist of oxides of the rarer earths as are used in Welsbach mantles. But even taking this into consideration, it will not be found to counterbalance the risk of poisonous fumes and plain dirt produced.

For obvious reasons it is never advisable to make up any explosive in quantity. No matter how confident you may be of your ability to handle a substance as dangerous as gunpowder, you might encounter just such an experience as the writer had when the cook, mistaking a bottle containing a small (fortunately) amount of flash mixture for some stale pepper, emptied it into the kitchen range. She was not hurt, but the surprise it gave her cost us a good cook. Therefore, the best plan is to make up just enough for one or two exposures at a time.

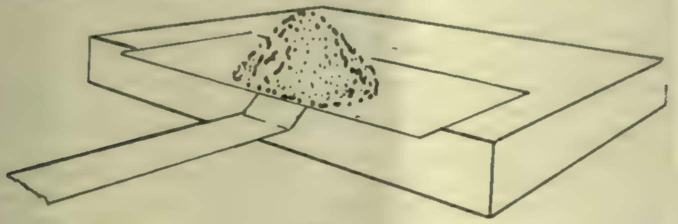

Fig 1.

In the compounding of any kind of flash powder, one should remember that like a match head it is the potential energy expressed which is the most dangerous factor. Ordinarily speaking, match heads are safe enough; we carry them around loosely in our pockets, but then we have an instinctive care—that they are kept from giving expression to their bottled-up energy.

It is possible to make a flashlight which may be handled with about the same risk as a box of matches, but it is also possible to make flash powder which goes off with auto-suggestion. Let me warn you to steer clear of chlorates and permanganates and picric acid. I here give you what I have found safe. The originator of it has used it for years and never had an accident, but he is never presumptuous.

Take 2oz. of barium nitrate and 1oz. of strontium nitrate; dry them thoroughly in a dish and then grind to a fine powder. Sieve this through a fine bolting cloth and keep it well corked from the air.

Now mix with it 1oz. of well-sieved magnesium powder. You may mix these two intimately without any fear. When mixed, take 120 grains of amorphous phosphorus—don't scare because we say phosphorus—amorphous phosphorus is practically inert, but you must be sure it does not contain any free phosphorus. To insure this freedom, wash it with some ether and let it dry spontaneously—that is, away from heat. When thoroughly dry, crumble it up to a fine powder and mix it on a paper with the other ingredients by moving the powders around and gently incorporating them. This powder is of the highest actinic value, and I believe to be the safest possible.

This brings us down to the question of lighting the powder; a wide field for the display of ingenuity. One may use a fuse. This has the advantage of permitting the operator to be one of the group, but unfortunately it also has the disadvantage, as it takes a little while to go off, of causing a set or expectant look on the faces. The better plan for portraits is some form of flash pistol. This permits of catching any fleeting expression the operator may desire, but does make some noise. Which of the two methods are to be adopted depends largely on circumstance. If the model is in a position allowing a few seconds' delay in the taking of the picture, the fuse is preferable on account of its noiselessness; but if spontaneity of pose is a strong factor in the composition, the pistol will get better results. The simplest form of fuse is a strip of paper. A piece of writing paper is cut and bent as in Fig. 1, laid so as to overhang slightly on a block of wood, and the powder poured on it in a little heap. The tip of the paper is then set on fire, and the explosion follows shortly after.

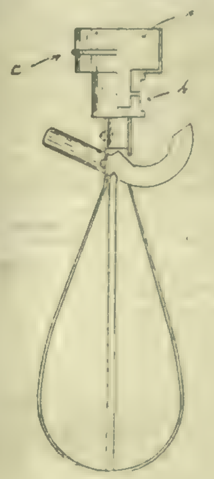

Fig. 2.

A home-made pistol is shown in Fig 2. It is a simple modification of the penny cap pistol sold in candy shops. A paper cap is put in the depression *b*, the cup *a* filled to the required extent with powder, a small piece of tissue paper placed over it, and a square piece of ¼in. board with a hole in the middle is pushed down over the tissue to the rim *c*. The small cavity at the bottom of the powder cup is for the purpose of spreading the flash. As it explodes first it scatters the main body of the powder over a large area, avoiding some of the noise. The tissue covering allows of the pistol being used in any position, a not-to-be-despised advantage in many cases. GEO. W. BETZ, M.D.

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**X-RAY PLATES.**—A German inventor, Dr. G. Bucky, has taken out a patent for sensitive dry plates for X-ray photography, in the use of which a dark-room is dispensed with, the plate being provided with protective dyed films which allow of the passage of the X-rays but shield it from actinic light. They can thus be handled before and during development in actinic light, the dye being afterwards washed out in running water.

**BOOKS ON PHOTOGRAPHY.**—Messrs. Kegan Paul, Trench and Co. announce a new volume ("The Advance of Photography") by A. E. Garrett, B.Sc.(London.), F.R.A.S., and Dr. Herman Vogel. The first part of the book is almost entirely devoted to a consideration of the early history of photography, and has been adapted from "The Chemistry of Light and Photography," which was first published as one of the International Scientific Series nearly forty years ago. This part of the work is that which is least frequently met with in modern books on photography, and it has been thought advisable to still retain it. There are detailed accounts of the modern application of photography in various branches, such as astronomy, Röntgen rays, colour photography, preparation of book illustration, photo-telegraphy, animated photography, micro-photography.—Messrs. Witherby and Co. have in the press an illustrated volume, entitled "Photography for Bird-Lovers," by Mr. Bentley Beetham, a well-known and successful bird-photographer. The book is an essentially practical guide to the pursuit of bird-photography in all its branches, and Mr. Beetham gives ungrudgingly from the store of knowledge gained by his own personal experience in the field.—Finally, Messrs. Cassell and Co. are shortly to issue the "Cyclopædia of Photography," a comprehensive work in twelve sevenpenny parts. It will deal fully both with the practical side of photographic work and with the use of the camera in scientific investigation. This work will be edited by Mr. Bernard E. Jones, assisted by a number of contributors.

# THE BROMOIL PROCESS.

## II.

### The Bromoil Process.

Having covered, perhaps too much in detail, the preliminary part of the process, we will now turn our attention to the actual work of the bromoil process. It is sincerely hoped that that which has been written will not deter the reader from attempting the production of prints by either the oil or bromoil process. Any one who is familiar enough with the handling of bromide paper and the production of bromide prints need have no trouble with the making of bromoils.

The discovery of a new photographic process means considerable experimenting by workers in photography, and these experiments necessarily mean new methods and formulæ. Since the discovery of the bromoil process numerous formulæ have been offered to photographers. Some seem to give results only in the hands of the discoverer, while others are worthless. It is the writer's intention to place before the readers of this article only such formulæ as have been personally tried and found to be successful. It is useless to clog up an article with innumerable formulæ all of which give the same results. It is always better to choose such as give the best results in the simplest manner. Only three formulæ will, therefore, be given, and the reader need have no hesitation in using any of them.

The formula suggested by Mr. C. Welborne Piper is made up according to the following method:—

| | |
|---|---|
| Ozobrome stock solution | 4 parts. |
| 10 per cent. potash alum sol. | 4 parts. |
| 10 per cent. citric acid sol. | 1 part. |
| Water, to make | 20 parts. |

You will note that not only does this formula require the addition of several bottles to your large supply, but also requires the use, as its base, of the ozobrome stock solution. Not only is this expensive, especially to the occasional worker, but it also deteriorates very rapidly, probably within forty-eight hours, and often in an hour or two.

M. E. Coustet recommends the use of a lead salt in conjunction with ferricyanide of potassium, and not only is his formula quite simple, but it also dispenses with the use of the acid bath, which must be used with other formulæ.

| | |
|---|---|
| Lead nitrate | 150 grs. |
| Potassium ferricyanide | 150 grs. |
| Water | 7 ozs. |

After ten minutes the image is bleached sufficiently, and appears as reddish upon a yellow ground. The print is washed for one hour, and at the end of that time is almost invisible. At times a slight image is visible, and it is better to place the print into a fixing bath to remove all trace of the image, as a darkening after inking will change the whole tone of your print. After fixing and washing, the print is ready for inking. The main difficulty to be found with this process lies in the length of time consumed in bleaching and making the print ready for the pigmenting. Aside from this the formula is quite good.

The last, and probably the best, formula is the one recommended by C. H. Hewitt, F.R.P.S. This formula has been used almost exclusively by the writer, after experiments with nearly all available ones and a considerable number of personal experiments. It has nearly always given results, and the reader is advised to use it exclusively:—

| | |
|---|---|
| Potassium bichromate | 4 drs. |
| Potassium ferricyanide | 2 drs. |
| Potassium bromide | 2 drs. |
| Ground alum | 8 drs. |
| Citric acid | 2 drs. |
| Water, to make | 20 czs. |

This bath is quite strong, and if the print is dry it should be placed into water until quite limp. This will prevent uneven bleaching. The print is removed from the water and is placed in a tray (porcelain or glass), and the bleaching solution poured quickly over it. Bleaching is completed in two or three minutes, and the print may be removed to a tray of clean water. Longer immersion will not injure the print, and practice has shown that a longer immersion is better. This bath will be found to deteriorate slowly, and, in addition to this great advantage, it has also the one of being readily prepared for use. Each of the three first-named chemicals may be kept in a powdered state, and if hot water is used they will dissolve readily. If hot water is used in making up this bath, see that it has cooled to about 65 degrees Fahrenheit before use.

The object of placing the print into a tray of water after bleaching is to remove as far as possible all traces of the bleacher. By doing this you save the strength of your acid bath. The print is removed from the wash water and placed in the following acid bath:—

| | |
|---|---|
| Water | 16 ozs. |
| Sulphuric acid | 1 oz. |

and permitted to remain therein for a period of from six to eight minutes. The print is then removed and transferred to a tray of water. Upon examination at this time a distinct relief will be noticed; especially is this true if the print is a contrasty one.

Some workers recommend a weaker acid bath. It is not advisable, however, to use a bath stronger than the above or weaker than one to twenty. Care should be used in making up this bath, and the acid should be poured into the water. If the water is added to the acid a considerable amount of heat may be generated, and the vessel in which the mixture takes place burst.

The acid bath is used to remove all traces of the chromate salt from the gelatine, to tan the shadow portions and to soften the gelatine not acted upon, i.e., the high-lights. After a number of prints have been through this acid bath, the bath will assume a distinct yellow colour, and should then be thrown away. It is to prevent the premature deterioration of the bath that the print is washed after leaving the bleaching bath. When the bath becomes exhausted it will fail to give a relief to the gelatine, and the surface will appear matt all over. If the work has been successful you will have an image in sunken relief. In other words, the shadow portions will appear matt and sunken, while the high-lights will appear glossy and swollen with water. If the print is in this latter state it will take the pigment properly.

The print is now placed in water and washed free of all acid. A slight image will be visible, and it is advisable, especially in the beginning, to commence the inking process over this image. If this is done, the image may be removed later. In fact, it must be removed, as it will darken in time sufficiently to make a print muddy in colour. The following fixing bath is used to remove the last trace of an image:—

| | |
|---|---|
| Water | 20 ozs. |
| Hyposulphite of soda | 2 ozs. |
| Sodium sulphite | ½ oz. |

The bath should not be stronger than this.

The print is now in a state analogous to that produced by the oil process. All these chemical processes through which the print has passed have had but one object—the creation of an image in soluble and insoluble gelatine; one in which the insoluble or hardened parts refuse to absorb moisture, and thereby permit the adherence of the pigment, and in which the soluble, or, rather, soft parts, representing the high-lights, absorb water, and thereby resist the application of the greasy ink.

Before entering upon the question of pigmenting, it would be well to call attention to the fact that the temperature of all solutions should be as nearly uniform as possible. A temperature of about 65 degrees is a proper one. Water too cold will cause failure and prevent the ink from adhering, while the use of hot water will soften the gelatine until it cannot withstand the necessary brush action.

For the first few attempts at bromoil printing the reader is advised to make an additional bromide print to act as a guide in pigmenting. This will also be a great help to the pictorial worker, as he can, by means of black and white crayons, work up the bromide until he obtains a print such as he desires the finished bromoil should be. With this as a guide he has no hesitation in the application of his ink. With these few preliminary remarks we arrive at the most interesting part of the whole process. In addition to being the most interesting, it is also the most difficult.

Take several sheets of fluffless blotting-paper and cut them into pieces slightly larger than the print. Place these in water until they become saturated. Procure a sheet of glass, or, preferably, a shallow tray, the size of these blotters. The tray is preferable, because it will keep the blotters in a state of saturation longer and prevent the necessity of re-wetting them. The wet blotters are placed in the tray, and the wet print placed upon them. A piece of dry blotter is then used to blot off or remove the excess moisture from the print. The print now has the appearance of being glossy in the shadows and matt in the high-lights. It is now ready for pigmenting.

Place upon a piece of glass a small amount of ink, about the size of a small bean, and spread it out as evenly as possible with the palette knife.

The large brush is now taken in hand, it is pressed gently into the pigment, and then pressed several times upon a clean portion of the glass, in order to charge the brush evenly with the ink. There is no special method of holding the brush. Each worker, as he grows older in experience, will discover a method that appeals to him, and by the use of which he can do better work. The brush should, however, be held near the end of the handle, and no attempt made to grip it tightly. Try different methods until you find one that will enable you to deposit the ink evenly upon the print without tiring.

While there may be said to be no special method of holding the brush, such is not the case with the application of the ink. There are three ways of applying the ink by means of the brush. (1) By a gentle dabbing, (2) by a dabbing and smudging, and (3) by hopping. The first and second methods give a fine, smooth image, in which the detail has been slightly obliterated. This is often very useful in pictorial work, where the detail persists in forcing itself to the detriment of the picture. The last method may well be termed a method of removal as well as of application. Hopping lightens the lighter parts, and darkens the shadows and produces detail. The first two methods need little or no explanation. The terms themselves are self-explanatory. Hopping means the falling and rebounding of the brush upon the paper. It may be performed in one of the two following ways:—The brush is held one or two inches above the print and permitted to drop. As it rebounds it is caught by the fingers. The other method is more mechanical, and requires the use of a piece of stiff wire. This wire is fastened to the brush and the end of the wire is gripped between the fingers. A slight motion of the wrist will cause the brush to jump up and down upon the print. The beginner should use the dabbing and the dabbing and smudging methods as much as possible. Hopping, in addition to being hard upon the paper, gives results that are not as satisfactory as when the other methods are used.

The brush is evenly charged with pigment, and then pressed against the print until the ink upon the brush is exhausted. Go over the whole surface quickly with the tacky ink. The ink may take in the high-lights as well as in the shadows. Do not let this worry you, as the continued application of the ink will build up the shadows and the ink will pull off the high-lights. This is a very trying time to the printer. The ink appears in daubs all over the print. The whole process will appear to have been a failure. Keep on working. Whenever taking more ink upon the brush, apply it to the shadow portions of the print. It is now that the guide print is of great use. Gradually the picture will appear to grow out of this mass of daubs. Do not become impatient and begin to use a softer ink; you may spoil an otherwise good print. The more haste the less speed at this stage of the game.

If the print has been properly developed, the ink, no matter how tacky, will feel soft to the touch, i.e., workable, and will adhere to the print. If the ink refuses to adhere, it may need softening. Not too much softening, because if the ink becomes too soft it will adhere to the high-lights as well as the shadows, and the print may be spoiled. *Remember* that a soft ink may be applied over a hard ink, but a hard ink will not adhere to a soft ink.

Interesting! When the worker sees the picture growing under each touch of the brush, growing out of a mass of daubs and smudges, he is fascinated. As each brushful of pigment is pressed against the print he feels growing within him the great power of control—the feeling of the painter—as each brushful of colour brings into existence the thought he has in mind. From now on the artistic sense comes into play. Here two paths spread before the worker. If he chooses one, he produces what is often termed the straight print. If he is an artist, and has in view the production of a picture, he travels the other path. Suppose he decides that the print is of sufficient merit to warrant the expenditure of time and a possible failure, with the hope of producing something pictorial, or at least out of the ordinary. Here, again, the guide print becomes a great help, and this is especially true if he has worked upon the guide print with black and white crayon. He now proceeds to darken offensive lights. He restrains himself from the application of too much ink to heavy, dark masses which are out of key. The amount of control placed in his hands is unlimited.

After carrying the inking of the print as far as possible with the tacky ink, the ink may be thinned by the use of a very small quantity of Robertson's Medium. The quantity required is very small, and the tendency will be towards the use of too much. The best results will be obtained by working as far as possible with a hard or tacky ink.

If the ink adheres to the high-lights and pulls off the shadows, continue to apply the ink, and in nine cases out of ten the process will reverse itself, and the ink will adhere to the shadows and pull off the high-lights. If it fails to do so, you have the pleasure of getting a negative instead of a positive. The cause of this is unknown, and the writer has made but one negative during his use of the process. If you do make a negative, continue to ink it and store it among your curiosities.

Your first few prints will undoubtedly be coarse and grainy in appearance, and may be anything but pleasing. This may be due to the drying of the blotters during pigmenting. It is absolutely necessary that the blotters be wet during the whole process of inking. In order to ensure this the worker is advised to lift the corner of the print and press the fingers against the blotters. If they appear wet when the pressure of the fingers is removed, there is still sufficient moisture to permit the proper inking of the print. Keeping the blotters wet ensures the keeping of the print in a right condition for inking. Again, this degraded appearance may be due to the method of application of the ink. Keep the brushes in good condition, and, when placing them in the ink, see that the ink is spread evenly over the bristles. A beautiful creamy appearance is only obtainable by careful working with the tools in proper condition.

Your print has been carefully inked and bears some resemblance to the result you desire. Charge the brush evenly with the ink and go over the work again. This time use a "tickling," or slight dragging, method in handling the brush. This will give finish and a creamy appearance to the print. Carefully examine the print. Wherever a light needs darkening, go over it with the brush. If certain lights need lightening, leave them alone until dry, when the proper relation may be given them by means to be considered under the term finishing.

In order that the worker may have at his fingers' ends a list of the causes underlying the refusal of the ink to adhere, or its too great adherence and in places where not wanted, I have prepared the following table:—

The ink may refuse to adhere because of one or more of the following reasons:—

1. Under-printed image. Give longer exposure and develop with a weaker developer.
2. Bleaching not fully carried out or bath exhausted. Bleach longer with a fresh bath. Do not bleach too many prints in one bath.
3. Exhausted acid bath. Remedy obvious. Wash prints after bleaching, and acid bath will last longer.
4. Print is too wet. Dry surface with a clean, fluffless blotter.
5. Pigment too stiff. Thin or soften with medium.
6. Improper use of brush or use of a wet brush.

Pigment adheres too readily:—

1. Over-printed image.

2. Over-developed image.
3. Exhausted bleaching bath.
4. Exhausted acid bath.
5. Pigment too thin.
6. Brush too full of pigment.
7. Brush action too slow.
8. Print becomes dry while inking.

The remedy in each case is so readily seen that no explanation is needed.

If the brush becomes clogged, the pigment will be deposited in spots, and has the appearance of being peppered.

Spots refusing to take pigment may be due to the formation of blisters, and the fact that the print is too wet, i.e., the moisture has not been evenly removed by the blotter.

If the print has proven a failure, the pigment can easily be removed by means of water and a wad of cotton, or if the ink has hardened slightly it may be necessary to use turpentine. The print may then be placed upon the wet blotters and re-inked. Take care not to abrade the surface, which is quite soft at this time.

### Finishing.

The print has been inked carefully, and is hung up to dry in a place as free from dust as can be found. The length of time required to dry the print will depend upon the quality of the pigment used, and also the amount used. A heavily inked print will require a longer time to dry than one thinly inked. Again, some inks have been made with a sufficient quantity of drier in them to dry within a few hours. In the experiments of the writer some inks were found to dry almost as soon as the paper, while others required four, and even six, days. A drier can be obtained from the manufacturers of the ink, and a very small quantity will be sufficient to dry the ink within a few hours. Do not use too much drier if you wish to reserve a delicate, oily quality in the finished print.

When dry, go over the surface, and carefully remove all fluff, dust, and hairs. This can often be done by a gentle rubbing with a soft rag or a brush. The print may be floated face down in water until the surface is washed free of fluff, etc.

For touching up the print, a piece of rubber and a sharp knife are used. The lights can be readily lightened and tones corrected. Do not ever retouch. The original pigment can be used to spot out imperfections.

The print may now be varnished or mounted without varnishing. Perhaps the best way to mount is to touch the corners with a drop of glue and place the print under a piece of glass, on top of which is placed a heavy weight.

Before leaving the bromoil process it may be well to review the process in a general way. The bromide print should be contrasty, and should be of good black colour. The development should be done with either amidol or metol-hydroquinone. A plain fixing bath should always be used. The print should be dried, if possible, before bleaching, and all traces of hypo must be removed. Bleach carefully and evenly about four to six minutes. Wash the print after bleaching to remove the bleacher, and then place in acid bath. Acid bath should not be stronger than one to five, i.e., one part acid to five of water. Prints should remain in bath six to eight minutes longer in cold weather. Wash prints about five minutes, or until clear of acid, and either fix or pigment, and then fix. If print has been dried after fixing before inking, it must be soaked for a considerable length of time, say, one to two hours, before inking.

H. Crowell Pepper.

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The Australasian Photo Review.—Our Australasian contemporary, published by Kodak Australasia, Ltd., makes its appearance for the present year in a new and more attractive dress, and is produced in a style of printing and illustration upon which both the publishers and the editor, Mr. Walter Burke, F.R.P.S., are to be congratulated. The present issue contains a number of interesting articles, including one on a new telephot camera and another on photographing railway trains with some exceedingly good illustrations. From the answers to correspondents and the reports of society meetings it is evident that the A.P.R. is successfully catering for the reading of photographers in the Commonwealth.

## PHOTOGRAPHY IN COURTS OF JUSTICE.

The use of the camera in the recent trial of Stinie Morrison for the Clapham Common murder has led to a considerable public comment, prompted by Mr. Justice Darling's expressed sympathy with the protest of the jury. It is evident that the freedom with which photographers have been allowed to act in Courts of Justice of all degrees is likely to be restricted, and the incident has, further, raised the question of the rights of the individual as to being promiscuously photographed without his or her consent for publication in the Press. We may, therefore, quote a few of the comments which have been made in the Press and elsewhere.

In the House of Commons Mr. Nield (U., Ealing) asked the Secretary for the Home Department whether his attention had been called to the representations of the jury and the observations of Mr. Justice Darling during the trial of Morrison at the Central Criminal Court with reference to the taking of photographic snapshots in Court during the progress of the proceedings, and whether he would at an early date introduce legislation to prevent a continuance of the practice both as to civil as well as criminal tribunals?

Mr. Churchill (Home Secretary): The question is receiving my consideration.

The "Daily Telegraph" writes:—During the hearing of the Clapham murder case at the Central Criminal Court the jury handed to the Judge a written protest against the "nuisance" of being constantly exposed to the photographer. Mr. Justice Darling said he thought the protest was a reasonable one, the practice of photographing in courts of law having become "far too common," and added that probably legislative action would be necessary in order to establish some regulations upon the subject. He forbore, however, to support the jury's protest by issuing any order at the moment.

In his summing-up the learned Judge further adverted to the matter. He drew a distinction between photographs published by the Press leading to the identification of suspected persons and photographs of arrested persons awaiting trial. It was imperative, he thought, that the authorities should consider whether regulations must not be made by them.

Probably in no sphere of operations has the exercise of photography developed more rapidly in recent times than in courts of justice. The man with the camera is as familiar at the Law Courts, both inside and out, as any of the officials. He is there to take impressions of whatever he deems suitable for a picture within the precincts, and may often be seen waiting outside at the closing hour to "snap" some principal in an action as he or she emerges. He is not necessarily an obtrusive person. His methods, inside the courts, at any rate, may pass quite unobserved. Armed with a diminutive but exquisitely perfect camera, he may take up a suitable position with clear headway, and "snap" his subject unobserved, while calmly looking him in the face. In that he has the advantage of his brother of the pencil, who must needs give some indication of his task. This development of the use of the camera has been concurrent with the expansion of illustrated journalism, and there is daily evidence of a growing skill on the part of the operators. Whereas but a very few months ago a single head or a small group of persons filled up the picture produced, now we have the whole interior of a court well presented, with Judge, jury, counsel, witnesses, and so on. Presumably it was one of these comprehensive pictures that partly laid the basis of the jury's protest to Mr. Justice Darling.

That the new enterprise may bring evils in its train cannot be gainsaid. In 1906, before the camera came into such common use and pencil sketches were most in vogue, the practice of depicting witnesses was seriously complained of in the Divorce Court, with the result that the President issued an order that sketching must cease. Complaint came in one instance from a lady, who, drawing the Judge's attention to an artist deliberately limning her countenance, asked the Judge to intervene. His Lordship disliked to exercise an arbitrary power, and satisfied himself with making a request, which was at once acceded to.

During the past four years the Divorce Court has rarely been sought by the artist. Again, in October, 1910, Mr. Justice Scrutton, when sitting at the Old Bailey, had his attention drawn to an artist busily at work, whom he thus addressed: "No sketches, photographs, nor anything of the sort may be taken in court, and if, after what I say, anyone sketches, there is such a place as Holloway." Yet again, during the Crippen trial at Bow Street, Sir Albert de Rutzen prohibited sketching in court. It is worthy of note, however, that when the same criminal was brought up at the Central Criminal Court the Lord Chief Justice laid down no such stipulation, and Crippen was sketched and photographed *ad nauseam*.

These instances of judicial and magisterial interference point the fact that there is no set statutory regulation affecting this matter, and that the Judge or magistrate is at liberty to exercise a discretion. Whether it is enough, or will prove enough if occasions for complaint increase, remains to be seen. Every Judge has absolute authority to regulate the conduct of business in his court. He may, and sometimes does, when he deems the nature of the case justifies the act, order his court to be cleared of all who have no interest in the matter before him. He may, and sometimes does, direct to the journalists present that the name of a certain witness, or the nature of his or her evidence, shall not find its way into the public prints.

But such powers are exercised with reluctance, in full realisation of the fundamental principle that publicity is of the essence of English justice. What one Judge may deem sufficient excuse for exercising his discretion, another may not think sufficient. There is no such universal practice as only legislative direction could produce. Only in one set of circumstances can a common attitude be looked for—that is, when the practice complained of, whatever it may be, tends to imperil the fair course of justice. That was the basis on which Mr. Justice Gorell Barnes (now Lord Gorell) prohibited sketching in the Divorce Court. His words, uttered on August 19, 1906, were these:—

"I desire to mention a matter with which, in my judgment, as affecting the proper administration of justice in this court, it has become necessary to deal. I have come to the conclusion that in future the practice of sketching in this court, which has largely increased of late years, must be stopped. After a long experience and close observation, I feel convinced that many persons who have to give evidence in cases in this court are embarrassed, and rendered more self-conscious and nervous than they otherwise would be, to an extent which affects the proper giving of their evidence; and that this acts to their prejudice, and may even interfere with the due administration of justice. Pictorial illustrations which may draw attention to divorce cases are not necessary, nor can they be said to be really desirable in the public interest; but the action I propose to take is on the ground I have already stated. I do not suppose that it has been realised how the taking of these sketches may affect a witness in the course of the case. . . ."

Deep in popular favour as photographs taken of trials have become, it is not difficult to indicate directions in which they may prove harmful. Apart from the immediate effect produced on a nervous witness, who is either being personally sketched or photographed, or is witnessing the portrayal of others, there is the obvious injustice to a prisoner, who, during the progress of a trial from which he ultimately emerges an innocent person, finds himself permanently portrayed in an environment and a situation most injurious to his reputation by association. An unscrupulous person might put such a photograph to improper use, even to the extent of extorting blackmail, for, standing by itself, and without explanatory evidence which would enable a just conclusion to be formed, the picture is capable of an adverse interpretation. This is a view of the situation which has impressed professional minds, and led to a fairly widespread opinion that, while nothing ought to be done to hamper the legitimate use of the camera in the depicting of current events, statutory prohibition is desirable to prevent the absence of discrimination in any degree obstructing the administraton of justice. It may be recalled that some time ago the Jockey Club protected the dignity of the "enclosure" at race meetings by prohibiting photography. At present the dignity of most of our courts of law is deemed not to be prejudiced by the free permission to "snap" all who may come within the scope of the wide-angle lens. So far as the Law Courts is concerned, the Divorce Division is the only one in which a distinct veto is put upon the artist's craft. In that we follow the French practice.

The "Globe" says:—At no time is it particularly pleasant to be compelled to serve on a jury in a sensational case, and the duty is rendered yet more irksome if photographers are permitted to force unnecessary publicity upon the unfortunate citizen who is endeavouring to discharge it. There are cases which will occur to everyone in which to "snapshot" the jury or the witnesses for the Crown might easily expose innocent persons to very serious danger. We have no right to make their duties harder or more disagreeable than they are already, unless we are prepared to see in England the rise of the same difficulties which so seriously embarrass justice in Italy. The whole purpose of the British Constitution has been declared to be "to get twelve men into a box." Whether this be so or not, the ruling powers should at least do all they can to give the twelve men when in their box all possible protection. To bring a camera into a criminal court ought to be an indictable offence.

The "Daily News" writes:—As at present laid down, there is no law to prevent pictures being taken in a court of law, but it rests with the Judge or those in charge of the court whether such a proceeding is permissible.

An official of the High Courts recently explained that, as Judges had absolute power in their own courts, they could, if anyone objected to the presence of photographers or artists, at once order those individuals to leave the court. Any Judge in any court could do this, and if the order was disobeyed the delinquent could be brought before the Judge and committed for contempt of court.

The only prohibition which has actually been made is in the Divorce Courts. Here it was laid down by the ex-President that the taking of photographs and sketches is not permissible. Since this ruling was made artists and photographers have been barred from the courts in which divorce cases are heard.

All Judges are not of the same opinion. Some permit pictures to be taken openly in their courts. In the famous Marquis Townshend case, heard before Mr. Justice Bucknill, the Judge allowed an artist during the progress of the trial to place an easel in court for the purpose of sketching the parties in the suit whilst they were giving evidence.

Legislation on the subject, as suggested by Mr. Justice Darling at the Old Bailey yesterday, is regarded by many interested parties as quite unnecessary. The example of the Divorce Court is pointed to as proof of this contention. At the Under-Sheriff's office a representative of the "Daily News" was informed that those in charge of the Old Bailey strictly desired that photographs should not be taken of the proceedings there.

The "Yorkshire Post" expresses the view that "We do not see that any newspaper or photographer is entitled to snap-shot any person without leave, and there can be no denying that in a case of this kind to photograph and publish portraits of jurymen and witnesses might lead to very grave consequences. The Houndsditch and Clapham crimes have been committed among an alien population, having in it a considerable number of desperate criminals, who would not hesitate to wreak vengeance upon witnesses or jurymen. It is equally important, in the interests of justice, that possible witnesses as to identity should not be impressed by a newspaper likeness, and thereafter single out an accused person simply because of that impression. No doubt the publication of photographs of people 'wanted' by the police may be a great convenience, and lead to the speedy arrest of those who otherwise might escape. We are not insensible to this advantage, but it is, in our opinion, greatly outweighed by the possibility of most serious injustice to a suspect. In the present trial there have been witnesses as to identity who, quite innocently, may have identified Morrison because of suggestion; or they may have actually recognised the man in the portrait. There is so much room for doubt here, as in other cases of the kind, as to give reason for the prohibition of publication where the question of identity is to be raised; and we hope this Clapham trial will lead to a drastic revision of the law on the subject."

The "Western Daily Press" writes:—"The whole subject will have to be very carefully handled; and, if uniformly prohibitive legislation be resorted to, it will be difficult to draw the line at what particular kind of photographs may be reproduced under privilege. It would be possible to "snapshoot" an accused person outside the actual court of justice. If the publication of a photograph taken inside the court were undesirable in the interests of justice, the publication of photographs of the same person taken outside the court would be scarcely less so. Yet the law, supposing one is to be enforced, prohibiting photographing within the court would remain uncontravened. It may seem to be the *reductio ad absurdum*, but the proposition has been advanced as to whether or not a man or a woman possesses the 'copyright' of his or her own features. It is a curious point, and it has been inferentially raised in connection with actresses who have objected to the unauthorised publication of their photographs for the purpose of profit. And if a man becomes a convicted felon, would the fact of conviction destroy his right of copyright in his own features, on the assumption that such copyright were pre-existent? The whole question of the publication of photographs bristles with delicate points such as may delight the expert in quibbles."

The "Law Journal" says:—"The reproduction of portraits of the parties, witnesses, and jurymen in sensational trials has developed into a nuisance which threatens to impair the dignity and efficiency of the administration of the law. So far as the 'snapshotting' of jurymen and witnesses outside the courts is concerned, legislative action may be necessary; but to the extent to which the objectionable practice is followed in court, the judges themselves have the power to stop it immediately. Were they to make an order prohibiting use of the camera in the courts, such as Lord Gorell made prohibiting the practice of sketching, any disobedience of the order, whether by a photographer who surreptitiously took a photograph, or by an editor who wilfully permitted its publication, would be punishable as contempt of court. 'Neither sketches nor photographs,' Mr. Justice Scrutton recently had occasion to say at the Central Criminal Court, 'should be taken in court, and if, after what I say, any one makes a sketch or takes a photograph, there is such a place as Holloway.' What is required is some concerted action on the part of High Court judges by which they will make it definitely known that the vulgar enterprise of the 'snapshotting' journalist will no longer be tolerated in the courts over which they preside."

## THE HISTORY OF BALLOON PHOTOGRAPHY.

The following is an abstract (in the Journal of the Franklin Institute) of a lecture by Professor E. Dolezal, published by the Vienna Society for the Diffusion of Knowledge in Natural Sciences:—The well-known French writer, A. Davanne, for a long while the president of that highly distinguished society, the Société Française de Photographie in Paris, said in an address, "The world will never forget that to France is due the invention of photography and the promulgation of its method."

In August, 1909, seven decades had elapsed since the French scientists, Arago and Gay Lussac, after a searching investigation of the process of painter Daguerre and cavalry officer Niepce, by which pictures could be taken by light, recommended the purchase of the rights thereto by the French Government. The purchase was made, and, through the liberality of the Government, Arago was able, on August 29, 1839, to make known the methods at a public session of the Academy of Sciences.

Arago's foresight was sufficient to indicate to him the value of the method in connection with the preparation of maps and charts, but he did not foresee its use in connection with balloon work. The latter application originated with a Frenchman named Andraud, who in an essay, "Une dernière annexe au Palais de l'Industrie," expressed some views on balloon photography in which, indeed, he allowed his fancy to play in almost the style of Jules Verne. The merit of taking the first balloon photograph belongs to a Paris photographer and aeronaut, Nadar, sen. His experiments showed, as was to be expected, that the photographic procedure of that day—wet plates and prompt development—involved serious difficulties. Nadar installed a dark-room in the basket of the balloon in the form of a tent of orange fabric with black lining. It appears, however, that the carbon disulphide in the gas affected his plates. He did not lose hope. At Petit Bicêtre, a hamlet consisting only of a dairy farm, a tavern, and small barracks, he prepared his plates, rose quickly to the height of about 80 metres in a captive balloon, returned, and developed the pictures. Nadar, having thus shown the practicability of such photography, was invited in 1859 by the Italian Minister of War to test his method in connection with the war with Austria, but the results, especially at Solferino, did not meet expectations.

In spite of these failures, balloon photography found new disciples in Europe and in the New World. In 1860 King and Black made such photographs in the neighbourhood of Boston, U.S.; an Italian, Negretti, at the instance of King Victor Emmanuel I., succeeded in taking pictures from a free-moving balloon; and, in the American Civil War, Lowe obtained views which served as guides for important military operations.

Nadar anticipated great results from his experiments, took out many patents, and also published articles, his views being occasionally fantastic. In 1868 he resumed his experiments in Paris, using a captive balloon furnished by Henry Giffard, with which he reached a height of 200 metres and took a picture showing the Triumphal Arch and other important structures. This negative is still to be seen in the collection of the Conservatoire des Arts et Métiers in that city. It marks a material progress in the art.

No important results in balloon photography were reported during the Franco-Prussian War, and the subject seemed to be neglected until 1878, when the Paris photographer, Dagron, took it up with much energy and obtained, with a captive balloon, a striking picture of Paris on a negative 22 x 28 cm. (about 9 x 12 inches). Dagron used a basket dark-room, as Nadar had done.

With the discovery of the dry-plate method by the English physician, Maddox, a new era began for balloon photography. Triboulet, an architect, and an enthusiastic promoter of meteorologic investigations, was the first to use the dry-plate in a free-moving balloon. On June 8, 1879, he ascended in the balloon "Jovis" from a hamlet near Paris, the photographic apparatus being fastened to the side of the basket. At a height of 500 metres above the Paris Observatory he took a panoramic picture, but scarcely had this been made when a cloudburst occurred that compelled him to descend, although he had thrown out all available ballast. Unluckily, his balloon struck one of the Notre-Dame towers, and he subsequently came down in the Seine. As the balloon was an unusual visitor to the city, a zealous Custom officer followed it—on foot, it seems—and when the balloonist reached the shore insisted upon a thorough search of all the packages, and so, in spite of the protests of the experimenter, the dark-slide had to be opened, and the picture was ruined.

In 1880 Desmaret succeeded in a free-moving balloon in taking pictures 21 x 27 cm., using a lens of 29 cm. focus, and regulating the duration of exposure by electrical apparatus. He had also in his basket accurate barometers, and regulated the exposure according to the speed of the balloon. He used highly sensitive plates. Two of his negatives are to be seen in the Conservatoire des Arts et Métiers. In 1882 Shadbolt, of England, did good work in this field.

Attention now began to be directed to the construction of apparatus especially adapted to balloon photography, the methods heretofore followed having been merely the attaching of ordinary cameras to the basket. In 1881 Woodbury, of England, constructed a camera for automatic photography from a captive balloon, but it was not a success. In 1884 Triboulet built an apparatus consisting of seven cameras so arranged that when suspended beneath the basket they formed an inverted arch, and by an electrical connection the whole series could be snapped at once and thus a wide field photographed.

The evident advantage that such photography might give in war led all the active European nations to take up the subject now that good results seemed possible; and Tissander, Ducom, and Renard in France, Eleslade and Templar in England, von Tschudi, von Hagen, and von Sigsfeld in Germany, Thiele and Uljanin in Russia, Ranza in Italy, and Speltrini in Switzerland are among those who laboured in developing the methods. Ranza invented a form of captive balloon specially adapted for photographic work, and materially advanced the technique of the art. Speltrini was the first to cross the Alps in a balloon, and he secured striking pictures of the mountain peaks.

Victor Silberer was the first to carry out balloon photography in Austria. In 1885 he took a picture of the Reichsbruecke, in Vienna. Silberer also organised and conducted the first military school for aeronautics, and he carried the work to such a point that it became entirely suitable for strategic purposes. E. Dolezal.

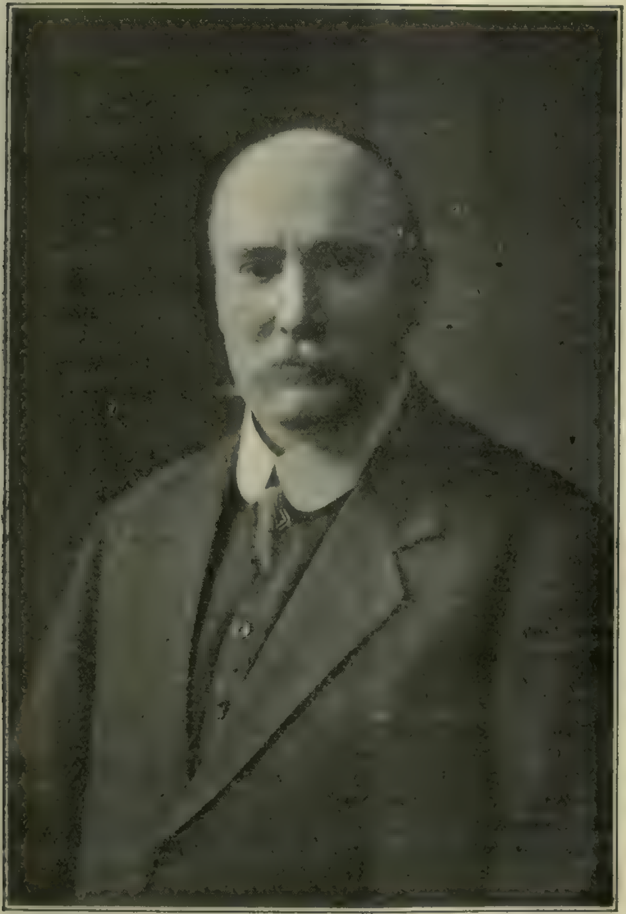
Next Friday.—The No. 4 Colonial and Foreign Number of the "B. J."

## THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

### THE PRESIDENT, 1911-12.

IN the election to the Presidency of the Association of Mr. F. P. Moffat, F.R.P.S., the Council of the P.P.A. is to be congratulated on placing in the chief office a Scottish photographer who for nearly sixty years has been engaged in the craft, and during that period has consistently maintained a high standard of photographic work, coupled with an astute and dignified business policy.

Mr. F. P. Moffat at a comparatively early age was placed in a merchant's office in Leith for the purpose of acquiring business habits, where he remained for four years, after which he entered the well-known photographic business founded by his father, the late John Moffat, in 1853. Mr. Moffat joined his father in 1875, a year or two before the commercial advent of the gelatino-bromide plate, which practically revolutionised photography. In 1877-8, after some experimenting with the new plate, he induced his father to relinquish the nitrate of silver bath in favour of gelatine plates. He was probably the first professional photographer in Scotland to discard the wet plate process. Plates not being very procurable in those days, he arranged a room for the preparation of the emulsion and coated the plates himself.



MR. F. P. MOFFAT, F.R.P.S.
Elected President of the Professional Photographers' Association, March 10, 1911.

Mr. Moffat is at all times ready to thoroughly test anything new in the way of apparatus or processes likely to benefit his work. Some sixteen years ago he installed a system of electric incandescent light for portraiture—a system since discarded in favour of the arc lamp—and several years ago he took up the subject of colour photography and turned out quite a number of portraits in three-colour carbon. He found, however, that trichromatic portraiture, while extremely fascinating from a scientific point of view, was not commercially a success, and therefore from a business point of view of little use.

The energies of the new President are not confined to the studio alone. He is a prominent member of the Edinburgh Photographic Society, of which he is a past president; is frequently called upon to act as judge at Scottish exhibitions, and contributes many examples of work in the oil pigment process to exhibitions in this country and abroad. He was one of the founders of the Edinburgh Photographic Club, which is still a very useful and flourishing association. He has been a member of the Royal Photographic Society since 1904, and was elected a Fellow last year. He has also been local secretary of the P.P.A., Edinburgh branch, since its formation in 1901.

In conducting his business, Mr. Moffat is a firm believer in turning out only the highest class of work, and charging a fair price for his labour; he has steadily set his face against the price cutting, which is, unfortunately, so prevalent at the present day. To the steady adherence to these principles may be attributed the fact that the business in the Scottish capital, started nearly sixty years ago, still occupies a place among the foremost studios of the country.

## PROSPERITY IN CANADA.

THE many assistants seeking employment by responding to the advertisements of "Situations Vacant" in our advertising pages are specially asked to notice the section which we shall allot in the forthcoming Colonial number of next week to "Situations Wanted Abroad." Many photographers in our Colonies experience, we know, a difficulty in securing competent help, and are willing to pay liberal wages to assistants from England who are both able and reliable. In Canada, in particular, the rapid growth of many cities in the North-West Territories has opened up the opportunities for photographic business, the development of the country advancing the interests of both proprietors of studios and the assistants whom they employ. In this connection we may quote from a paragraph in a recent issue of our contemporary "Canada," in which is mentioned the experience of an Englishman who settled in Calgary some eighteen months ago:—

"With his available capital he purchased several lots of land in the suburbs of that enterprising city, at the same time establishing on one of the main streets a photographer's business. Since that time he has sold his first purchases of land at a profit of 100 per cent., and lately disposed of his photographic establishment at more than double the amount laid out upon it. This success has enabled this fortunate man to come to England with his family for a three-months' holiday, after even such a short absence."

# Photo-Mechanical Notes.

### Cost of Half-tones and Zincos.

THE following interesting report is published by Mr. S. H. Horgan in the "Process Engraving" notes in the "Inland Printer":—

Sixty out-of-town persons attended the second conference of "Central and Western Photo-engravers" held at Chicago on Friday and Saturday, February 17 and 18. Like the first conference, held three months ago, this one was under the auspices of the Photo-engravers' Club of Chicago, and so popular is the club as host that the visitors almost unanimously ordered that the next meeting be held in Chicago also, with the provision that the conference defray the expenses.

Those in attendance included representatives from Denver in the West, Toronto in the East, St. Louis in the South, and the Twin Cities in the North. E. W. Houser, chairman of the local club, welcomed the visitors and presided over the conference. In responding for the visitors, F. H. Clark, of Cleveland, said he was agreeably surprised at the increased attendance. He feared that the success of the first conference was due in a measure to the desire of many of those attending to take off a day or so. This gathering proved, however, that the trade was in earnest in its desire to get on a sound business basis.

W. B. Prescott, of the "Inland Printer," spoke of the approaching era of co-operation, and said that those who saw the light should not be deterred by the indifference of the many. The fact that there are indifferent ones is the strongest possible reason why the agitation for more businesslike conditions through co-operation should be prosecuted with vigour.

"Mistakes of the Past" was the topic for the Friday afternoon meeting. With the aid of a stereopticon, George H. Benedict, of Chicago, gave an interesting and luminous address on cost of production as deduced from the work of several shops and hundreds of time-tickets.

L. F. Eaton, of Detroit; Roger C. Cunningham, of Kansas City; N. S. Amstutz, of Valparaiso, Indiana; Willis J. Wells, of Chicago, and others discussed trade conditions generally. Mr. Wells spoke on the need and desirability of individual costs, as compared with "averages," in which Mr. Benedict dealt. At an informal dinner in the evening the discussion continued under the guidance of Louis Flader, of Chicago, who acted as toastmaster. The topic for Saturday morning was "Future Possibilities," and a free-for-all discussion preceded and followed the reading of an appropriate paper by Paul Manz, of Chicago.

All this led up to the final session, when all hands got busy answering the topic "What Are We Going to Do About It?"

The result of this was the appointment of a cost commission to investigate and report to a future conference, which will be called by the commission. Each firm represented was assessed $10 to defray necessary expenses.

During the discussion it developed that there was much confusion arising out of misunderstanding of technical terms. A word used to express an idea or thing in one section had an entirely different meaning in another section. On motion of Mr. Flader the commission was instructed to prepare a glossary for the purpose of standardizing these terms. After hours spent in investigation, discussion and the exchange of experiences the conference expressed the opinion that minimum half-tones—10 inches square—can not be made for less than $2, and that minimum zincs cost at least $1.20.

The last act of the conference was to whip into shape the deductions made from the investigations and discussions. Under the leadership of Mr. Benedict the conference summarised its judgment on costs—not selling prices—as follows:

In estimating the size of half-tones add one-quarter inch to the length and width of bevel.

On long narrow plates estimate the width as one-fourth the length.

Make no allowance for unmounted plates.

Make no sketches on speculation.

For retouching or grouping photographs and altering copy, the cost is double the labour cost.

For hand-tooling or outlining cuts, and proofs in colours, the cost is three times the labour cost.

HALF-TONES—From Photographs or Wash Drawings: Square finish, block measure, the cost is $1.30, plus 7 cents per square inch. Minimum charge 10 square inches.

For vignetting, the cost is 50 per cent more than for square finish.

For half-tones finer than 150-line, the cost is 25 per cent. extra.

For extra negatives for half-tone groups, the cost is one-half as much as for half-tones made to be inserted.

For two-colour half-tones from black-and-white copy, the cost of each plate is double the cost of an ordinary half-tone.

For line etchings on copper the cost is double the cost of half-tones.

For zinc half-tones, 85-line or less, the cost is 25 per cent. less than for copper half-tones.

For anchoring half-tones on blocks, 15 cents per anchor.

ZINC ETCHINGS—From Black and White Line Drawings or Prints: The cost is 85 cents plus 3½ cents per square inch. Minimum charge, 10 square inches.

For reproductions from lithograph or steelplate copy, script, penmanship and shorthand, the cost is 50 per cent. extra.

For etchings of colour-plates to register, the cost is 50 per cent. extra.

For laying tints for colour-plates, the cost is double the labour cost.

For reverse (white letter) etchings, on wood, the cost is 50 per cent. extra.

For metal bases, 6 cents per square inch; minimum, 25 cents.

For mortising, on wood: Outside, 10 cents; inside, 15 cents. On metal: Outside, 15 cents; inside, 25 cents.

The cost commission will conduct further investigation into costs, and these figures may be revised. It was, however, the unanimous opinion of those present that the prices would be found to be accurate costs, on an average, when overhead expense and a reasonable profit are included in the computation.

# Exhibitions.

### PARTICK CAMERA CLUB.

THE Partick Club held its first annual exhibition in its rooms, Peel Street, Partick, 15th-25th inst., when Mr. W. C. S. Fergusson judged, and awarded bronze medals to "Peggy," Geo. MacKervail; "Peggy Q.," Chas. McKenna; "The Young Chef," Chas. McCaffery; and "York Minster" (slide), J. G. Mossemenear.

### DENNISTOUN AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE Dennistoun Association held its annual exhibition in the club-rooms, Hillfoot Street, 18th-25th inst. The challenge shield for the best picture in the members' classes was gained by John Paton. Mr. Arch. Cochrane judged, and made the following awards:—Class 1.—(1) John Paton; (2) Arch. Campbell; (3) James Stevenson; (highly commended) T. Pringle, J. Paterson. Class 2.—(1) James Paterson; (highly commended) W. Foulds. Class 3.—(1) James McKie; (2) T. G. Gilmour; (highly commended) C. H. Hanley. Class 4.—T. Pringle. Class 5.—D. Rowan. Class 6 (slides): John Hamilton, James Stevenson. Class 7 (open).—(1) W. J. Hart; (2) James Hamilton; (highly commended) W. Arbuckle, James Dunn. During the run of the exhibition lectures were given: "The Kingdom of Fife," Bailie H. J. Miller; "Holland," A. G. Watson; "Romances of the Deep," A. Patience.

### FORTHCOMING EXHIBITIONS.

March 11 to April 8.—South London Photographic Society. Sec., Horace Wright, 180, Friern Road, East Dulwich, London, S.E.

March 23 to 25.—Beith and District Arts and Crafts Club. Sec., J. Peat Millar, 40, King's Road, Beith.

March 25 to April 1.—Sunderland Photographic Association. Sec., Wm. E. Kieffer, Stirling Road, Sunderland.

March 25 to April 20.—Worcestershire Camera Club and Photographic Survey Society. Sec., G. H. Haycox, St. Wulstan's Crescent, Worcester.

March 28 to April 1.—Sheffield Photographic Society. Sec., C. H. Parker, 67, Wadbrough Road, Sheffield.

March 28 to April 8.—Streatham Photographic Portfolio. Sec., F. E. Huson, 56, Salford Road, Streatham Hill, S.W.

March 29 to April 1.—Bolton Camera Club. Sec., J. E. Button, 491, St. Helens Road, Bolton.

March 29 to April 1.—Ilkeston Arts Club. Sec., A. Smith, 11, Graham Street, Ilkeston.

April 17 to 21.—Southend-on-Sea Photographic Society. Entries close April 3. Sec., C. A. E. Chandler, 29, St. Helen's Road, Westcliff-on-Sea.

April 25 to 29.—Barrhead Amateur Art Club. Entries close April 11. Sec., J. M'Grouther, Glenartney, Barrhead.

April 27 to May 4.—Malvern Camera Club. Entries close April 17. Sec., J. B. Nickolls, The Exchange, Malvern.

May 3 to 4.—Chelmsford Photographic Society. Sec., C. H. Wallis, Rosebank, Moulsham, Chelmsford.

May 8 to 31.—Royal Photographic Society. Latest date, carrier, April 24; hand, April 25. Sec., J. McIntosh, 35, Russell Square, London, W.C.

May 12 to 20.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

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BACKGROUNDS.—Messrs. O. Sichel and Co., 52, Bunhill Row, London, E.C., are now showing at the above address a series of high-class backgrounds suitable for the present season. Visitors will be able to suit their requirements from an inspection of the actual grounds.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between March 6 to 11:—

Apparatus.—No. 5,647. Photographic apparatus. James Thurston Sibley, Francis Pym Mannock, and Frederick Henry Nixon.

Colour Cinematography.—No. 6,046. Process for the production of cinematograph pictures in colour. Albert Bannister.

Cinematographs.—No. 5,897. Cinematographs—a radiant light cooler. Fraser Devereux Gordon.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Colour Transparencies and Prints.—No. 27,818, 1909 (November 29, 1909). A process for the production of coloured photographs from ordinary silver positives, consisting in:—Treatment of the positive with bichloride of copper and iodide of potassium, followed by immersion in an aniline dye-bath and washing with plain or acidulated water; fixing the colour by immersion in a 3 per cent. to 10 per cent. solution of tannin, or a 20 per cent. solution of iodide of potassium; washing to eliminate excess of tannin; fixing the print by means of hyposulphite of soda or cyanide of potassium and finally washing to eliminate the fixing reagent.

It is known (write the patentees) that certain bodies, in particular the metallic salts of various acids, have the property of precipitating several aniline colours. Such salts include many of the chlorides, bromides, ferricyanides, and others. Amongst these, the most interesting are the chlorides, iodides, ferricyanides, and chromates of silver, because it is easy to transform the reduced silver of photographs into any one of these compounds. The salt that has given the best results and which is especially suitable is iodide of silver.

In a process for toning silver prints it has been heretofore suggested to transform the silver of an ordinary silver image by double decomposition with the corresponding salts in the presence of an oxidising agent into silver iodide, silver bromide, or other compounds capable of being coloured directly, and then to colour them by immersion in a suitable dye-bath, such as quinoline red. Fixing is effected by thiosulphate of sodium (hypo) to which tannin may be added. Alternatively it would be possible to transform the reduced silver of the print into iodide of silver by plunging the positive into a solution of iodine in iodide of potassium, which results in a direct transformation.

The present invention comprises a complete series of operations, and the use of various reagents, which result in the production of perfect pictures.

The transformation is effected in stages by first transforming the silver into chloride, bromide, or ferricyanide, and then into iodide, by immersion in a weak bath of iodide of potassium.

This double transformation is extremely important, and is an essential feature of the invention, since the monochromes obtained by this process are more intense, and greater clearness and delicacy is given to the image, than is obtainable by the direct transformation process.

In carrying the invention into practice the positive, after being well washed with hyposulphite, is plunged into a solution of, for example, bichloride of copper of about 5 per cent. strength. As soon as it is completely washed and the silver converted into chloride of silver, it is washed for some minutes and immersed in a very weak solution of iodide of potassium of not more than 1 per cent. or 2 per cent. strength at the most. In this bath the colour of the image, which was a browny white, is changed to a greenish white, and the positive image is completely transformed into iodide of silver.

After this transformation of the image, immersion in a dye bath follows. A sufficient small number of aniline colours react well in the presence of iodide of silver. Those which are preferred in the present case are the red of rosaniline or fuchsine, the blue of methylene, or the blue commonly known as blue 149, and ordinary auramine, for trichromes. For two-colour prints intended for stereoscopic projection, a mixture of fuchsine and auramine in predetermined proportions and the green known to commerce by the name of brilliant green or ethyl green are preferred. The aqueous solutions of these colouring matters should be relatively weak, and contain a small proportion of acetic acid, which favours imbibition whilst preventing the filling up of the whites. However, the degree of concentration need not be rigorously insisted upon, and a weak bath, in course of time, produces monochromes as intense as those produced by a concentrated bath.

The image of iodide of silver on the print, after being washed for some minutes in order to eliminate iodide of potassium, is plunged into the selected colouring solution. The time of imbibition is about twelve hours. The termination of this operation can be noted by observing when the coloration is as intense on the back as on the face of the plate or film. If the whites are tinted, the print is cleared or washed out either in plain water or water containing a small quantity of acetic acid.

After this the silver salt of the sensitive film is dissolved without removing the colour, and even without permitting it to diffuse through the gelatine. Two methods are available. According to one method the print is first hardened in a solution of alum to prevent melting of the gelatine, and is then immersed in a solution of iodide of potassium of 20 per cent. strength at least. The iodide of potassium commences to dissolve the iodide of silver, which is rendered completely transparent without, however, being removed. This renders the colour pure, but without allowing it to diffuse or come out of the gelatine, since it is retained by the iodide of silver, which becomes invisible.

The second method is much more general and more perfect. It is based on the two following operations. The monochrome is first plunged in a bath of tannin of from 3 per cent. to 10 per cent. concentration, and left to rest for about twelve minutes. The tannin, which precipitates all aniline colours without exception, renders the colour insoluble without affecting the iodide of silver; the fixing of the print can therefore be thereafter accomplished without fear of injury.

Two methods of fixing are available after the treatment with tannin, viz., with hyposulphite of soda or cyanide of potassium. For fixing with hyposulphite of soda, after having removed the greater part of the tannin contained in the sensitive film by a thorough washing, the print is plunged into a concentrated or saturated bath of hyposulphite. The period for fixing is about ten minutes. In a less concentrated bath the fixing will be difficult and often incomplete. It is now only necessary to eliminate the hyposulphite by thorough washing. The employment of tannin, besides being indispensable for fixing the colours, leaves them in the gelatine in a precipitated form, which gives them extraordinary solidity.

In order to fix by means of cyanide of potassium, the print, after the treatment with tannin, is plunged into a solution of cyanide of potassium of about 10 per cent. strength. The iodide of silver disappears very rapidly. The monochrome is then washed first in plain water in order to eliminate the excess of cyanide, then in water slightly acidulated with acetic acid, and finally washed with a large quantity of water.

Only prints with "free" tones formed solely by aniline colours have hereinabove been mentioned, but positives in less intense colours can be obtained. In this case, in place of fixing the positive after imbibition and washing out, the positive is passed through a bath of tannin, then washed, and the iodide of silver re-developed in any suitable developing bath. The print is, in this case, formed by reduced silver, the tone or shade of which is modified by the aniline colour.

In conclusion, in the present improved process for transforming a silver print into an aniline print the order of the operations is as follows:—

1. Transformation of the reduced silver of the print into chloride of silver by bichloride of copper.

2. Transformation of chloride of silver into iodide of silver by a feeble bath of iodide of potassium.

3. Imbibition in a weak bath of a selected aniline colour.

4. Washing the print in plain water or in acidulated water.

5. Fixing the colour in a 3 per cent. to 10 per cent. solution of tannin, of a solution of iodide of potassium of at least 20 per cent. strength.

6. Elimination of the excess tannin by means of plain water.

7. Elimination of the silver salt by means of concentrated hyposulphite of soda or by cyanide of potassium of about 10 per cent. strength.

8. Elimination of the fixing reagent by a final washing. Auguste Jean-Baptiste Tauleigne, Pontigny (Yonne), and Elie Mazo, 8, Boulevard de Magenta, Paris.

Lens-Screens for Diffused Definiton.—No. 21,911, 1910 (September 21, 1910). This invention relates to an improved screen attachment for photographic cameras intended for portrait and landscape photography in order to give a softer effect and reduce or dispense with retouching.

The device consists of a screen of light gauzy fabric or wire gauze placed in a protecting sheath or tube, and fitted adjustably over the lens, so that the light from the object has to pass through the screen. The shield or sheath protects the screen from the greater part of the light coming from outside, so that the light thrown upon it comes mainly from the actual object. The screen causes a scattering of the light, which is found to give a soft effect in the photograph without destroying the detail. The device is adjustable in position, so that the distance of the screen from the lens may be varied as found desirable, and screens of different fineness may be employed according to the nature of the work. Frederick William Livesey, of Hazelmere, Beechwood Avenue, Weybridge.

## New Trade Names.

S.B.S. Ltd. (Device).—No. 330,332. Optical lanterns and cinematograph films (being transparencies for exhibition). The Safety Bioscope Supplies Co., Ltd., 7, Union Court, Old Broad Street, London, E.C., manufacturers and merchants. January 24, 1911.

Kinedom.—No. 330,763. Apparatus included in Class 8 for photography and for showing moving pictures and films appertaining thereto. The Rotary Photographic Co., Ltd., 24, Ropemaker Street, Moorfields, London, E.C., manufacturers. February 6, 1911.

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## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Speed of Focal-Plane Shutters.

For photographing such subjects as moving motor-cars, cycle racing, foot racing, and other athletic events (writes Mr. S. J. Tayler, in "Photography and Focus" for March 21) the focal-plane is, of course, indispensable, and if any press work is to be attempted it will, in nearly every case, be focal-plane work. Apart from the question of efficiency, it is the only kind of shutter, with one or two possible exceptions, which gives actual exposures of 1/100th of a second and less. Many photographers, who accept the statements of the expert as to the inaccuracy of the diaphragm shutter, still believe in the accuracy of the focal-plane. This faith is not justified, for both are equally inaccurate in the majority of cases. These inaccuracies do not condemn the shutter, for the practical utility of the actual speeds is soon ascertained in use and the markings habitually ignored. The so-called 1/1000th of a second is about as illusory as the 1/100th usually accredited to the diaphragm shutter; it actually matters no whit what the top speed of the focal-plane shutter may be—it is quite as fast as the plate will stand, even under the most advantageous lighting circumstances. Whether it is labelled 1/1,000, 1/2,000, or 1/800, it will probably be somewhere in the neighbourhood of 1/400th.

### The Camera in the Tropics.

A leather-covered metal camera (writes Mr. Lionel de M. Malan, in the "Amateur Photographer and Photographic News" for March 20) suffers very little from the climate if it is stored, when not in use, where there is plenty of ventilation—provided, of course, that ants and such-like insects have not access to it; this is easily insured by placing saucers of paraffin or water under the legs of the table on which it rests. On no account should the camera be shut away in a drawer, as it would soon become covered with mildew in such a badly ventilated place. Possessing such an instrument, let us see what extra precautions have to be taken in using it. From the moment that the roll of film is withdrawn from its tin and placed in the camera it is likely quickly to deteriorate, due to the heat and moisture. For this reason the camera should never be charged until the same day as the exposures are to be made, or, better still, until one comes across something that one wants to photograph. The tin containing the film may be carried, unopened, in one's pocket on the shady side of one's body, until wanted. Development should take place as soon after exposure as is practicable—this will best be done during the evening of the same day, as late as will allow of completing all the process, including fixing, washing, and hanging up to dry, at a reasonable hour for retiring to bed. After sunset the air in most tropical places becomes considerably cooler every hour, until at its coolest, just before sunrise. If development were started early in the morning it would have to be started very early indeed, because the films must have become very nearly dry before the air becomes hot. Although the films dry very little during the night, owing to the air becoming more than saturated with moisture as the temperature falls, yet they get the full advantage of the first rise of temperature in the morning, and become dry before the sun has risen to such a height as to heat the air more than wet films can stand. In out-of-the-way places clean and cool water is scarce, and ice unobtainable; surface wells and rain water tanks often being the only supply—these being in the full glare of the sun all day—the water they contain would be much too hot for our purpose, and so a sufficient quantity of this water must have been placed in the shade the first thing in the morning and allowed to stand.

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## New Materials, &c.

Titles on Negatives.—The Halifax Photographic Co. send us some specimens of work which they are now prepared to do for photographers, viz., the addition of titles to negatives. The wording is very neatly put in in printed characters at a price of 9d. per negative for a title of three words, and 2d. per further word. It should, of course, be understood that the negative, after being treated for this "Letterphot" title, is only of use for postcard printing, on account of part of the film being scratched to make room for the title, which appears in a white border.

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### CATALOGUES AND TRADE NOTICES.

Trade Work in Colours, Etc.—Messrs. Wallace Fidler and Co., Carnarvon Road, Barnet, N., send us their latest circular of prices for bromide enlargements in black and white or finished in water-colours or oils. This firm likewise makes a specialty of oil paintings on canvas, miniatures on ivory, etc., and, as many of our readers may be interested to know, is prepared to give lessons in oil painting, black and white, water-colour, pastel and aerograph work.

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Ensign Film Competition.—Mr. A. Overy, Box 205, Barberton, Transvaal, South Africa, is the winner of the "Ensign" Roll Film Competition for March. Houghtons Limited offer a three-guinea camera every month for the best negative on "Ensign" film. The entries close on the 3rd of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### FRIDAY, MARCH 24.

Queen's Park Photographic Association. "Tramps Abroad with a Kodak." W. F. Slater.

### SUNDAY, MARCH 26.

The United Stereoscopic Society. "How the U.S.S. see Life." A. T. Mole.

### MONDAY, MARCH 27.

Southampton Camera Club. Lantern Slide Competitions.
Scarborough and District Photographic Society. "Astray with a Camera." J. H. Rowntree.
Bradford Photographic Society. Autotype Carbon Demonstration.
Kidderminster and District Photographic Society. Annual Competition.
Leek Photographic Society. Members' Excursion Slides.
Cleveland Camera Club. Composition in Landscape.
Shettleston and District Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

### TUESDAY, MARCH 28.

Royal Photographic Society. "Surface Brightness, its Measurement and its Application to Photography." J. S. Dow and V. H. Mackinney.
Halifax Camera Club. "Autotype Carbon" (Autotype Co.). W. Wadsworth.
Hackney Photographic Society. "Jenolan Caves of New South Wales." G. T. Gale.
Leeds Photographic Society. "Altera Roma! Eburacum" (York of Long Ago). T. W. Thornton.
Manchester Amateur Photographic Society. Lantern Slide Testing and Exhibition of Home-made Apparatus by F. Rodgers.
St. Helens Camera Club. Annual Meeting.
Leith Amateur Photographic Association. "Tramps Abroad with a Kodak." W. F. Slater.

### WEDNESDAY, MARCH 29.

Croydon Camera Club. "The New Thames Screen-plate."
South Suburban Photographic Society. "In the Steps of the Sassenach." J. Nixon.
West Surrey Photographic Society. Trial of Lantern Slides before the Exhibition.
Sale Photographic Society. Lantern Slide Competition.
Partick Camera Club. Monthly Lantern Slide Competition.
Borough Polytechnic Photographic Society. Members' Night.
Balham Camera Club. "The Value of Club Excursions" (Discussion).
Chorley Photographic Society. "Noctona Gaslight Printing." A. Webb.
West Calder Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

### THURSDAY, MARCH 30.

Batley and District Photographic Society. Members' Print and Slide Competition.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Field Work."
Liverpool Amateur Photographic Association. "Some Thoughts on our English Cathedrals." William A. Clark.
Camera Club. "100 English Wild Flowers, with Autochromes." H. Essenhigh Corke.
Oldham Photographic Society. Monthly Meeting and Members' Slides.
Handsworth Photographic Society. "A Glimpse of Starland." Frederick Smith.
London and Provincial Photographic Association. "Some Curiosities and a Few Contrasts." S. J. Beckett.
Heaton and District Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, March 21, Mr. A. H. Blake in the chair.

Mr. F. W. Hill delivered a lecture on the "Open-air Statues in London," which he divided into the following classes: Royal, statesmen, public benefactors, Army men, and art and drama. The lecturer dealt with his subject in a very thorough and systematic manner, illustrating his remarks with a large number of lantern slides. A brief discussion followed, and the proceedings terminated with a hearty vote of thanks to Mr. Hill.

MANCHESTER AMATEUR PHOTOGRAPHIC SOCIETY.—On Tuesday last, March 14, Mr. Treve Dawson gave a lecture and demonstration on photography in natural colours by the Thames colour plates. The lecturer first explained how the colour screens were constructed, and then showed how, if a panchromatic plate be exposed on a coloured object, behind one of these screens, a negative is produced which in appearance resembles an ordinary photographic negative; from this a positive is made in the usual way, then this is bound up in careful register with a colour screen, and the resultant picture shows the object photographed in its natural colours. The great advantage claimed for this method was that from the first negative any number of subsequent positives could be made, bound up with screens and duplicate colour photographs obtained. A large number of excellent lantern slides were exhibited showing the adaptability of the "Thames" plate to portrait, landscape, and flower study, and the lecturer received the very hearty thanks of the audience for his instructive and valuable demonstration.

# Commercial & Legal Intelligence.

CANVASSING FRAUDS IN THE BLACK COUNTRY.—William Evans (34), otherwise Keir, described as a canvasser, of no fixed abode, was charged at Walsall, last week, with obtaining small sums of money by false pretences. Chief Constable Thomson stated that he only proposed to proceed with three charges, but in Walsall alone there were several dozen cases against prisoner, while in the Black Country there were probably hundreds of cases. Prisoner had professed to be canvassing for orders on behalf of a firm of photographers at Dudley, and at Smethwick, West Bromwich, Wednesbury, and other towns all round the district he had obtained photographs from poor people who gave him orders for enlargements, and paid deposits of amounts varying from 3d. to 1s. The orders were never executed, and prisoner had simply been subsisting on the proceeds of his frauds. Pointing to a pile of apparently some hundreds of photographs which were produced in court, Mr. Thomson added that these were found at prisoner's lodgings, and they would be returned to the owners in all cases where they were claimed. The police in other towns were willing to leave prisoner to be dealt with on the Walsall charges.

Sentence of six months' hard labour was passed.

We are glad to see that the "Birmingham Daily Mail" comments upon the above case in the following paragraph:—

"For a particularly despicable offence a canvasser was yesterday sentenced to six months' hard labour by the Walsall magistrates. He had solicited orders for photograph enlargements from hundreds of poor people in that town, and, of course, these simple, credulous folk lost the photographs which they handed to him, and the accompanying deposits. As a rule the law is too lenient with mean offenders of this kind; more exemplary punishment would prove a deterrent in cases other than this where petty frauds are carried out at the expense of persons who have the greatest difficulty in making ends meet under ordinary circumstances."

Photographers should note that the Press are now fully convinced of the fraudulent nature of the canvassing "business," and only require their attention directed to it to warn their readers against the representations of rogues whose operations injure photographers and the public alike.

## NEW COMPANIES.

ANY-TONE.—Capital, £4,000, in £1 shares. Manufacturers of and dealers in photographic, chemical, and physical apparatus, optical instruments, etc. To acquire from R. P. Gregson the benefit of a process discovered by him relating to an application for use in photography. Private.

# News and Notes.

SOUTHEND-ON-SEA PHOTOGRAPHIC SOCIETY.—The ninth annual exhibition will be held in the Technical Institute, Southend, from April 17 to 21. There will be four open classes, in each of which two bronze plaques will be placed at the disposal of the judge, Mr. F. J. Mortimer, for award, together with a special silver plaque for the best picture in this section. Exhibitors at the South London Photographic Society's exhibition can have their pictures sent to Southend, carriage free, if desired. Entries close April 3, by which date forms, correctly filled in and accompanied by the necessary fees, must reach the joint hon. secretary, Mr. S. Wenman, 50, Baxter Avenue, Southend-on-Sea.

THE FESTIVAL OF EMPIRE.—An important section of the All-British Arts and Industries Exhibition, to be held at the Crystal Palace in connection with the Festival of Empire, will be that devoted to photography. The chief interest in this department will be found in the competition for a silver cup or plaque to be awarded for the best collection of pictures sent in by a British society, and another for the best collection sent by a Colonial or Indian society. It is intended that the display should form a huge and delightful album of Empire. Already nearly fifty clubs have entered, and it is expected that some 3,000 photographic views of all parts of the Empire will be shown.

The Photo-Enlargement Swindle.—A reader of "Mrs. Bull" writes to that paper a warning against the photograph enlargement swindlers, whose methods have been so often exposed, and she tells how one of the sharks was treated in Wellington. The usual "lady" calls for the photograph to be enlarged free of cost, and a week later a man comes with her and asks 4s. 6d. to 9s. or £1 1s. for the frame. At Wellington the swindler had a warm time. The men and women demanded the original photographs back, and held the swindler and his horse until he threw from his bag a pile of photographs. They then hooted him out of the town.

Self-Igniting Flashlight Powder.—"G. A. G.," writing in "Work," says: "Several methods of firing flashlight powders, electrically and otherwise, have been tried more or less successfully. The following method has been used by the writer for several years and has never once failed. Obtain some permanganate of potash in crystals, and after putting the magnesium powder in a tin lid or other receptacle, place in the centre of the powder a few of the crystals. Now on the top of these crystals drop one or two drops of glycerine. In a few seconds the chemical action of the glycerine on the potash will make the latter take fire, thus igniting the powder. The time of firing can be varied several seconds by making the crystals either coarse or fine. A few experiments will soon show how to mix for getting different results. This method is very useful when the operator desires to be included in a group."

Burroughs Wellcome and Co.'s New West-End Exhibition Room.—An admirably equipped exhibition room has just been opened by Messrs. Burroughs Wellcome and Co. in the heart of the doctors' quarter. Situated at 54, Wigmore Street, W., the exhibition room is intended to afford physicians a convenient opportunity of examining the medical equipments and pharmaceutical products of the firm. The whole scheme has been carried out with characteristic thoroughness. Dust-proof, all-glass showcases and the exclusive use of white in the decorations convey the impression of order, purity, and spotless cleanliness. Although the room is primarily intended for medical customers of the firm, readers of a photographic journal will be interested to learn that a case has been specially set aside with the object of demonstrating the uses to which "Tabloid" photographic chemicals may be put in medical record and X-ray work.

The Bulletins of the Cracow Academy of Sciences for 1910 (writes "Nature") contain three important papers by Professor L. Bruner and his colleagues on photo-chemistry. The first action studied was that of light in promoting the conversion of maleic into fumaric acid in presence of bromine. In the absence of light, the bromine merely combines with the two acids to form dibromosuccinnic acids, the action proceeding fifteen times more quickly with maleic than with the more stable fumaric acid. In presence of light, perhaps because the bromination may become reversible, the main action is to cause the maleic to change into fumaric acid. This change, which is not effected in presence of chlorine or iodine or of the compounds $ICl$ and $ICl_3$ was traced by measurements of conductivity and of solubility. The amount of fumaric acid finally produced depends on the nature of the light, but if this is fixed there is a definite ratio between the fumaric acid produced and the bromine used; by increasing the quantity of bromine, the maleic acid can be changed completely into fumaric acid. These observations reveal a striking contrast with catalytic actions in which light is not concerned, since the concentration of the catalyst is then without influence on the final equilibrium between isomers. Other characteristics of photochemical action were shown by the investigation of the bromination of toluene under the influence of light. This action is extraordinarily sensitive to the presence of oxygen, which appears to give rise to oxidised bromine-compounds which carry on the action after the light has been removed; bromination in the side chain can, indeed, be effected almost violently *in the dark* if the material is subjected to the action of slightly ozonised oxygen, which thus acts as a most efficient "carrier" of bromine to the side chain. When these disturbing effects were got rid of by exclusion of oxygen and the addition of a little iodine, the velocity of bromination was found to be independent of the concentration of the bromine, i.e., equal quantities of bromine were used in equal times throughout the action. The action of various wave-lengths of light was determined with the help of a mercury lamp and light-filters, but all wave-lengths absorbed by the bromine appeared to take part equally in the photochemical action.

In the Cause of Charity.—What is described as "A Salon of Fragrance and Fair Women" is to be held at Harrod's Stores from Monday next, March 27, to Saturday, April 1. There the donation of £500 worth of Luce's perfumes is to be sold by a committee of ladies of the stage, headed by Miss Gertrude Robins (Mrs. Charles E. Dawson). The proceeds will be handed over to the Middlesex Hospital as a contribution to the Prince Francis of Teck Memorial Fund, to which the late Prince's brother, H.S.H. Prince Alexander of Teck, has lent his support as part of his labours in carrying on his brother's beneficent work for the Middlesex Hospital. A score or more of stage favourites will sell the perfumes at the stand at retail prices.

*Photograph by*] [*Elwin Neame.*

Miss Gertrude Robins.

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# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

### JUDGING AT THE "NORTHERN."

To the Editors.

Gentlemen,—Your critic obscures my point; I did not *only* say pictures were selected because they were "liked," but also because "they were good." The question of personal liking does not always rule; but selection is, with me (and should always be, I think), made because in my "personal judgment" it is worthy of public exhibition, good enough in intention, aim, and achievement to merit such publicity; and the "personal judgment" makes the standard.

As your critic is perforce anonymous, I cannot, of course, "place" him or know his value as a judge; but, being thus necessarily anonymous, it seems to me to be a piece of bad taste to thus appraise himself so highly: his standard is in this matter known only to himself. His bad taste is further exhibited in his saying that when judging he has been "glutted with the sort of things Mr. Evans would think alone worthy"; for that can only imply that my standing and experience as a critic is low and worthless, for it is not common at photographic exhibitions for judges to be "glutted" with *good* work.

"Expediency"—your critic has rightly expressed it; it is the bane and degradation of all exhibitions, and we can look for no real progress until the sham of it is realised.

"Fair Play" thinks "the judges ought to do their duty and select pictures for the whole exhibition." Why, certainly! and that is just what we did; selected the pictures we thought ought to make the exhibition: and when the committee remonstrated at the smallness of the number selected, thought the only way out was the reply, "We cannot lower our standard of what ought to be exhibited, and if you want any others hung you must choose them yourselves, on the condition that they are plainly differentiated from those of *our* choice, as we cannot be responsible for the presence on the walls of any others."

How far from doing one's duty to the best of one's means is that? The obvious reply is that the quarrel is with our means, our standard; and it is better to be blamed for keeping that too high than t'other way round. *Vale!*—Yours faithfully,

Frederick H. Evans.

32, Rosemont Road, Acton, W., March 17, 1911.

In response to the above letter the writer of the review of the "Northern" writes as follows:—

To the Editors.

Gentlemen,—I do not wish to add anything more to this discussion beyond the remark that Mr. Evans has put an uncharitable construction upon the remark of mine which he quotes, and that he has done so whilst taking advantage of my anonymity, which was itself quite in order, since the review I wrote was unsigned. I am happy to say that our personal and direct communications are less acrid.—Yours, etc.,

The Critic.

## HOLDING FILM NEGATIVES IN ENLARGERS.

To the Editors.

Gentlemen,—I have much pleasure in making public my method of inserting film negatives into the carrier of my enlarging apparatus for the benefit of your worthy correspondent "B. K." and any others who are in similar difficulties.

Directly I found myself called upon to produce enlargements from films and plates of all sizes I set about making thick cardboard (thin wood would do) carriers to go inside the carrier proper, each with an aperture to take one size only.

On one side were turn-buttons, and on the other thin pieces of metal (cut from a mustard tin) to hold the glass in position. In fact, they are cardboard facsimiles of the wooden "double carriers" sold for use in dark-slides. The carrier is thick enough to accommodate two pieces of glass, with the film sandwiched between so that they come flush with the surrounding cardboard on which the buttons and metal are fixed.

By using the best quality glass (that cut from obsolete negatives) there is no fear of scratches or air bubbles, and also no need to remove the front glass when enlarging from a plate, which would otherwise necessitate packing to prevent movement.

It will be seen that the advantage lies in having a carrier for each size likely to be met with.—Yours very truly,

P. Fredk. Visick.

50, Stanbury Road, Peckham, S.E., March 17, 1911.

## PHOTOGRAPHING SHOP WINDOWS.

To the Editors.

Gentlemen,—My experience is that no two windows are alike as to reflections. The course I adopt is to photograph the window when the sun has just left it, leaving the opposite side in shadow.

I usually use a large plate, get my original print on a semi-matt bromide paper, work out all reflections that may be there, and copy to size required. At times I have had the sun blind put out. This, of course, lengthens exposure, but often kills all reflections. The print I enclose was taken on 12 x 10 plate and worked up as stated and reduced to sizes required.—Yours faithfully,

S. Yeo.

Dorking,
March 15.

## IRIDESCENT MARKINGS WITH SILICATE SUBSTRATUM.

To the Editors.

Gentlemen,—The free caustic soda in silicate will undoubtedly affect the surface of glass by prolonged contact and dampness; but to obtain speedily that slight degradation of the polished surface of a lens that seems to be a scientific want of the present day, I beg to suggest the following procedure.

In the side of a tank of cold water fix the lens in a cell, so that it should be in contact with the water. Then arrange a jet of steam upon it, so that constant condensation takes place; after a time, depending upon the character of the glass, the removal of the soda will leave a layer of silica and the iridescent effect desired. This action is constantly taking place on glass under the action of rain. I have some sheets of glass, removed from an old studio, that are spoiled for framing purposes. Of course, this result would only come from a prolonged exposure in the case of common sheet glass, owing to the liberal use of lime by the makers; but in the old patent plate days it was disgustingly rapid in its appearance, owing to the removal of the skin in polishing. And collodion would not willingly remain on such a surface. That was why old wet plate workers hailed with such rapture the discovery of "Twincure," the magic preventive of splitting films and foggy patches We paid a good stiff price for it, too, at first, until we found that it consisted of the white of one egg, dissolved in 80oz. of water by the aid of a few drops of ammonia and shaking! Some of us would have been willing to apply the shaking (rough and rapid) to the inventor; but photographers always have been a credulous, unbusinesslike clan!—Yours, etc.,

J. D. Cooper.

133, Brighton Road, Surbiton-on-Thames.
March 15, 1911.

## THE ECONOMY OF ANTHRACITE STOVES FOR STUDIO HEATING.

To the Editors.

Gentlemen,—With reference to your article on studio heating in last week's "B.J.," I can thoroughly endorse all that was said in favour of anthracite stoves for that purpose. I have had an "Esse" stove in my studio for over four months, and it has given every satisfaction. One important point in favour of the anthracite stove is that it will burn continuously for fifteen hours without refilling or attention.

If filled at night, the indicator put to "slow," it will continue to burn slowly, and the studio will be genial and warm when you enter in the morning.

With my old stove—a large slow combustion, which filled the place with clouds of dust—it was always midday before the place was comfortable. The anthracite stove is hermetically sealed, so the dust nuisance is avoided. Economy is another point in its favour. A hundredweight of anthracite fuel costs me 1s. 4d. and serves for about eight days, so I reckon that 2d. gives me twenty-four hours' good heat.—I am, yours faithfully,

J. Sillars Richmond.

Waverley Studio, Bank Street, Galashiels, N.B.

## THE CARD-INDEX FOR PHOTOGRAPHERS.

To the Editors.

Gentlemen,—I read "The Card-Index for Photographers" with much interest, and should like to make one or two remarks on the subject. Half the advantages offered by the card-index system are lost if makeshift devices are employed in the working. Any photographer who cannot afford to lay out the few shillings necessary to obtain a proper outfit, might as well stick to the old methods. He is not doing enough business to need a card-index system.

Nests of four drawers (each drawer holding 1,000 cards) can be obtained for about 30s. These drawers will be made to travel sweetly in their compartments, and to take the cards without too much "play" on either side. They will be fitted with a movable block which can be clamped at any part of the drawer, and against which the cards will lean at a convenient angle for reading. They will also contain a locking rod, which will prevent the cards falling out should the drawer be upset. Anyone who has had to pick up a thousand cards and replace in proper order will at once grasp the merit of this last device.

It is waste of time to rule the cards at home. They can be bought of the right substance (an important point), printed, ruled, and holed, at 4s. 6d. a thousand. Not holed, 6d. a thousand less. In filling up the card the customer's name should not be written "Jones, Mr. Harry," but "Mr. Harry Jones." The general idea is that when filled in in the former manner, the card is more quickly found in the drawer. This is not so. It is just as easy to find the card with the name written in the ordinary way, and is less confusing when the name has to be read off by some person other than the writer. Used as described by Mr. D. Berlin in last week's "B. J.," the card-index system of keeping track of negatives, orders, and customers will be found much superior to any other method.—Yours truly,

Owen Ellison.

483, King's Road, Chelsea, S.W.
March 18, 1911.

## COLOURED PORTRAITS.

To the Editors.

Gentlemen,—Apropos your remarks upon this subject in your issue of the 17th inst., not only is attention being paid to high-class colour work at the present time, but to low-class colour work as well. If the latter is allowed to continue—and I really cannot see how one can prevent it—such work will kill the higher class work, as sure as postcards have killed the ordinary view and cabinet trade. In South London to-day there are several firms supplying hand-coloured postcard portraits at four for sixpence. It cannot be said that the work is bad—one rather wishes it were, as the public might not then patronise such firms. Such work cannot be permanent, as it is doubtful if any of the aniline dyes used for colouring are permanent, and I have been careful to note that the specimens in one window at least are changed every few days. Even when produced in large quantities one fails to see where there is much profit to be had out of four specially taken and coloured postcard portraits for sixpence. Unless clever colourists are employed for good work to be sold at a fair price, the result is almost sure to look cheap and nasty; and it will be considered so, even if it is not, should the cheap coloured postcards secure a footing. I cannot help thinking that a photographer would do well to break away from the coloured portrait of the orthodox type, if only for a time, and produce something of a distinct character, say, crystoleums. There may be some professional photographers who have tried crystoleum work commercially, but I do not know of any; the process at present appears to be worked only by amateurs. I have made and sold a few privately at good prices, and should produce more had I to depend upon photography entirely for a living. A clever amateur photographer of the name of Lawrence, who practised the art at Greenwich in the year 1857, invented a system of producing partially coloured wet-plate positives, which he christened "Relievios." He obtained two guineas each for them, and was able to produce only a [illegible] few before his death. I am the fortunate possessor of one example, and I value it too highly to take it to pieces in order to thoroughly examine it; but from his note-books, which recently came into my possession, I can see how they were made. A wet-plate positive was taken upon glass in the usual way, the background was scraped away, leaving the figure on a background of plain glass; the back of the figure was then blacked, and the whole backed up with a hand-coloured background in oils or water-colours upon card—not a gaudy affair, but a work of art. The result is that the figure appears to stand out from the background, there being, of course, a thickness of glass between the photographic image and the coloured background. The image on the glass was also tinted, and the result I have—it measures 4 in. by 3 in.—is more beautiful than one may possibly imagine. The wet process nowadays is not worked by the average professional, but I do not see why "relievios" should not be made by treating a suitably thin transparency, backed up with white paper, in practically the same way. I give the hint for what it is worth, and regret that I cannot show all my readers one of Lawrence's originals. There is, I feel sure, money to be made by producing such, or similar, coloured portraits.—I am, gentlemen, yours truly,

Blue Label.

## A CONFERENCE OF ADVERTISING MEN.

To the Editors.

Gentlemen,—The Incorporated Society of Advertisement Consultants contemplates organising a Conference of Advertising Men to be held in London about May. A hall would be taken of a size in proportion to the attendance, and leading advertising men in London invited to address the conference; and probably subsidiary meetings would be held during the day, winding up with a dinner for such advertising men as cared to attend it.

The particular object of our Society in organising this affair is to interest the large number of advertising men who work in the provinces. It is felt that the social side of advertising unduly concentrates itself on London. Men engaged in London on advertising work have an opportunity to meet each other in various ways, and will shortly have a club house; but the advertising men of the great provincial centres neither meet each other nor get in contact with their London colleagues.

A great deal of highly meritorious work is being done by advertising men outside London, and it is desired at the present time to elicit an expression from them as to a gathering such as I have described. Our President, Mr. Thomas Russell, has promised to address the meeting, and also to interest himself in procuring the presence of well-known and influential men in the advertising field. Perhaps if you will be good enough to publish this letter in your paper, the attention thus attracted might elicit a sufficient body of opinion to bring forth a practical suggestion.

Our idea is to welcome advertising men of all descriptions—wholesale and retail advertisers from London and the provinces and their advertisement managers, the advertisement managers of London and provincial newspapers, and the advertisement managers of trade publications.

I shall be glad to answer any correspondence addressed to me here.—Yours obediently, Geo. V. Briscoe, Hon. Sec.

The Incorporated Society of Advertisement Consultants,
38, Bedford Street, Strand, W.C.,
March 16, 1911.

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

J. P. Rugg.—See reply to C. H. Merritt.

F. and G.—We are sorry, but we do not know the individual.

F. Holloway.—Many thanks for the cutting. You will notice that we had already received a report.

E. J. Amoore.—The article in question appeared in our issue of November 5, 1909. The number may be obtained from our publishers, price 2½d., post free.

Book on Calculus.—Will you please insert in the "B.J." the nam of publishers and price of book entitled "The Calculus Made Easy," as mentioned in the "B.J.," March 17?—H. Hunt.

See answer to Leser.

A. L. Cranch, Harry Shaw, Old Subscriber, and others.—In our next.

Book on Calculus.—Please answer me, if possible in your next publication, who are the publishers of "The Calculus Made Easy," and the price of it?—Leser.

The publishers are Macmillan; the price, 2s.

A. M.—1. We think you must be using an incorrectly adjusted light-filter. 2. Not sufficient to account for your failure. 3. Yes, within the limits of the process. The results are reasonably good—not equal to the results with the process you name, but still fairly satisfactory.

Process Print.—I should esteem it a favour if you could kindly tell me how the enclosed print is made. Is it entirely printed from half-tone block?—Williamson.

It is simply a half-tone block of fine ruling.

Protamol.—In your issue of January 20, 1911, page 44, of "B.J.," you refer to "Protamol" mountant, and I have been attempting to obtain some, but failed. Will you kindly be good enough to favour me with the name of the English agents?—T. A. S.

We can only refer you to the firm mentioned in the article—namely, Messrs. R. Lechner, Graben 30 and 31, Vienna.

Developer.—I have seen a formula for giving extra intensity by the addition of ferro- or ferri-cyanide of potassium to the developer, but in one place the one is given and in another the other. Can you tell me which is right?—J. Wright.

We think the ferro-cyanide is meant, but, so far as our experience goes, it is not of perceptible advantage in the developer.

Colonial Number.—I note you are reserving a special section for "Situations wanted abroad" for the use of assistants. To dispel any doubts, perhaps you will be kind enough to inform intending advertisers if they may use the "B.J." office for any replies, under the same conditions which apply to the usual weekly edition of your most valuable publication?—Assistant.

Certainly, the usual arrangements will remain in force.

Paint for Studio.—Will you please inform me where to obtain orange green paint for painting interior of studio?—M. C. Chesterfield.

We do not know what you mean by an orange green paint. In any case we should advise you to select a grey or light blue colour for the walls. Ask at your local oil-shop for a washable paint in one or other of these colours.

Hypo-alum Bath.—Enclosed are specimens of toned bromides by the hypo boiling process, but we cannot get a good colour. Can you give us any help as to same?—Boiling Process.

It looks as if your bath is too fresh and not sufficiently seasoned, or perhaps you are not printing deeply enough. Add a little solution of nitrate of silver to the bath, about half a dram of one-in-twenty solution to a quart of the bath. The prints must be well exposed and fully developed.

True-to-Scale Process.—Some few months ago there was an article in the "B.J." on the method of preparing copies from plans, etc., by laying down an ordinary blue print on a graph or jelly. Have searched through recent copies of the "Journal" without being able to find the article. If you could refer us to it and to any book which gives particulars of these methods of copying plans, we should be obliged.—P. S. and Co.

The article appeared in the "Journal" for May 7, 1909, p. 364. You will find a summary of it in the 1910 " Almanac," p. 578. For the iron and similar processes of preparing heliographic copies we can refer you to "Ferric and Heliographic Processes," published by G. Routledge and Son, 68, Carter Lane, London, E.C., price 2s.

C.C. Papers.—We are using collodion paper for the last few years and always used to be with excellent results; but lately some black spots are coming out on prints as soon as they are put in the first change of water, or else it comes out after toning them in the gold bath. The spots are impossible to remove, and therefore we beg to ask you how we could mind same. We are keeping strictly to the directions recommended by the manufacturers.—Kassel Bros.

The usual cause of black spots is the falling of minute particles of metal (e.g., from zinc cutting shapes) on the prints before toning. Metallic impurities in the water lead to the same effect. We advise you to try to trace the effect to a cause of this description.

Grain-Surfaced Bromides.—For the majority of my work here—which, as you will notice from the letter-heading, is a very isolated place, I use a glossy bromide, most of the portraits being put out as postcards, and this class of print is most popular with the stray sitters which come one's way out here. Sometimes, however, I have a call for matt prints, and as I do not want to stock more than one brand of paper I thought perhaps you could tell me some way of matting the prints. Any help you can give me in this way will be much appreciated.—Maree.

About the best thing you can do is to put the finished dry print in contact with fine glass paper, or fine wire gauze, and pass the two together several times through a rolling press, or even the domestic mangle. This will give a grained surface to the prints, but it is necessary to cross the relative positions of the print and glass paper, otherwise the effect is to produce a few deep markings instead of the grain.

Ownership of Negative.—I had an order to photograph some electro-plate articles for reproduction by half-tone process, and supplied bromide prints. Some time afterwards the customer asked for free loan of negatives in order that an amateur photographic friend of his might make bromide prints off them for him (the customer) to put in a catalogue. I refused to part with negatives, but offered to supply prints required. Now he writes claiming that the negatives are the property of customer *not* photographer; is this correct? I remember this question in your paper some time, but cannot remember answer, nor can I drop on it now, so would be thankful if you would answer in next number.—Ownership.

Your customer is totally in the wrong. Only in the case when *negatives* are specially ordered do they become the property of the customer. There have been numerous cases in the courts, all upholding the photographer's right to the custody of the negative. You may refer your customer to the "B.J. Almanac" for 1906, p. 675.

Colours for Tinting.—Will you kindly say whether (1) aniline colours may be regarded as sufficiently permanent for tinting photographic lantern slides. 2. Whether the water colours listed as transparent in the current "B.J. Almanac" are suitable for lantern slides, and, if so, what medium (if any) would be suitable. The colours, I believe, are Winsor and Newton's artists' water colours. Would they be likely to be more permanent than the aniline dyes? Personally I would prefer to use the aniline, as they are so transparent; but I do not wish to have a lot of fading slides on hand.—Colourist.

1. If the slides are not used much the aniline colours will last fairly well; it is a matter of exposure, particularly to strong lights like the arc. If your object is to produce coloured slides for sale, then we should say aniline tinting will not do. 2. Professional slide colourists usually employ oil colours; but water colours may be used, with the aid of a little oxgall if necessary. The results are far more permanent than aniline tints.

Press Agency.—About last October I submitted some photographs to a press agent. During November and December a number of sales were made by them and the photographs published. I am now asking the press agents for payment and the return of some more of my prints which they still have in their possession (or, rather, in the possession of their clients). The press agents inform me the firm whom they supplied are in liquidation, and the balance of my photographs are with this same firm, and that they only pay when they get paid; and, furthermore, they do not hold themselves responsible for photographs submitted which they cannot get back from their clients. As I think this matter of importance to all photographers, perhaps you can let me know whether I can claim for the fees for publication and also for the return of my photographs.—K. D.

It depends on the terms on which the agency handle the work. We believe it is the unwritten custom of agents of press photographs to handle work on the understanding that they pay when they are paid, and we expect that condition appears in their printed stationery. If it does not, you might succeed in making them pay the reproduction fees, but we doubt it. As regards the prints retained, no agent would undertake liability, and we do not know how you can get the return of the prints except by applying to the Official Receiver.

**Colour Process.**—1. I should be much obliged if you would help me in the following: After working out a process for taking the three-colour negatives (in colour photography by the three-plate process) all at one exposure without any special arrangements in the camera, such as mirrors, etc., it was to be accomplished by binding together a transparent non-colour sensitive plate, a transparent green-sensitive film, and a red-sensitive plate, exposed through the transparent emulsions, with a yellow screen between the first and second, and a red screen between the second and third; I was told by a friend that a similar process had been invented and patented before. Can you tell me if this is so? Also, can you tell me how to make a *dry* filter to cut off the ultra-violet only? I know of the quinine-sulphate solution. 2. There is a book mentioned in to-day's "B. J.," called "The Calculus Made Easy," the publisher is not mentioned, can you tell me where to procure it, and price?—P. Davidson.

The Ives "Tripak" process is on the lines of your system. You will find full particulars of it in the last issue of the "Colour Photography" supplement, "B.J.," March 3. Some years ago Dr. Smith put out a triple plate for the same purpose—i.e., with the three emulsions on one glass. 1. Aesculine is an excellent absorbent of the ultra-violet, and can be prepared as a gelatine filter in the usual way. It darkens in the light; but a better substance in this respect is beta-naphthol-di-sulphonic acid. 2. See answers to other querists.

**Press Photography.**—I am twenty-four years of age, and have a great desire to become a press photographer. I shall be much obliged if you can give me any information as to how to proceed to secure a situation as such. I have done a good deal of photography during the last few years. I suppose the photographer will have to provide his own outfit. I notice that most pressmen use the Anschütz type of camera. I suppose it will be because it is much lighter and handier than the reflex. Is a 5 x 4 or half-plate to be preferred? I suppose a half-plate camera of the Anschütz pattern, with a good anastigmat lens working at *f* 6.8, and three double dark slides would do for the purpose.—Press Work.

Situations are obtained in replying to advertisements in our own columns and in those of the "Daily Telegraph," or by applying to the larger papers, particularly where your work has met with acceptance. Photographers usually have some apparatus of their own; but press-photographic firms—e.g., the Dixon Press Agency, 15, Newgate Street, E.C.—provide instruments for their operators. Yes, a focal plane folding camera of the Goerz-Anschütz type is the favourite. Size, 5 x 4 or half-plate, more usually the former, we should say. For many subjects a half-plate reflex is used; but its bulk is against it when the photographer has to go far afield. You should get "Photography for the Press" (George Routledge and Co., 1s.), which will give you some insight into the opportunities for press work which are open to an unattached photographer. Without some experience you are not likely to be taken on by any of the newspapers or agencies employing their own men.

**Book on Calculus.**—I shall be much obliged if you will inform me through your "Answers to Correspondents" column who are the publishers and what is the price of the text-book, "Calculus Made Easy," mentioned in your issue of March 17. Perhaps you will also be good enough to give me some idea of the scope of the work—viz., is it very elementary in character or otherwise? For example, does it satisfactorily treat the solution of differential equations? I thoroughly agree with your comments on mathematical text-books in general, and on those dealing with the calculus in particular. Apart from the fact that the latter are all needlessly complicated, my chief cause of complaint is that none of them treat of the applications of the calculus to practical work, with the result that to most students the theoretical knowledge they have obtained is absolutely of no value. The only text-book with which I am acquainted which endeavours to remedy this defect is Mellor's "Higher Mathematics," and this is of little use owing to the extremely wide ground which the author attempts to cover.—E. H. Merritt.

Price two shillings, published by Macmillan and Co. The book is difficult to describe, as its character is quite unique. It is elementary in the sense that it is very easy to understand and yet it carries the reader a very considerable distance into the subject in a very short space of time, and leaves him in a condition to apply the calculus in practical work, provided, of course, that his work does not involve very abstruse calculations.

**Dichroic Fog.**—I developed in dish a process plate with a glycin developer of the following composition:—

| | |
|---|---|
| Glycin | 5 grs. |
| $Na_2$ $SO_3$ Anhydrous | 7.5 grs. |
| $Na_2$ $CO_3$ Monohydrate | 19 grs. |
| Water to | 2½ ozs. |

and I found the plate stained with a sort of iridescent stain when seen by reflected light, but which looks yellow by transmitted light. The stain occupies a position near the edge of the plate. I shall be highly grateful if you would kindly let me know what is the cause of the stain and how I should prevent it. Is it due to the sulphite being too much or too little? Will a Howard Farmer's reducer (diluted) or carbamide take away the stain? I might say that I developed a Wratten's Panchromatic plate in the same developer and I got no stain whatever. In Hauff's handbook it is strongly recommended to take soda sulphite crystals *not more* than the amount of glycin for stand development, whereas in Messrs. Wratten's leaflet on stand development they recommend a formula in which crystallised sulphite is three times by weight of glycin. I should like to have your valuable opinion on this subject. What proportion of sulphite (crystals) to glycin will not be scanty enough as to give rise to stain, and at the same time will not be so sufficient as to produce chemical fog in stand development, especially in a hot country like India? I make up my developer at the time of development, so there is no need to add enough sulphite to preserve it.—S. N. Banerjee.

The effect you describe is undoubtedly dichroic fog, and possibly the cause is simply the use of stale plates, as the fog appears only around the edges. We cannot answer your general questions with regard to sulphite, as the points you raise have not been tested The formula you give does not include an excessive amount of sulphite, therefore it does not appear likely that excess of this ingredient is the cause of your trouble. As a rule the sulphite used is about 2½ times the weight of glycin, while about twice as much again by weight of potassium carbonate is employed as the alkali. We note you use soda carbonate instead of the potash salt; you might find the latter more satisfactory.

◆

**Photography at Turin.**—We have received the prospectus of a competitive exhibition to be held in the Italian section of the Turin International Exhibition. A considerable sum is to be awarded in cash prizes in five sections—namely, pictorial photography, colour photography, scientific photography, reproduction of works of art, and photo-mechanical processes. Entries should be sent to the offices of the Turin International Exhibition, addressed to Signor A. Cominetti.

*⁎* Notice to Advertisers.—*Blocks and copy are received subject to the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.*

The British Journal of Photography.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2656. Vol. LVIII. FRIDAY, MARCH 31, 1911. Price Twopence.

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## COLONIAL NUMBER.

### FOURTH YEAR.

This fourth issue of a Special Colonial and Foreign Number is posted directly to a still greater number of photographers in the Colonies and foreign countries. The advertisement pages likewise include a still greater number of commercial announcements—the largest volume of advertising ever published in a single issue of a photographic journal.

SITUATIONS WANTED, ETC.—The enormous size of this issue has necessitated some rearrangement of the small undisplayed advertisements which are so important a feature of every issue of the "B.J." These commence on page 2, and are continued on page 53 of the Supplement placed in the centre of the number.

SITUATIONS WANTED ABROAD.—Colonial and foreign photographers are asked to notice the special section on page 2 of announcements by English photographic workers seeking employment abroad.

COLONIAL AND FOREIGN PHOTOGRAPHERS please note the short article, "The Journal for Photographic Firms." (P. 260.)

### SUMMARY.

A large portion of the present issue commencing on page 240 is occupied by reviews of materials and apparatus recently introduced upon the British market. These include new papers, plates, etc., hand-cameras of various kinds, including several notable new designs of reflex, printing machines, portrait lamps, several new lenses, new studio accessories, and a variety of miscellaneous items of a professional photographer's equipment.

A review of the methods in current use among British professional photographers will, we hope, be read with interest by the many recipients of this issue who have no opportunity of seeing the productions of leading studios in this country. (P. 234.)

The convenient storage of negatives in large quantities is dealt with in an article by Mr. G. Watmough Webster. (P. 231.)

Exact instruction in the collodion process for glazing prints is given in an article by Mr. Arthur Payne. (P. 233.)

Some notes on permanence in photographic prints deal with a few points often overlooked in the selection of a printing process. (P. 230.)

We advise photographers to keep an eye on the novelties which art editors of illustrated journals offer to their readers, since these can often be utilised as attractions for the show-case. (P. 230.)

Some useful methods for the prevention of the unfair use of proofs by sitters are mentioned on page 230.

The advantageous use which can be made of a telephoto lens is the subject of a note on page 229.

Remedies for and preventives of markings on negatives due to hard water are mentioned in a note on page 230.

## EX CATHEDRA.

**The "B.J." Colonial, No. 4.** In publishing this fourth special number of the "B.J." we must first thank the many advertisers who, by their early supply of "copy," have lightened the labour of our publishers in producing an issue which, it may interest the trade to know, is the most representative of the British photographic industry—and also the largest in point of commercial announcements—ever published in the history of photography. Our Colonial and foreign friends, to whom in their thousands this issue is directly sent, will, we have no doubt, take an equal degree of satisfaction in this announcement. It should prove to them that there exists at the "B.J." office an active organisation which places them and the many firms of the photographic trade in direct communication. Some idea of the great number of houses which offer their goods in these pages may be obtained by a glance at the index, which will be found on page xxxix. Such an indication of the numerous firms' announcements has, indeed, become necessary; but the list of names is, at the same time, an eloquent testimony to the importance which the "B.J. Colonial" has rapidly attained since its inception four years ago. The special feature of this issue—the review of new introductions upon the market—compels us to omit or curtail a number of regular features of the "B.J.," and, therefore, we would remind every reader abroad into whose hands this issue comes that, on receipt of trade card, our publishers will be pleased to send the "B.J." free for one month from date of application. A few notes on the customary features of the "B.J." will be found on page 260 of the present issue.

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**Commercial Aspects of the Telephoto Lens.** Photographers who are called upon to undertake commercial work outside the usual run of portraiture frequently ignore, so we find, the great assistance which a lens of the telephoto type can render them. They would seem to have the fixed conviction that such a lens is of service only in the photography of extremely distant objects, but by citing a couple of examples we can show that the telephoto has quite useful applications in ordinary work. In photographing small specimens, or even larger objects, such as motor cars, etc., it will be found that the near point of view for the camera, which has to be taken in order to get a full-size picture with the longest focus lens in the photographer's possession, leads to a strained perspective. But by taking the camera much further away and using a telephoto in order to get a picture filling the plate, the gain in correct rendering of the object is very considerable, and of two photographs made under the foregoing sets of conditions, the owners of a vehicle or small article of manufacture would immediately prefer that made with the more distant standpoint of the camera. Another instance which may be quoted is in photographing houses or estates to be offered for sale largely by means of photographs. The tele-photograph, taken from a somewhat distant standpoint, will frequently show to advantage the natural position of a building amid surrounding scenery, where a view obtained at closer quarters would completely fail in rendering the surroundings.

* * *

**Methods of Defacing Proofs.** Protection against unscrupulous customers who, on receiving proofs, will repudiate the photographer's work on the ground of bad likeness, etc., is felt to be a need in many studios, and yet any measures which may be taken likewise need to be of a kind which will not give offence to those sitters, happily in the majority, who are free from desire to resort to these underhand practices. A neat method of marking proofs so that they cannot be toned or copied is to make a minute inscription quite close to the face in copying-ink pencil. Another is to use a perforating stamp; both of which expedients are of value in conjunction with an intimation to the sitter that any proofs retained must be paid for. Where there is any reason to suspect that proofs will be kept by the sitter and handed to some photographic friend to be toned, a further preventive is the following, due to an American photographer:—A little paraffin wax is dissolved in benzine or petroleum ether, and a small cross marked on the print with a brush dipped in this solution. The mark will not be noticed as soon as the solution has dried (which it does immediately), but it prevents the action of any toning solution.

* * *

**Show Case Novelties.** We think many photographers neglect the use which they might make of the artifices of their craft in preparing prints for the show-case. Such prints would not be necessarily examples of artistic work, but by their novelty would attract the attention of the passer-by. To illustrate what we have in mind we may refer to a series of "shadow portraits" which a year or two ago appeared as a feature of the "Sketch" newspaper. In these, use was made of artificial light to give at one exposure a portrait of the sitter, and, at the same time, a silhouette likeness on the background. It may be questioned whether the latter was entirely innocent of the retoucher's pencil; at any rate, it was an exceedingly clever effect of photography, and one which any professional could easily copy. Another more recent instance in the same illustrated paper was a portrait of the Speaker of the House of Commons, printed to full depth only over a small disc about the size of a halfpenny, containing the eye of the Right Honourable J. W. Lowther. The rest of the face appeared as a faint impression, the result of simple screening of the negative during printing. A primitive photographic method such as this, combined with the title, "Catching the Speaker's Eye," provided a very forcible page illustration. Ideas such as these are the stock-in-trade of the up-to-date art editor, and might well be utilised by the professional photographer in providing those who stop to look at his window with something to talk about.

* * *

**Scum Marks due to Hard Water.** Scum markings on plates have received a good deal of attention in our correspondence columns of late, but in these cases markings produced in development have generally been referred to. Several times of late we have had complaints of another kind of scum mark, which has proved to be due to the use of hard water for washing purposes. Alkalies precipitate various insoluble substances from hard water, and therefore when a plate, the film of which is filled with alkaline developer, is put into tap water, some of these precipitates are found in the gelatine. Very likely some are also found when a developed, but unwashed plate, is immersed in a plain fixing-bath, for such a bath is invariably made with tap water, which is usually hard. One of the advantages of the acid fixing-bath is that it, if made from a suitable formulæ, more or less prevents such precipitation, but the bath can never contain a strong acid, and therefore it is not always effectual. A final acid clearing-bath is therefore always advisable, and in the cases we have referred to above a clearing-bath has always been effective. In bad cases a ·5 per cent. hydrochloric acid bath is advisable, especially when the scum has not been discovered until the plate is dry. Gelatine plates will stand the prolonged application of such a bath quite safely, but if treated before drying a weaker bath will generally be quite effective. Even citric acid will serve in such a case, and few clearing-baths are more effective than the well-known mixture of chrome alum and citric acid. But the mixed bath will not keep well, and so hydrochloric acid is generally more convenient. Sulphuric acid in the same strength will do as well, and will do no damage to the films if allowed to cool down before use. Nitric acid, however, should not be used in any circumstances, and neither citric nor acetic acid are advisable excepting when used in conjunction with alum, which serves to counteract their softening effect on the gelatine.

## PERMANENT PHOTOGRAPHS.

THE term "permanent" has been applied to various photographic processes from the very early days of the art down to the present day. In the fifties Thomas Sutton stamped the silver prints issued by his establishment at St. Brelade's Bay "Permanent Photograph," while at later dates collodion transfers, bromides, platinotypes, carbons, and enamels have each in turn claimed the same title. The endurance of a photograph depends upon a number of conditions, such as dampness, sulphurous or other chemical vapours, heat and light. Prints produced by processes in which the salts of silver, especially if in combination with gelatine, play an important part are more or less susceptible to all these influences, and consequently their permanence cannot be guaranteed. Yet it must not be assumed that a printed-out silver print is therefore fugitive. The albumen prints made and published by such workers as the late William England exist to-day in many collections as fresh and brilliant as at the time of their production. Yet developed images are undoubtedly more permanent: some bromides made by us about thirty years ago show no loss of detail and only a slight yellowing of the whites, due probably to traces of iron retained in the paper from the ferrous oxalate developer, then the only one available. On the other hand, prints made by the same process, and kept under even better conditions, show a decided loss of detail, with a general alteration of colour in the deposit itself. Prints toned with hypo and alum or sulphide are probably more permanent, the more stable sulphur compound being formed, which is not liable to change in an impure atmosphere.

Carbon prints may be regarded as practically permanent, as far as actual deterioration of the image goes, if stable pigments are used and the prints treated with reasonable care. We have seen carbons which appeared to have lost some of the finer detail in the high-lights, but this has possibly been due to a darkening of the paper support, which has caused the more delicate half-tones to disappear. Great care should be exercised in selecting a pure transfer paper which will not alter with age and exposure to light, while the pigments used in the manufacture of the tissue must be above suspicion. These points being observed, the greatest danger lies in the liability of the gelatine itself to perish by prolonged exposure to a damp atmosphere, especially if accompanied by a high temperature, conditions which usually prevail in the tropics. Ozotype prints and gum bichromates may fairly be classed with carbons, the same few precautions being necessary to ensure their lasting in good condition. Of all prints produced by the aid of the chromium salts (mechanical processes being excepted), the oil pigment and bromoil processes possess the attributes of permanency in the highest degree. The image being composed of printing ink, they should practically rank with ordinary engravings and lithographs for endurance.

Any black platinum print is, of course, above suspicion as far as permanency is concerned, for as long as the paper exists there is also the picture. Insufficient clearing or washing may cause a yellowing of the whites, but this can be removed by suitable treatment, even bleaching powder having no effect upon the image, providing that it be not used of sufficient strength to rot the paper. In the case of sepia platinum papers, it is not possible to generalise so widely in respect of permanence. It would seem that the commercial papers differ as to the means adopted for securing the sepia tone, mercury employed for this purpose leading to a sepia print which in the course of time shows fading, particularly in the high-lights of the picture. A reasonably fair test for the probable effect of time is to place a print in a solution of potass. cyanide, which should not reduce the intensity or alter the colour of the sepia at all. With the black paper the simple formula for development issued by the makers should be rigidly adhered to and "fancy" additions of mercury and the like avoided.

Ceramic enamels are, of course, absolutely permanent if properly fired and if a sufficiently hard glaze is used, and for that reason those produced on porcelain plaques will probably outlast those supported upon copper. We have observed that enamels on metal exposed to the atmosphere in the open have shown a distinct roughening of the surface after a few years, while those on porcelain retained their pristine gloss.

A very interesting pastime, not without profit, for those of our readers who possess the B.J. Almanacs for the last twenty-five or thirty years, is to look up the various specimens issued by manufacturers and to compare their condition. The American journals, most of which can be seen in the Patent Office Library, are also a good hunting-ground, various albumen, collodion, and aristotype specimens of bygone years being highly instructive.

# THE STORAGE OF NEGATIVES.

One of the great advantages of periodical technical literature is the opportunity—so often, to the benefit of its readers, taken advantage of in the pages of the "B.J."—of affording information from the editorial chair that might be sought in vain in any of the usual textbooks. As a case in point, I would instance the informative leaderette on page 114 (Feb. 17), on methods of storing and naming negatives in such a way as to render future reference to them rapid and easy. Those instructions are most useful; but, as they do not profess to be more than outlines, as it were, of a complete system, I propose to give a personal experience which, starting nearly fifty years ago, has gradually evolved a system at once simple and easy, and enabling any negative, whether taken yesterday or a quarter of a century ago, to be picked out and placed on the printing bench within a moment or two of an order for prints from it being given. It is in the main similar to the editorial plan; but little details can be given which will greatly facilitate its working and carrying out in gross. I may say that my own experience coincides with the Editor's views, that negatives nowadays are much more rarely required for replicas than was the case some years ago; but the fact remains that an occasional one is needed, and as it is impossible to predict which one, it is advisable to store, and most carefully register, all. I find, even to this day, that I sometimes have a twenty-year-old negative to print from. In the case of the death of a loved member of a family a negative often proves a valuable possession.

### What is a Ton of Negatives?

Storage is a pressing consideration, especially as the business gets older. In my own studios I have, as a matter of fact, been most fortunate in this respect, and have in consequence preserved every negative from which a finished print has been sent out. But it has always been my practice when fixing up a new negative room first to call in an architect, inform him of the possible ultimate contents of the room, and take—and *act on*—his instructions as to strengthening the floors and walls. The need for such precaution was exemplified in the experience of a well-known photographer in the Midlands a few years ago. He was having an entirely new building erected, and before it was quite completed he started the storage of the negatives in a top room. Before all were in situ the wall began to collapse with the weight of the negatives, and had to be rebuilt! Lest there should be thought to be a touch of extravagance in this account, I will show in figures what a store of negatives may weigh. It will be found that a box of a dozen half-plates will weigh about 22 ozs. It does not need a large business to be presupposed for, say, five thousand half-plates to accumulate. This number of negatives would therefore weigh twenty-two times 5,000 in ounces; that is 110,000 ozs., or 6,875 lbs., which is, without the weight of shelving, considerably over three tons, and so on. And in a business of average extent the tons would gradually mount up till catastrophe became imminent. I do not doubt that there are many negative rooms in the country at this present moment that are in a condition of unstable equilibrium. It is evident that both floors and walls have to be considered, though the latter, of course, are more dangerous the newer they are.

### Practical Storage Arrangements.

Leaving now this important aspect of the subject, we may consider the practical working of the storage arrangements. I first started storing my negatives by system nearly half a century ago, in the wet collodion days, in the early stage of the carte de visite fever. The negatives, after naming and numbering by scratching the film (before varnishing) with the name and number, were stored in negative boxes holding fifty, and entered in a special index book. Such boxes were dear in those days; but prices were good, and they could be afforded. But shelving was needed, and much space. I therefore in my next studio abandoned this system, and had a room fitted up by a carpenter with grooved shelving, with upright supports dividing the grooves into sets of 100, so as to make reference easy. Decimal sub-divisions should always be adopted for storing consecutively numbered articles. The numbering was done on the front of the lower shelf, and at the beginning of each 100 the number in full was written thus: 15600; then four grooves were missed, and the fifth had only the units and tens figures, so as to enable them to be read off at a glance, without the confusion that too many figures together would give. The same plan was adopted with ¼, 1-1, 15 x 12, and 12 x 10 and 10 x 8 sizes, the latter two being placed in the same set of grooves (10 in. apart), and no distinction being made in their respective numbering, so as to keep down the number of index books. I may here interpolate that both for grooves and boxes the numbering was done on gummed paper slips. I tried various sizes of figures, and finally arrived at quarter-inch high for the grooving and half-inch for the boxes, referred to later on. We use the rubber-covered type for the purpose; manuscript lettering was tried, but was too irregular, and less quickly legible. That is an outline of a system I kept up for years. After a long lapse of time there seemed to be but the slightest amount of atmospheric deposit upon the surfaces of the plates, and the little there was readily removed. If a negative was missing, a glance at the shelves showed it, and when an order from an older subject was given, the index book gave its number, and the printer just walked up to the shelves and lifted the negative down. But as years rolled on the four sides of a good-sized room, and a rack in its centre, did not suffice for the accumulation; so it was decided to remove the earlier negatives shelf by shelf, box them, and thus get twice or thrice as many plates in the same extent of wall space. The new-comers were then placed in the vacated grooves after these had been re-numbered.

### Arranging in Tens.

With regard to this boxing, two important points have to be considered. Where the very utmost economy of space is a paramount necessity the Editor's method cannot be improved on; but when this necessity is not so overpowering, a variation of it confers such an altogether disproportionately great advantage that it is strongly to be recommended. The former plan was the one my printers carried out till about ten thousand half-plates were boxed off. Then, looking well into the matter of economy of time, I noticed that, instead of being able to pick out a particular number at a glance, it was confusing to see a set of figures with no system about them, save that they increased regularly in one direction. I at once decided that this could be improved upon. Instead of filling each box to its utmost, ten negatives only, separated from one another with pieces of paper (less in size than the plate), were allowed to each box, and the shelves for them were partitioned off by uprights, cutting up the available space into divisions that would just hold ten boxes—100 negatives to each space or division. Compared with the other plan, this was really a beautiful way of storing them; it would scarcely be believed how much it facilitated things. Each box plainly numbered in tens, ten boxes to a division, a blind man could, without making a mistake, go up to the shelves and take down any box asked for.

To economise timber in building fresh shelving, its width need not be more than three-quarters of the length of the boxes, which then overhang a little, and are thus more readily grasped. Further economy of space is obtained by placing them on their sides, the titling being at the ends, and not at the sides, after the platemakers' fashion, who disregard either the user or dealer's convenience of storage. In placing the numbers the lowest is printed in full on the first or left-hand half of the box-end, and on the right-hand half only just the unit and ten of the highest number, thus: | 29681 90 | and so on. A definite plan for placing the negatives in the boxes should be adhered to invariably. Thus, in the box as above, at the bottom should be placed the lowest number, No. 29681, and the last put in should be the highest of the ten—29690.

As to the actual method of numbering the negatives, my own takes more time than the Editor's; but has advantages to correspond. The governing principle of all is, of course, that a negative once chosen must, before going to the printer, have upon it its own distinguishing number in sequence with its predecessors, special care being taken that no two negatives are numbered alike—a mishap that is not impossible of occurrence with the ordinary method, as, for example, in a case of confusion through altering an original order in favour of a rejected negative. It is virtually entirely obviated in my practice, which is to have ready-printed books of gummed paper perforated into slips, each headed with a consecutive number followed by a blank for the name. As the names with their numbers are given out the slip can be filled in, torn off, and pasted on the film. Duplicating a number is thus impossible. Economy will be subserved by the photographer preparing his own books, or using sheets, and doing the numbering with a pen beforehand. Great care, however, has to be exercised in writing the numbers correctly, for it is astonishing how the brain lags behind the fingers in writing a set of consecutive numbers. Another great advantage of these ready-made number tickets is that no doubt can exist as to the number to be given to a new negative, many causes contributing to the order book not necessarily having the negative numbers following in unbroken sequence.

I should like to conclude with a description of a little refinement of practice which has been found most useful and work-facilitating. We all know how negatives accumulate while waiting for instructions after the issue of finished proofs. My printers used to allow them to collect in heaps, in the way the Editors mention; but the plan is objectionable, in that the heap being so often turned over to find a required plate as the orders come in, there is great liability to injury to the film. I have latterly adopted the plan of having a series of grooved shelves for the most commonly used sizes placed immediately over the filling-in bench. Then, as soon as the proof is finished, the negative is placed in the rack, and is close at hand when the actual order is finally given. These racks only hold a few weeks' supply, and when they become full the first half are taken away and placed in their final resting-place in the shelves in the negative room, and the printing room temporary grooves are re-numbered. It should be observed that only retouched negatives, proofs of which have been sent out, are thus stored, and it has been found that no advantage accrues through filling up the space occupied by a useless negative with a newer, accepted one. Economy of space would be dearly bought by confusion of numbering. Finally, I would say that all my negatives, before being varnished, are retouched, and the numbered slips pasted on. In not a single case has the retouching given way, nor the slip become detached, and this statement covers 70,000 or 80,000 negatives at least.

G. Watmough Webster, F.C.S.

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Photography for the Press.—We hope our readers in the Colonies and foreign countries realise the opportunities which they have of adding to their earnings by the reproduction of their photographs in the Press. In comparison with the vast number of illustrated journals produced in Europe and the United States, the market near home for Colonial photographers is small, but it should be remembered that all the illustrated papers in England, even the weeklies, make use of many photographs from abroad, and if the photographer can put himself into the position of an editor in London and refrain from offering prints of limited interest, he ought to be able to turn many of his exposures to monetary advantage. A useful idea of the kinds of subjects which are acceptable may be gained from the advertisement on another page of the "Illustrated London News," a journal which week by week draws its matter (largely photographs) from all quarters of the globe, and further interests itself in "placing," with other papers, photographs which it is unable to use itself. A study of the British and American illustrated papers should prove profitable to Colonial photographers.

# ENAMELLING PRINTS WITH COLLODION.

Many years ago it was the practice of the majority of portrait photographers to send out their prints in a highly polished condition. This was the day when the public demanded the utmost wealth of detail, and a brilliant polished surface was given to the prints, so as to allow the whole of the detail to be shown. Then the photographer polished the prints with encaustic paste, or burnished them, or else he enamelled their surface with collodion.

### The Glazed and Matt Portrait.

In the course of events several pictorial photographers decided that it would be an improvement to send out their prints with a matt surface. Possibly they wanted a new style of print, something that was distinctive from their competitors. Anyhow, they influenced their customers to consider that the matt-surfaced prints were much more artistic than the highly glazed print. It is difficult to say why the use of a matt surface should make a print more artistic, except it were done as a matter of business. But, whatever the reason, the fact remains that these photographers created a new fashion and style, and now it is the universal custom to produce matt-surfaced prints.

I am, however, old-fashioned enough to confess that for many purposes—I do not say for all—there is really a great charm about a beautiful portrait full of exquisite detail and possessing a richly glazed surface, such as is produced by enamelling the prints with collodion, and I venture to think that there is a large public who share my opinion, and who would appreciate a revival of the "old-fashioned" glazed portrait.

Let me, therefore, venture to suggest to those who are willing to place an old style of print before a new public, that they should show a few specimen prints possessing the qualities I have mentioned, and test their selling powers. It will not be a costly experiment, and might easily turn out "trumps."

It would be absurd for me to attempt to teach the readers of this journal how to take a photograph in which all the detail is absolutely sharp and clear, but there may be many who will be interested in a short account of the best and most practical methods of enamelling the surface of prints with collodion. In the old days so much of this work was done that there were firms who, calling themselves enamellers, did nothing else but enamel prints for the trade, but now such a firm would be difficult to find. However, there is nothing in the work that cannot be done by any intelligent operator or printer.

### Collodion for Enamelling.

The most important factor for success in enamelling prints is to use a thoroughly reliable and suitable brand of enamel collodion. For successful commercial working it must always be of the same uniform quality, giving a strong, tough film, beautifully transparent when dry, and free from colour and opalescence. As most people know, collodion is made by dissolving pyroxline in a mixture of alcohol and ether, and is extensively used in surgery, etc.; but all kinds of collodion are not suitable for this work, and under these circumstances I may be pardoned if I state that Mawson and Swan, of Newcastle-on-Tyne, manufacture a suitable article, which they supply under the name of Mawson's Enamel Collodion. The photographer may easily test the suitablility of any sample of collodion by coating a glass plate with it, and then, when it has set, examining it carefully for any trace of colour or milkiness, and he can readily test its strength by drawing his finger-nail through the film, when it should drag from both sides like a tough skin.

The collodion must be quite bright, and free from sediment or suspended dust. If not quite clear, it must be filtered through a small pledget of cotton-wool held in a glass funnel into a clean bottle. This bottle must not only be clean, but dry, because the mixture of a small quantity of water with the collodion will spoil it. When coating the glass plates with collodion, the operator should pour the filtered collodion from one bottle, and drain the plate into the funnel containing the pledget of cotton-wool held in a second bottle, so that the collodion which has once been used may be filtered before being again used to coat a second plate. Owing to the rapid evaporation of the solvents, it will be found necessary in course of time to thin the stock solution of collodion by adding a mixture of equal parts of alcohol and methylated ether, sp. grav. .720, or, what is preferable, using the thinning solution sold by the makers of the collodion.

A supply of enamel collodion, a small bottle of indiarubber solution fitted with a cork that is split in its narrow end and holds a small piece of sponge, a muslin bag or pad about six inches in diameter containing an ounce or two of powdered French chalk, some clean dusters or polishing cloths, a number of pieces of "patent plate" glass about a quarter of an inch thick and twelve to sixteen inches square, a metal or porcelain trough large enough to easily take the glass plates and two or three inches deep, and some sheets of thin fine cardboard, or waterproof paper, are all the materials and appliances necessary for enamelling gelatine prints.

### Cleaning and Edging of the Glasses.

The *modus operandi* is very simple. After the rough edges of the glass plates have been removed with a file or piece of emery cloth, they (the glasses) are thoroughly cleaned and dried. The best side of the glass—that is, the side quite free from flaws or scratches—is rubbed with the bag of French chalk, and then polished with a clean duster until no chalk remains on the glass. A narrow edging of indiarubber solution, about ⅜in. wide, is then run round the edges of the polished side of the glass by means of the sponge held in the split cork, which edging rapidly dries, and is useful in holding the collodion film in position without interfering with the subsequent stripping of the film. I am, of course, assuming that this work is all being done in a room that is free from dust.

### Coating with Collodion.

As soon as the indiarubber solution is dry, the polished surface of the glass plate is coated with the collodion in a similar manner to varnishing a negative, except that no heat must be used; and, indeed, on account of the highly inflammable character of the collodion, it is absolutely essential that no naked lights or fire must be in the room where the enamelling is being done. The electric light may be used for illumination, but no naked lights, on any account, and it is preferable to do the work by daylight. The collodion rapidly solidifies, and as soon as it is well set, slide the plate face up in the dish of water, in which it remains until all greasiness has disappeared.

The enameller finds the proper time for immersing the plate in the water by touching the film, at the corner of the glass from which he drained the surplus collodion, with the tip of his little finger. When the film is sufficiently hard just to take an impression of the skin markings, he immerses it in the dish of water.

### Laying Down the Prints.

The gelatine prints to be glazed are transferred in a wet state from the washing tank to the dish, and arranged face downwards upon the collodionised glass whilst under the surface of the water. The glass carrying the prints is then carefully removed from the water, so as not to admit any air between the surface of the prints and the collodion film. The prints are lightly squeezed down upon the collodion film, and the plate set in a rack to drain and dry for an hour or more, whilst the remainder of the prints are transferred to the collodionised glass plates in a similar manner.

### Applying the Backing Papers.

When the prints are perfectly set, take a piece of thin cardboard, or waterproof paper, and coat the face with any strong mounting solution, and then lay it face downwards on the back of the print which is on the collodionised glass, and press it well into contact. Treat all the prints on the glass in this manner, and then stand the plate in a warm place, so that the prints may thoroughly dry during the night. In the morning, when the prints are quite dry, a sharp knife is run round each print, so as to cut through the collodion film. The prints are then carefully peeled from the glass, and, after being trimmed to the proper size, are ready for mounting on the usual mounts, whilst the glass plates are carefully cleaned ready for the next batch of prints.

### For Albumen and Carbon Prints.

The above instructions apply, of course, only to the use of prints made upon an emulsion prepared with a gelatine basis. For albumen prints it is necessary to replace the water bath by a warm gelatine solution—one ounce of pure gelatine to ten ounces of water—and provision must be made to keep this solution melted and at an even temperature; otherwise the operations are similar to those given for gelatine prints.

For carbon prints, sheets of smooth and good quality opal glass are coated with collodion and washed in water in the manner already described. The printed carbon tissue is then soaked in water, squeegeed on to this temporary support, and developed in the usual manner. Finally, the permanent support is brought into contact with the print whilst under water, then carefully removed from the water bath, so as to prevent the introduction of air-bubbles between the mount and the print, squeegeed, and allowed to dry spontaneously; when quite dry the collodionised image is readily removed from the glass, and is then ready for mounting.

### The Merits of the Collodion Glaze.

It may, of course, be said that a burnished surface, sufficient for all practical purposes, may be obtained by merely squeegeeing a gelatine print down upon a polished plate of glass or metal, and then stripping it when dry. But the glossy surface obtained in this manner, though good, by no means equals the brilliant enamelled appearance obtained from the use of collodion. Not only does the collodion give an improved appearance to the print, but it also protects it effectively from finger marks and damp, and the print is not so easily scratched, and is much more permanent. It is an improvement, though perhaps only a slight improvement, that makes all the difference when it comes to selling the prints, and all good work—that is, the best work—is a combination of many little improvements each in themselves of not much moment, but taken together producing that excellent quality of work that indicates the master craftsman.

ARTHUR PAYNE.

# CURRENT METHODS AMONG BRITISH PROFESSIONALS.

IN this article our Colonial and Foreign friends, to whom this number is particularly addressed, will find a review of the present practice of professional portrait photography in the United Kingdom. It is impossible within the space of a single article to write at length of the many diverse methods at present in use, but we hope our general survey will show our readers in distant countries the present-day tendencies among photographers at home. To many of these latter also the notes will doubtless be of interest and will induce them, we hope, to take stock of their methods and policy, and thus keep themselves abreast of present progress in the business of photographic portraiture.

During the last two or three years there has been a marked growth of interest among professional photographers in the business side of a studio. More attention has been paid to creating a favourable impression upon possible customers by means of tasteful stationery, and the occasional circulation of an attractive booklet calling attention to special work produced at the studio, or whispering a reminder in the customer's ear appropriate to a particular season. Some photographers also have arranged small exhibitions on their premises and have thus drawn local attention to themselves.

The detail work of the business side of a studio has also received much greater attention, and many photographers have adopted some system or other of using a card index, whereby the progress of orders, from the reception room to the dispatch of the finished portraits, has been readily traced—the system, too, allowing the proprietor more easily to keep himself informed of waste in materials, and generally to learn more exactly of the profit resulting from particular descriptions of work. Quite a number of articles on this subject have appeared of late in the "B.J."

As regards the general business policy of photographers, we think we may take the hopeful view that there are signs of a reaction from the bane of cheapness which has of late been a serious factor in professional portraiture. The day of the portrait postcard, a form of competition which has been a thorn in the side of many a studio—particularly in the provinces—seems to be on the wane. This has no doubt been the result of the appallingly low prices at which these and other similar forms of portrait have been issued. Like fashions in ladies' clothes, when everyone from the humblest social rank can obtain a particular style of postcard, those who can afford to spend a little more become prejudiced against it and revert to a style of portrait which they had previously forsaken on ground of expense.

### Business Tactics.

There would appear also to be signs of a healthy reaction among photographers themselves against running after customers with invitations to a free sitting. Though a number of quite high-class studios have made this system the basis of their business, yet, on the other hand, many photographers of equal standing have steadfastly set their faces against it, and the public, we think, though flattered in many cases by the request of a sitting, has come to see that the invitation is, after all, an empty compliment, proffered simply to catch an order, and, at the same time, to give the photographer the sole copyright in the portraits he takes. Some photographers have justified the system as a species of protection against those sitters who go to a high-class studio, purchase one or two copies only, and then get some cheap printing or enlarging firm to make for them further duplicates embodying the skill and taste of the original photographer. There is, however, a natural protection against these tactics, inasmuch as the copies must be reproductions from prints, and can, therefore, never have the quality of direct impressions from the negative. Photographers are thus on the horns of a dilemma; yet we think that if a census were taken of studios which have established a sound financial position, it would be found that the invitation method was given an entirely subsidiary place in the business.

### Studios and Studio Fittings.

There is little that is novel in the construction or fitting of most high-class British studios, all the "tunnel" and other freak designs have either been demolished or put to other uses, and it is only in cases where local conditions necessitate it that the ridge-roof pattern is departed from. The majority of studios range from 25 to 40 feet in length, the breadth varying from 12 to 20 feet, the height to the eaves being about 8 feet, and to the ridge about 12 feet. Most studios are glazed for nearly their entire length, clear glass being generally used. The blinds are, in nearly all cases, mounted upon spring rollers, two sets, one set being dark blue or green and one set white; the side blinds have the rollers at the bottom. Festoon blinds or curtains are used in some studios, but they are not in favour in London, as they collect dust, which is discharged upon the sitter when they are manipulated. In places where this is not a drawback the festoon type of blind is no doubt more convenient, since it is free from the nuisance of the weakening of the springs which occurs in time. Portable screens and reflectors are becoming more and more popular, both in the circular and square forms, the latter being really portable blinds. The elaborate and fanciful reflectors formerly in vogue for electric light work seem quite to have disappeared. Scenic backgrounds are to be found in nearly every studio, but they are distinctly more artistic in character than those in use a few years ago, the design being suggested rather than drawn. The "marble halls" style is quite out of date. Soft "cloud" and graduated grounds are much in favour, and some of the most artistic workers are using a plain white ground with excellent effect. An attempt has recently been made to introduce coloured backgrounds, but, so far, only a few are in use. If suited to the decoration of the studio they may be made to give a very good impression of space and elegance, the fact that the apparent continuation of the studio is only a painting not being obvious at the first glance. Some skill is necessary in the choice of such backgrounds. Artificial accessories of the "Haddon Hall steps" type are now seldom found in good studios, a stone seat and a sundial on its pedestal being usually the limit. A variety of chairs of more or less artistic design and a settle or garden seat or two afford all the aids to posing required by our best photographers. Even the once ubiquitous headrest is rarely seen.

### Cameras and Lenses.

The working tools, such as cameras and lenses, do not present any novel features. The German type of universal studio camera, taking all sizes, is to be found in most up-to-date studios, although there is in some of the latest fitted a tendency to return to the English model, fitted with an extra back, with rapid changing attachment for small work. These are often fitted upon stands of the semi-centennial type so popular in the States, which permit of the camera being worked close to the floor. It is satisfactory to note that although of foreign design, most of the cameras and stands are of British manufacture. It is worthy of notice that few large cameras are now in use, 15 x 12 being usually the largest plate exposed for direct portrait work. Portrait lenses are still extensively used for single figures and head and bust pictures, and photographers are at last beginning to utilise the diffusion of focus arrangement with which most of them are fitted. The rapid rectilinear is quickly being displaced by one or other of the many anastigmats for group work and large portraits, and some of the more recent recruits to the profession have eschewed portrait lenses altogether, using rapid anastigmats of the Tessar and "Homocentric" types for small as well as large work.

### Artificial Light.

The last few years have seen a very general introduction of artificial light, the great majority of the installations being arc lamps, either of the open or closed type. With the former the light is used entirely by reflection from an umbrella or other shape of reflector, whilst with the enclosed arcs the more common practice is to use the direct but well diffused light of the lamps. Both systems have their advocates, though we should say that among the very best exponents of artificial-light portraiture the open arc is most in favour. Nevertheless, the photographer of modest means finds that a single arc of the enclosed type is a most valuable tool, not only for portraits in the studio, but for printing purposes, the same lamp being used for both with the assistance of a special circular frame, round the inside of which a large number of printing frames can be arranged. Where electric current is not available batteries of incandescent gas burners have been used and excellent work has been done with them in many studios.

### Tank Development.

In the dark room the most notable improvement in professional work has been the adoption of development in a tank. In addition to saving much space, this system allows of the photographer getting through the day's development after the close of the studio in a much shorter time and with greater uniformity in his negatives. Those who develop their own exposures will frequently use the tank simply as a convenient mode of manipulation, judging the character of the negative by inspection in the dark-room light in the usual way; but many others have adopted the system of using a standard developer for a fixed time at a given temperature, and having settled (by trial) these conditions, have entrusted development to assistants, simply instructing them to make up the tank developer according to formula and strictly to observe directions as to time of development and temperature. These conditions must be observed or the method is useless, and, even so, the tank process has its drawbacks, the chief of which is the occasional production of markings on the negatives from some obscure cause or other. These, it must be admitted, are rare, and not sufficiently serious to discount the real practical and commercial value of the method. One precaution is most essential: the tank in which the plates are developed should be fitted with a water-tight cover, so that it can be reversed in position three or four times during development, thus ensuring the even action of the solution. A common time of development by this fixed-time method is from twenty minutes to half an hour, and most plate-makers now give formulæ suitable for the system, though even then the time needs to be checked for different batches of plates, since these may vary considerably as regards the time required for development to a given degree of contrast.

### Styles of Portrait Prints.

Competition was never more strenuous in photography than it is to-day—whether as between the manufacturers, the wholesale dealers, or the professionals themselves. To this competition are undoubtedly due the rapid changes in the prevailing styles of portraiture witnessed during the last few years.

### Imitations.

A professional will strike out a new style in order to differentiate his work from that of his competitors, but before long he will find imitations springing up, not only by other professionals operating along the same lines, but by means of, as it were, mechanical reproductions furnished to his lower-priced competitors by the manufacturers. For instance, border-printing in the so-called Cosway style had not long been in vogue before mounts were produced incorporating the border, thus dispensing with the necessity of double-printing. Another firm produced an accessory in the form of a papier-mâché contrivance, which, when interposed between the sitter and the camera, gives the sitter and the border together on the plate. Following the Cosway style came the "Sketch" portrait, in which the sitter is photographed against a white background and then a "sketchy" exterior or interior effect is worked in by hand on the print. Here again imitation was soon rendered easy by the introduction of backgrounds with continuous foregrounds, with a design painted on which, when photographed with the sitter in a certain position, would give a somewhat similar effect.

### The "Sketch" Portrait.

Despite this imitation the "Sketch" still holds its own, as may easily be seen by a walk along the fashionable West End streets or a glance through the illustrated weeklies. Instead of the aerographed backgrounds with which they were at first finished, they are now largely done with pencil, and frequently with washes of water-colour. This water-colour is only added decoratively—they are in no sense coloured photographs, in that the hair, eyes, and flesh are left untouched. It will be seen that this is a style that is neither easily imitated nor cheapened. It is worked almost entirely in platinotype when the coloured wash is added, as bromide does not lend itself well to the application of water-colour washes, although Messrs. Wellington and Ward have recently introduced a special surface, adapted for this purpose, which they offer to those interested in this branch of work.

### For Coloured Photographs.

Where a coloured photograph is wanted, that is, coloured in the ordinary sense of the word, the best studios are now making very effective pictures by blocking out the whole of the negative with the exception of the head and such portions of the bust, arms, and, in the case of young children, legs as may be visible. The clothes and background are then sketched in pencil and the photographic image daintily finished in water-colours. In the hands of a skilful artist some charming effects may thus be obtained—the child photographed sitting on the studio floor playing with toys may thus easily be represented as either sitting on the seashore playing with shells or in a meadow picking daisies!

### The "Sketch" Negative.

When travelling in the provinces, or even in the London suburbs, one notices that photographers are endeavouring to make these "Sketch" pictures from unsuitable negatives. Although a good retoucher can do a great deal in the way of blocking out a negative taken against a dark background, it frequently happens that the outline of the sitter's head or dress is such that it cannot be blocked out without presenting a cut-out appearance. Again, even with the white background, the lighting is badly managed, and there are bad shadows. Recent issues of the "B.J." have given articles on the subject, so there should be no reason why the slight difficulties attending the production of suitable negatives should not be overcome.

### Cream-Toned Papers.

Quite a number of photographers are giving a distinctiveness to their work by the use of a cream-toned paper. This colour has been available for some years in both bromide and carbon, and also in the self-toning papers, but only comparatively recently does it seem to have been taken up by professionals to any extent. The latest introduction in the cream papers is that of the Buff Sepia Japine and Platinotype—papers which were doubtless put on the market to share some of the patronage bestowed by good class studios upon the matt cream carbon transfers.

### The Neglect of C.C.

The visitor to England from either the Continent or the States must be struck by the small use of Collodio-Chloride in this country—small, that is, as judged by the extent to which it appears in showcases. Why this should be so is difficult to determine, since any printer used to gelatino-chloride should be able to produce good prints on the collodion paper. One reason that may perhaps have had something to do with it is that collodio-chloride is so frequently offered by its vendors as a substitute for carbon—in fact, it is often made to appear that its only virtue lies in its resemblance to that process. If this be the case the policy is a mistaken one. Be that as it may, the professional whose arrangements do not permit of his working platinotype or carbon as an alternative to P.O.P. may well consider the claims of collodio-chloride.

### Mounts.

In the matter of mounts one of the chief tendencies to be noticed is the adoption by professionals of the multiple or border mount, which, during the last few years, has so largely come into favour among amateurs. Mount makers have catered for studios in this respect by issuing multiple border mounts suitable for the reception of prints of the standard sizes. The folder type of mount, a somewhat stiff cover enclosing a print mounted on a thin board, continues in favour, but it may be questioned whether the large limp mount issued without such protection is the kind which will continue to satisfy the public. It is so easily damaged that framing is almost a necessity. We believe the public would appreciate a stiffer board, which would be equally suitable for framing, and, in the smaller sizes, for insertion in albums. Dry-mounting by means of shellac tissue continues to gain in favour in all directions, although, of course, in large numbers of studios producing the cheaper class of work, mounting with starch, or with one of the many excellent dextrine pastes now on the market, continues to be in vogue.

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# THE PRACTICAL SIDE OF THE TREATMENT OF RESIDUES.

My apology for standing sponsor for the following notes lies in the fact that while I have observed in the correspondence columns of the "B.J." a regularly recurring appearance of the same advice, in reply to enquirers, as to "what to do" with regard to the treatment of residues, I do not recollect having ever seen any information going into details as to "how to do it." I am therefore endeavouring to describe as briefly as possible the method which I have adopted for some years past in order to realise to the best advantage on old fixing baths and sensitised paper waste and clippings.

To deal first with the handling of waste paper, we are often told through the technical Press and otherwise that this is not worth saving; but from the results of my own experience in this direction I certainly think that the opposite is the case.

### Silver from Waste Papers and Prints.

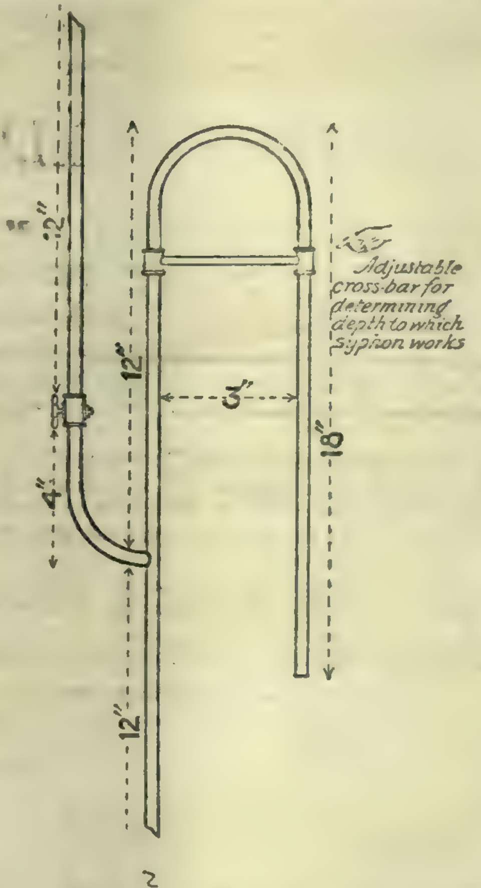
We have in our printing-room an old packing case with the lid removed, and into this is thrown everything in the way of unfixed paper waste, whether bromide, gaslight, or P.O.P. paper—clippings, old rough unfixed proofs, under- or over-exposed bromide or gaslight paper or postcards, wet or dry—all goes into the box. Then we have a galvanised iron tub such as is used in many towns for household refuse. This is about 18 in. in diameter by 14 in. in depth. When an accumulation of paper waste has got together in the printing-room this tub is placed right on top of the workroom fire and allowed to get hot; then the paper waste is thrown in a little at a time and ignited, and, as the contents of the tub become gradually reduced to ashes, they are occasionally stirred about with a poker, and more added until the tub is full. This, of course, does not by any means demand undivided attention, and a girl can be occupied with other work, and just now and then give the burning paper a good stir up and add a few more handfuls. If there is any great quantity of flat cut paper, such as rough proofs, it is better to crumple this up before throwing into the tub, which helps it to become thoroughly incinerated. The tub is allowed to remain in the grate over night, and the following morning the contents are, of course, quite cool, and should, if the operation has been properly carried out, be now found as a very fine floury ash. An old hypo cask is now lined with one or two thicknesses of old newspaper and the ash transferred to it, and the iron tub is ready for a fresh burning. As soon as the cask is full a few sheets of paper are laid over the top of the contents, and the cask is headed up ready to be sent to the refiners'. The whole matter from beginning to end is simply a question of taking a little trouble, which need not interfere with other work, and can often afford a means of filling in odd spare moments. The last cask of ash I sent away brought £1 3s.

### Treating Fixing Baths.

Now with regard to old fixing baths. We have on a wooden gauntree in the back-yard two earthenware jars such as are used for keeping bread in; these cost 7s. each, and are about 18 in. deep by 14 in. diameter, inside. They are fitted with earthenware covers pierced with a number of holes, which is advantageous, as it permits of the fumes from the precipitation of the residue escaping into the open air. These two jars are used alternately—that is, one is being filled with old baths from day to day, while the other is being precipitated and allowed to settle. The residue is, of course, thrown down by potassium sulphide (liver of sulphur). This is bought in two-pound wide-mouth bottles, and costs sixpence per pound. It is not removed from the bottle, but the cork is removed and water poured in until all the space between the chunks of sulphide is filled up, and naturally a saturated solution is quickly obtained. Then an old fixing bath is thrown out into one of the jars, the contents of a bottle of this saturated solution of sulphide is added slowly and evenly all over the centre and out to the edges of the surface of the liquid, so as to ensure thorough mixing. This is done every time a bath is added to the jar until the latter is full, and as the saturated solution of sulphide is used from the bottle the latter is filled up again with water time after time until all the solid contents have been dissolved, when a further bottle is brought into use. The full precipitation of the silver residue is easily ascertained by simply taking out a little of the liquid in a small glass vessel—a glass preserve jar answers admirably—and adding to this just a few drops of sulphide solution. If the characteristic dark precipitate still forms it shows that more sulphide solution must be added to the large jar; if no precipitate shows, or a light yellow (sulphur colour) deposit should appear, no more solution is needed, and in point of fact in the latter instance too much has already been added. From this point the jar is allowed to stand undisturbed for as long as possible, to allow of the residue settling at the bottom, the other jar being meanwhile filled and the residue thrown down in its rotation.

### Preparing for the Refiner.

As soon as it is desired to remove the precipitate, the clear liquid above it must be got rid of, and in our case we use a simple form of syphon as illustrated. This is simply a U-shaped brass tube, with one arm longer than the other and an extra length of tubing let into the longer arm. This latter length is fitted with an ordinary gas tap. The whole affair was made by a local gasfitter for, as far as memory serves, three shillings. To use this, the short arm is lowered into the liquid until it is guessed to be just above the level of the precipitate, the tap opened, the end of the long arm stopped with the finger, and a slight suction applied to the upper open end will at once give the thing a start. The tap is then closed, and the syphon will work so long as it remains so or there is any liquid above the bottom of the short end. The depth to which this syphon may be lowered into the jar is made adjustable, so that if it is found to be too low when first started, and the precipitate begins to come through, it can be raised; or, otherwise, if too high at first it can be lowered so that it draws off everything to within an inch or so of the precipitate, which will now be found in the form of a thick and by no means pleasant-looking mud at the bottom of the jar. If there is not much of this, say the first few times the jar has been run off, it is not taken out, but the jar is simply filled up again with old fixing baths, and the process repeated until we find a deposit of, say, four or six inches at the bottom. This is now emptied into an old wash-bowl, and from there it goes into a saucepan (also old) of fairly large size, which is kept simmering on the workroom fire until the contents are evaporated into almost a jelly. We now take an ordinary chocolate box, procured from the nearest confectioner's (made of thin wood, to hold 4 to 7 lbs. of chocolate), and line this with old photo-blotting discarded from the mounting bench. The contents of the saucepan are emptied


12"
12"
3"
18"
4"
12"
Adjustable cross-bar for determining depth to which syphon works

into this, and allowed to get thoroughly set by being kept in a warm place until such time as the next consignment goes off to the refiner's. Two such boxes sent away a short while ago realised £1 8s., the only expense to be set against which is the cost of the liver of sulphur and the freight charges, both of which are trifling in comparison, and the initial cost of the jars and the syphon, which very quickly pay for themselves. There are jars on the market specially made for this purpose, with a tap for drawing off the clear liquid, but these are much more expensive than the combined cost of the jars already described and the syphon for use with them, and the syphon method offers a great advantage in that the upper liquid can be drawn off to just above the level of the precipitate, no matter what amount of this there may be; while with a tap in the side of the jar one may find that the tap is too far above the level of the deposit, in which case a quantity of useless liquid is left in the jar; or, on the other hand, the precipitate may have accumulated until it reaches above the tap, and would therefore be partly lost if the latter were opened.

I have not dealt with gold or platinum residues in this article since my use of platinotype, and my wastage of gold-toned prints and toning baths does not justify me in the practice of recovery of these metals. But for the generality of work, the method described is found fully efficient.

Marchons.

# Photo-Mechanical Notes.

### Metal Labels.

Referring to the paragraph in these notes of March 17, the Jee Metal Label Co., 79, Peckham Rye, London, S.E., write stating that they are actual manufacturers of the name plates, etc., and are able to compete favourably as regards both quality and price with the same class of work "made in Germany."

### The Possibility of Economy.

Photo-engravers probably sometimes sigh for some magical simplification of their processes whereby cost would be almost eliminated, but their case would be no better in the end than it is now; and as the days of miracles are past, in spite of the claims of the man with the secret method, it is as well to face the facts and see that the complicated and delicate work which has to be done is performed in the most economical manner, and that what is common knowledge is applied to the best advantage.

### Economy in Materials.

Certain materials are looked upon as the most economical, but unless it is understood why they are so, and unless they are used only when the reason is known to hold good they may be uneconomical. Thus wet collodion is cheaper than dry plates if the glass can be used over and over again and the labour of preparing the plates is not too expensive. If, however, a highly-paid operator is employed in sensitising plates and the resulting negatives are kept on plate glass, there is no economy, but dry plates would be cheaper. The enclosed arc lamp is cheaper, but only when it is used to illuminate black and white originals, and the current can be obtained at a fairly high voltage—say 200. For low voltages and for coloured originals the open arc will be found more economical. And so one could go through all the operations in the production of an engraving and find that economy only exists under suitable conditions. For instance, it is of no use to have cheap materials which are troublesome to manipulate, and one of the reasons for the failure of many excellent processes has been that the skill to operate them is not available, and though the inventor works them easily enough by reason of his experience, the ordinary worker fails, and the process therefore is not commercial.

### Selling Prices.

In all trades there is always a wail about price-cutters, especially from those who suffer from temperamental lack of energy, but in probably no trade more than photo-engraving is there a greater uniformity of price-level: low possibly, nevertheless some firms manage to prosper, while others are embarrassed. There is, therefore, some other cause than price, and that is knowledge or the want of it. If a firm knows its costs it will not sell below them: to do so would be sheer lunacy. If the selling prices are roughly the same, and one firm makes a profit while another makes a loss, the reason can only be that the costs of the first firm are lower than the second. The only way to keep costs lower is by careful internal organisation. Waste of labour, waste of time, waste of material must be carefully watched and constant attention devoted to devising methods to economise to the utmost in all directions. No genius is required other than the ability of taking pains to attend to every detail.

### A Knowledge of Cost.

The first essential to profitable selling is a knowledge of cost, and this should be as detailed as possible. Many firms have been surprised on careful inquiry to find that some things they thought unprofitable were quite the reverse, and others which were supposed to be hardly worth doing were thoroughly satisfactory. Once the facts are known the sensible men will not want reminding of the Stock Exchange maxim, "Cut your losses."

### On Commencing Business as a Photo-Engraver.

Whether a photo-engraving business can be successfully started or not depends entirely on the amount of work that will be commanded, other things being equal—that is to say, equal skill shown in conducting the business and the same prices that are paid other successful engravers being obtained. But sufficient work is required to keep a staff constantly employed for the normal working day. If these conditions are granted, then it may be taken as a unit that labour will amount to about half the total cost of the product (rather less in particularly well-organised businesses, considerably more in badly-administered ones). If we add the average profit on top of cost we can make the labour-cost a proportion of selling price. The selling price will be known in any given district, and a practical man will know how many men are necessary to produce the finished engravings equal to those usually supplied in that place. When the wages these men require are known, a simple calculation will enable one to ascertain the volume of work necessary to run a successful business. An example will make this clearer. Let us suppose that in order to produce blocks in the usual quality it would require a minimum staff of men costing £20 a week (as it probably would in London), then £40, plus profit, worth of work would be required in order to make any success, and the profit yielded will be no more than that which contents the average photo-engraver of the district. If we guess this as 10 per cent. (which is less than he deserves, but probably much more than he gets), then we should require £44 of work weekly, or £2,288 yearly. Naturally, in places where the standard of work was lower either in quality or speed of delivery the minimum staff would be less expensive, and therefore the volume of work would not need to be so large to commence with. It must not be forgotten that this recipe requires properly skilled labour, very carefully directed.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between March 13 and 18:—

Cameras.—No. 6,248. Roll film cameras. Adeline Elizabeth Stacy.

Colour Photography.—No. 6,279. Manufacture of colour screen-plates and films for colour photography. Henry William Hamblin Palmer.

Shutters.—No. 6,392. Shutters for photographic purposes and the like. Cyril Frederick Lan-Davis.

Vignetter.—No. 6,706. Vignetting device for use in photography. John Weir, William Wallace Weir, and Robert Weir, trading as Weir Bros.

Camera Attachment.—No. 6,511. Attachment for photographic cameras. William Arthur Shaw.

**Lighting Apparatus.**—No. 6,868. Apparatus for inverted incandescent gas lighting, more particularly designed for photographic enlargement and projection work. Henry Howell.

**Cinematographs.**—No. 6,502. Cinematograph cameras. Ernest Porter.

**Stereoscopic Cinematography.**—No. 6,740. Method of and means for producing a stereoscopic effect from pictures projected upon a screen or the like, especially adapted for cinematographic purposes. William Joseph Rider.

**Cinematograph-Phonograph.**—No. 6,390. Automatic clutch for running a cinematograph and phonograph synchronously. Société des Etablissements Gaumont.

**Stereoscopy.**—No. 6,329. Stereoscopic viewing apparatus, the invention being applicable for correcting defects of vision such as squints. Vassilii Titovitch Gousoff.

### *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

**Bleach-out Colour Paper.**—No. 5,154, 1910 (March 3, 1909). The invention consists in the use of the compound thiosinamine as a sensitiser towards light of the dyes used in the manufacture of a bleach-out colour paper. It has been found that thiosinamine (allyl-thio-urea) is a sensitiser which has a very considerably more powerful effect than any hitherto known, and one which in certain circumstances is twenty times as powerful in action as anethol.

In addition to the advantage of its exceedingly powerful action, thiosinamine has a further special advantage, viz., that, unlike other sensitisers ordinarily employed in the bleach-out process, it may be employed in aqueous as well as in alcoholic solutions.

The thiosinamine may be added either directly to the bleach-out emulsion or be subsequently combined with the dyes by means of baths or in some other manner. It may, if necessary, be also produced directly in the emulsion through the action of ammonia on allyl-mustard oil, the product of this union being, as is well known, thiosinamine: e.g., the two ingredients may be mixed in definite proportions with the emulsion, either consecutively or each to a separate portion of emulsion, and these portions then mixed together afterwards.

The above description applies also to the use of thiosinamine for increasing the action of dyes employed in sensitising silver haloid emulsions.

The thiosinamine can be added in any suitable way; the only matter of importance is that the thiosinamine should be present with the dyestuff when the plate or paper or finished product is subjected to the action of light, and that only very small quantities of the thiosinamine should be added. Dr. John H. Smith, 60, Rue de la Côte, St. Thibault, Bois-Colombes, Seine, France.

## New Trade Names.

**Therma.**—No. 331,038. Prepared paper for photographic purposes. Ilford, Ltd., Britannia Works, Roden Street, Ilford, London, E., manufacturers of photographic plates, papers, and films. February 15, 1911.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Printing on Silk.

In an article on this subject in "Photography and Focus" for March 28, Mr. H. T. Chippindall gives the following hints:—A dram of dextrine is mixed with 2 oz. of water and allowed to dissolve. It is then made up to 4 oz. with boiling water, and, when cold, a solution of 1 dr. of ammonium chloride in 2 oz. of water is added. As this mixture does not keep well it should be used as soon as possible after being made up. The silk is soaked in the liquid until it is thoroughly saturated, which should take about four or five minutes, and it is then hung up to dry, suspending it, tightly stretched, from its two top corners. The fabric, when "salted," as this operation is termed, will keep indefinitely. All these operations can be done in full daylight.

The next stage is the application of the sensitiser, for which purpose the two following solutions must be made up and then mixed:—

| | | |
|---|---|---|
| A. | Silver nitrate | 120 grs. |
| | Water | 1 oz. |
| B. | Citric acid | 50 grs. |
| | Water | 1 oz. |

The mixture is spread evenly over the silk with a soft camel-hair brush. There must be no metal in the mounting of the brush that is used. The best way is to brush the liquid over the silk, first in one direction, and then crosswise. The process of sensitising must be done in a weak artificial light, such as at night by ordinary gas or lamplight, or in the very feeblest daylight. The printing, which is done by daylight, is carried out in the same way as for ordinary P.O.P., except that the silk should be printed a little darker than usual. Prints on the silk are toned, fixed, and washed in the same way as ordinary silver prints. The washing should be thorough, and before the prints are quite dry they should be ironed out to remove all creases.

## CATALOGUES AND TRADE NOTICES.

**Enlargements.**—Messrs. F. J. Fletcher and Sons, 69, Durham Road, Sparkhill, Birmingham, send us their circular of prices for enlarging and other trade work.

**"Criterion" Plates, Papers, and Films.**—A new list, issued by the Birmingham Photographic Company, Ltd., Criterion Works, Stechford, England, contains, in addition to the sizes and prices in which the well-known "Criterion" papers and plates are made, a number of useful notes, descriptive of the special features of these standard products.

**Photo-Button Appliances and Materials.**—A new price list of machines, hot rollers, colours, button parts, photo-jewellery, etc., used in the production of the photo-button, reaches us from Jonathan Fallowfield, 146, Charing Cross Road, London, England. The publication is the most complete catalogue which can be had by those taking up this profitable branch of photographic business. Messrs. Fallowfield have long been specialists in the supply of these appliances, and this latest list affords the intending photographer the most useful guide in taking up photo-button production on a large or small scale.

**Zeiss Lenses.**—A new list issued by Messrs. Carl Zeiss, 13-14, Great Castle Street, London, England, is a production which is far more than a mere catalogue of sizes and prices. It enters at considerable length upon the properties of the objectives made by the famous Jena constructors and is illustrated very freely by reproductions showing the special facilities conferred upon the photographer by particular types of the Zeiss lenses. As regards the lenses themselves, the very full details as to focal length, covering power, etc., will be appreciated by the buyer at a great distance, particularly as the latter may take the figures given by Messrs. Zeiss as under, rather than over, the capabilities of the lenses, the makers adopting a high standard of definition. All photographers who would select their lenses from the best obtainable should get this price list and study the advice in it.

**The Raines Service.**—The catalogue of prices of enlargements, trade printing, etc., issued by Messrs. Raines and Co., The Studios, Ealing, London, England, reaches us as we go to press. It is on the lines of its predecessors of recent years, and sets forth with the utmost clearness the charges for the work in all enlarging and printing processes done by Messrs. Raines. The beauty of its printing and production is quite characteristic of the actual photographic work done by this firm, whose reputation for quality and promptitude of service we are not overstating when we say that it is accepted as a standard of excellence. There is no variety of trade work, such as a good studio would wish to offer to its customers, which Messrs. Raines do not undertake and carry out whilst maintaining their own high standard.

# NEW MATERIALS AND APPARATUS.

In this section we give reports upon the many new introductions on the British market. In some cases the new articles are variations of well-known pieces of apparatus; in several instances they are absolutely new departures in construction. All, however, have come under our own personal trial or examination, and for this reason the difficulty of drawing distinctions between competing goods is felt by ourselves as acutely as by anyone, since the fact is forced upon us that one manufacture is suited for one particular purpose, another for another, and that every article needs to be considered on its merits—and its price—seeing that individual requirements are as varied as human nature itself. And so it comes that we must ask for a careful reading of every page of this issue, advertisements and text, in which occupation our Foreign and Colonial readers in particular should be assured of considerable pleasure and profit.

### Gevaert "Gravure" Paper. Made by Gevaert, Ltd., 26 and 27, Farringdon Street, London, England.

In this new printing paper the makers provide the photographer with a material of quite distinctive quality. It is a paper for the production of prints resembling, in their surface and richness of shadows, the impressions from a photogravure plate. Photogravure, as many of our readers know, has been used to some slight extent by professional workers, but the technique of this most beautiful of reproduction processes is, unfortunately, beyond the power or opportunity of the average professional photographer. The new Gevaert paper, however, yields prints which rival photogravures in their richness of tone and gradation, but calls for a degree of skill in working even less than that necessary for the ordinary methods. Thus, the new paper appeals particularly to the photographer whose customers can appreciate a really beautiful production, as it enables him to offer them results out of the ordinary, and this without any special difficulty.

The paper is issued in 9 grades, differing in surface, colour, and thickness. The matt paper, which may be taken as the standard surface for regular work, is issued:—A, white and of ordinary thickness; B, white, but thicker; C, cream, and ordinary thickness; I and H, of card thickness, and white and cream, respectively. Brands D and E are each of a rougher paper, white and cream, respectively; whilst F and G are papers of surface resembling linen, and again white and cream. Thus, the variety at disposal simply by selection of the paper is very considerable. It is still further extended by the range of tones which are obtained by taking advantage of the ordinary methods of gold and platinum toning. The worker in "Gravure" thus has within his power a process which he can adapt to his particular uses in a score or more of ways.

It should be said that the paper requires a negative of fairly good contrast, such a negative which prints well on C.C. or platinum paper. The negative of flat contrast and muddied shadows, which requires a gaslight paper to yield a good print, cannot be expected to produce the beautiful results of which the "Gravure" paper is capable.

Platinum toning alone yields excellent warm-black tones. The bath is:—

| | |
|---|---|
| Potass chloroplatinite | 15 grs. |
| Phosphoric acid sp. gr. 1.120 | 5 drs. |
| Water distilled | 40 ozs. |

In this the prints tone within two to five minutes, and are then washed, fixed, and washed in the ordinary way.

For cold-black and bluish-black tones, prints are first toned quite briefly in a gold bath, made as follows:—

| | |
|---|---|
| Borax | 90 grs. |
| Sodium acetate | 90 grs. |
| Gold chloride solution (15 grs. in 2 ozs.) | 1¼ to 2 drs. |
| Water | 20 ozs. |

Toning in this bath may be for a few seconds up to two minutes; the longer the toning here the bluer the final print. After a brief rinse prints are passed through the platinum bath and completed as before.

In addition to these standard methods, slight variations of the latter may be employed in producing red-chalk and sepia prints, in using which also the worker will appreciate the rapid toning in the baths, and the ease with which the prints are handled. The paper, being apparently prepared by a non-emulsion process, the finished prints lie extremely flat, and are particularly adapted for mounting on the thin folder and other mounts now so much in vogue.

This bald recital of the properties of the paper is sufficient to show that in the Gevaert "Gravure" the photographer will find the means of raising the interest and quality of his productions, and should, therefore, reap a corresponding financial reward.

### "Criterion" Plates. Made by the Birmingham Photographic Co., Ltd., Stechford, Birmingham, England.

The Birmingham Photographic Company, which within the past few years have taken a leading place as manufacturers of photographic printing papers of the highest class, have recently enlarged their factories as a result of extending their output to include a whole series of dry plates. Users of the "Criterion" papers, and there must be many among our readers who have proved for themselves the first-rate qualities of the bromide, gaslight and printing-out papers, will naturally turn towards these new products of the Birmingham Company with the certainty of finding the same high standard of manufacture maintained. Our own tests of these plates were made with a similar degree of confidence in the ability of the company to supply for the purposes of negative-making materials which should be as good in every way as those for printing. And in this, we are glad to say, we were not disappointed. The new plates include six distinct varieties, four of the ordinary (non-colour-sensitive), and two of the isochromatic kind. Of the ordinary plates the "Special Extra Rapid" and the "Portrait" are emulsions of extreme rapidity, allowing of the briefest exposures out of doors under severe conditions and in the studio. We found these plates to develop readily, using metol-hydroquinone developer, to ample density and without tendency to fog when continuing the development of intentional under-exposures. These two plates will probably be the most popular of the "ordinary" brands, but for those who prefer a somewhat slower plate the "Extra Rapid," requiring about half as much exposure again as the two preceding is issued, as also a slow or landscape plate, the "Ordinary" requiring four to five times the exposure of the "Special Extra Rapid."

A similar difference as regards speed is made in the case of the isochromatic plates, the "Ordinary" being a somewhat slow plate for use in copying, outdoor landscape work with a stand camera, etc., whilst the "Isochromatic Extra Rapid" is a very fast plate of the orthochromatic kind, allowing, under the best conditions of subject and summer light, of snapshot exposures through a screen. It is in short a plate which the hand-camera worker will find sufficiently quick for all kinds of snapshot work without a screen, and one which he can call upon for colour-correct photography when the subject demands it. The whole series of plates are evidently the result of the most careful manufacture. They are issued at the standard popular prices, and we doubt not will be welcomed particularly by those who, as we have said, have learned in the "Criterion" papers what to expect of the Birmingham Company.

### "Edelweiss" Bromide and Gaslight Papers. Sold by F. E. Jones and Co., Ltd, 22, Gray's Inn Road, London, England.

Samples of these printing papers which we have had occasion to use during the past few days have proved the high-class quality of the goods. Developed with metol or metol-hydroquinone, the bromide paper supplies prints of first-rate black colour and richness of gradation, with brilliant high-lights. The prints tone perfectly by the sulphide method, and the choice of papers fulfils all the requirements of the professional photographer. The standard variety may be taken to be the A, thin matt smooth, the other varieties being: B, thin matt rough; C, thin glossy; D, thick glossy; E, thin "velvet"; F, thin cream smooth; G, thick matt rough; and H, thick cream rough. The "Edelweiss" gaslight paper is supplied in a similar series of papers, and, like the bromide, yields first-rate printing results.

### "Takiris" Bromide Paper. Sold by Ferdinand Levy, 14, Red Lion Square, London, England.

A new brand of bromide and other printing papers manufactured by the well-known Continental firm of Takiris is now being introduced on the British market by Mr. Levy, from whom samples and prices may be obtained on application. We shall have an opportunity later on to speak of the gaslight and printing-out papers, but we may here refer to the bromide, samples of which in the glossy and velvet grades have reached us. Developed either with amidol or metol-hydroquinone, the two formulæ recommended by the makers, the "Takiris" paper yields prints of fine black colour and pure high-lights, and is evidently a bromide of first-rate manufacture.

### Warwick Plates. Made by the Warwick Dry Plate Co., Warwick, England.

The Warwick Company, whose name is deservedly well known as a leading firm of dry-plate manufacturers, has, within the past few months, re-arranged and re-labelled its series of dry plates, as a necessity of the steady improvement in speed which has attended the efforts of the makers. The "Ordinary" plates (those not colour-sensitive) are now issued in four varieties. Of these, the "Gold Label" is a plate of extreme rapidity and cleanness of working, and, at the same time, one which yields negatives of brilliant yet harmonious character. It is thus an eminently suitable plate for portraiture in the studio, its fine grain and rendering of detail being of particular advantage when enlargement upon a considerable scale has to be done. In the "Silver Label" plate the makers provide a somewhat lesser degree of speed, but at the same time one fully qualifying the plate for all ordinary work with a hand-camera. It is, in fact, a remarkably fine plate of the extra-rapid class. The "Bronze Label" is a plate of about half the speed of the "Silver Label," and specially suitable for copying, enlarging, slow landscape work, etc. In the "Warpress" the makers supply a plate of the highest speed specially for the purposes of press photograhers, much of whose work lies among subjects which themselves are flat and wanting in contrast, and therefore calls for a plate in which ultra-sensitiveness is combined with ability to give ample density. Yet here, as in the other plates, the makers secure also great freedom from liability to fog, as evidenced by the remarkably clean results obtained without any bromide in the developer.

Of the two orthochromatic plates, the "Rainbow Fast" and "Rainbow Slow," the former is a plate of the highest sensitiveness, equal to that of the "Warpress," and, like the "Warpress," also readily giving any required degree of density. The requirement among many amateur workers being a plate with which instantaneous exposures can be given when using a light-filter, stress may be laid upon the excellent way in which, as our own recent exposures have shown, the "Rainbow Fast" responds to this demand. The "Rainbow Slow" is of about half the speed, and an excellent plate for general landscape work with a light-filter, for copying paintings, etc. Each variety of the Warwick plates is sold at the popular prices based on 1s. per dozen in quarter-plate size.

Photographers' Printing.—Some most tasteful specimens of letter headings, memorandum forms, envelopes, etc., specially designed and printed with a view to the requirements of photographers, reach us from Mr. William H. Know, Main Street, Tollcross, Glasgow, from whom specimens and prices may be obtained on application.

Photographers' Printing.—Messrs. Walter Pearce and Co., St. George's Press, Brentford, England, send us a selection of the booklets and leaflets for photographers in which they have successfully specialised for some years past. These include some most dainty examples of half-tone and typographic printing, containing a few words of suitable text introducing the photographer to his customers. Messrs. Pearce do this work at very moderate prices, and many Colonial studios, anxious to make an effective canvass by post among the townspeople in their district, would do well to apply to the St. George's Press, Brentford.

Coronation Photo Buttons.—The British Photo Button Co., Crowder Works, Winchester, England, send us a sample of the special "Coronation" button badge just introduced by them. It is lithographed in eight colours, and is a most attractive example of the button form of badge. Price, complete with pin, £2 3s. per thousand. Colonial readers may be reminded (as an aid to remitting postage) that 120 buttons go to 1 lb.

New "Agfa" Plates.—Two new varieties of plates made by the Actien Gesellschaft für Anilin Fabrikation are just being introduced on to the British market by Messrs. Charles Zimmermann and Co., 13, Bartlett's Buildings, Holborn Circus, London, England. They are the "Iso-rapid" and "Chromo Iso-rapid," the former a plate similar to the Agfa "Isolar," but of much higher speed; and the latter an orthochromatic plate requiring about half the exposure of the Agfa "Isolar Chromo." Both plates are non-halation, having a brown coating between the film and the glass, which disappears on fixation in an acid bath. Both brands of plates are supplied in sizes up to 24 x 20, at the same prices as the "Isolar" and "Chromo Isolar."

Illingworth Gaslight Papers.—Since the introduction of the "Slogas" paper, a review of which appeared at the time in our columns, the makers, Messrs. Thomas Illingworth and Co., Ltd., Willesden Junction, London, England, have introduced a new grade, the "Vigorous Satin," the delicate half-sheen surface of which is particularly well suited for portrait work. The new brand in the other respects of latitude in exposure and leisurely development is on a par with the other varieties of "Slogas," which is a gaslight paper of high grade. Messrs. Illingworth likewise send us a number of specimen prints on their bromide and "Enitone" (self-toning) papers, offering a similar selection to any Colonial photographer who would wish to take this means of acquainting himself with the capabilities of these well-known materials.

Photographers' Printing.—Messrs. Hood and Co., Ltd., St. Bride Works, Middlesbrough, England, send us sample booklets of their work in printing for photographers. Among these we are interested to notice several most excellent view albums, produced for customers in the Far East. Messrs. Hood, being both photo-engravers and printers, are in the best position to undertake such orders efficiently from first to last, and we feel sure that commissions from our readers abroad for half-tone and colour printing, in typographic matter as well as for half-tone and line blocks, will be turned out in the high quality which Messrs. Hood consistently attain. Among the firm's own publications is a handsome portrait of King George V., issued mounted on art board, 11 x 16 inches, to retail at 1s. Prices for quantities from Messrs. Hood.

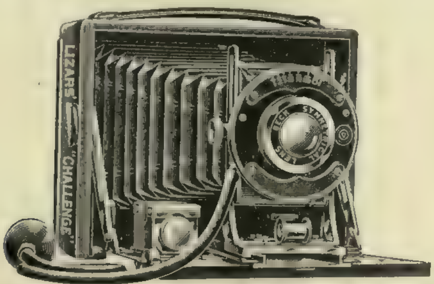
Autogravette Negatives.—A series of sketch negatives, specially prepared for producing the popular sketch type of portrait by a simple method of double printing, dispensing with the use of masks or discs, has been introduced under this name by Mr. Francesco Duran, Shottery Road, Stratford-on-Avon. The sitter is photographed against a blue-white background, and the whole or part of the drawing of the sketch negative printed in, as best suited to the pose and costume of the sitter. The style of the resulting prints is that which is so popular at the present time, and should appeal to photographers anxious to produce this attractive style of portrait with the minimum of trouble and expense. The price of the negatives in 12 x 10 size, suitable for cabinet or whole-plate figures, is 7s. 6d. each, or a set of six different designs, 40s.

Film Tissues.—Under this name a useful material is being supplied by Messrs. H. Rheinlander and Son, New Malden, Surrey, England. It consists of an extremely thin celluloid sheet at least, three uses of which are as follows:—(1) The tissue is laid over the film side of the negative, attached at the corners by a touch of adhesive, and then serves as a protection against silver stains, the use of the film saving the trouble of varnishing. (2) Titles may be written on the film with Indian ink or printed from type, and the written side, on being placed as before in contact with the film of the negative, causes the title to print with the latter. (3) When printing from wet negatives, a sheet of tissue a size larger than the negative is laid over the latter, which is then placed, on a plain sheet of glass, in a printing frame the next size larger. The extreme thinness of the celluloid ensures the full sharpness of the negative being retained in the print, but those who may wish to introduce a certain amount of diffusion into their prints may do so by using a number of the tissues. Messrs. Rheinlander also supply a matt tissue, which can be worked up readily in pencil, and is thus used for attachment to the back of the negatives or for insertion in preparing mounted window and other transparencies. The tissues are supplied in packets at prices as follows:—Quarter-plate, per dozen, 10d.; per half-dozen, 6d. Half-plate, per dozen, 1s. 6d.; per half-dozen, 10d. Other sizes up to 12 x 10 at proportionate rates. The films are beautifully free from flaws or specks and admirably adapted for their purpose.

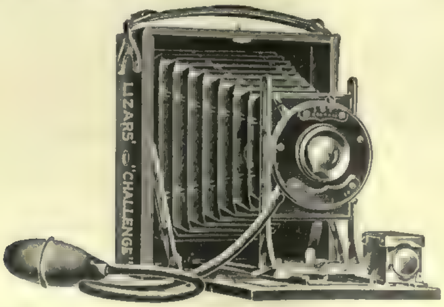
### "Challenge" Hand Cameras. Made by J. Lizars, 101 to 107, Buchanan Street, Glasgow, Scotland.

In a series of new models of hand camera for the 1911 season, the well-known firm of Lizars, we are glad to see, has kept before it the important qualities of strength and good workmanship, and has not yielded to the temptation to sacrifice these important features for excessive lightness and slimness of the apparatus. On these accounts the cameras are especially suitable for travellers and for workers in foreign countries where the climatic conditions are severe.

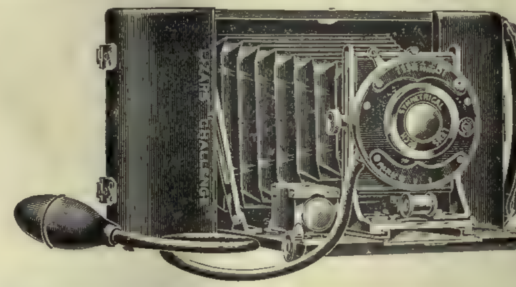
In the Model 1 C we have a hand-stand instrument built oblong, so as to take the picture the landscape way of the plate when the camera is held in the normal position. The great majority of a tourist's exposures being made in this way, the average worker is well advised to give a camera of this build the preference over one which, normally, is fitted for taking an upright picture. The 1 C instrument, in the quarter-plate size before us, possesses an extension of 8in. from lens diaphragm to plate, has swing back, a rise of front of over one inch, also cross front, and automatic catch which locks the lens front in the position of focus for objects at infinity on the front being pulled out. It is fitted with reversible brilliant finder, two bushes for the tripod screw, and focussing hood which forms also a substantial protection of the ground glass. Strongly made throughout, and fitted with Beck symmetrical lens and Bausch and Lomb "Auto" shutter, the price, with three double slides, is £4 4s.



In the Junior "Celtic" we have a camera of similar form, but of more limited range of movements. It is built to take upright pictures, is of single extension, and with a fixed lens front. Strongly made in polished mahogany, the price, with single achromatic lens and Bausch and Lomb "Automat" shutter, is 30s., or with Bausch and Lomb R.R. lens, £2 2s.

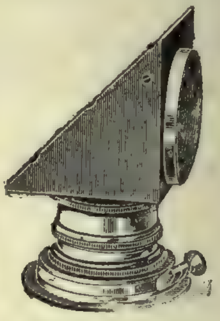


The "Challenge" Dayspool de Luxe is a film camera of double extension substantially made in teak and with the automatic focussing catch. Although built for use with roll film, dark slides can be employed without the use of a loose adapter. Complete with reversible finder, rising and cross front, Beck symmetrical lens, and Bausch and Lomb shutter, the price is £4 12s. 6d. Like the two cameras already mentioned, the construction is such as to withstand an immense amount of hard wear.



### Ross Process Apparatus. Made by Ross, Limited, 3, North Side, Clapham Common, London, England.

Messrs. Ross send us the latest improved pattern of the reversing prism made by them for photo-mechanical work, and designed with a view to the most rigid and accurate adjustment of the lens used in conjunction with the prism. The latter is mounted in a stout metal setting, which brings one of the non-reflecting surfaces closely to the front lens of the objective. The hypotenuse surface is silvered, and the prisms themselves prepared from colourless, carefully annealed crown glass. The prices are as follows, including in each case an objective ring fitted with revolving collar and clamp, which allows of the lens being turned on its axis and clamped in any position in which the prism is required.



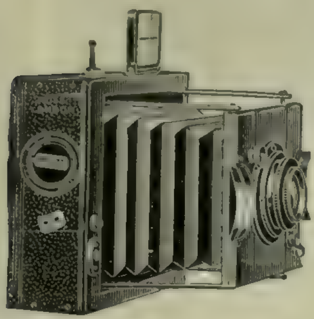
| No. | Length and Breadth of Non-reflecting Surfaces. | | PRICE. | | |
|---|---|---|---|---|---|
| | Ins. | Mm. | £ | s. | d |
| 1 | 1 | 25 | 4 | 10 | 0 |
| 2 | 1⅜ | 35 | 5 | 10 | 0 |
| 3 | 1¾ | 45 | 7 | 0 | 0 |
| 4 | 2 | 50 | 9 | 0 | 0 |
| 5 | 2⅞ | 60 | 12 | 0 | 0 |
| 6 | 2¾ | 70 | 16 | 0 | 0 |
| 7 | 3⅛ | 80 | 21 | 0 | 0 |
| 8 | 3½ | 90 | 30 | 0 | 0 |

Also for the purposes of the process three-colour worker Messrs. Ross are issuing sets of three-colour filters in optically worked glass, the red passing rays from 644 to 590, the green from 600 to 480, and the blue from 490 to 360. The filters are issued in sets of three in sizes from 2½ ins. square (price £4 13s. 6d.) to 5 ins. square (price £18 10s.).

### Ross Cameras. Sold by Ross Limited, 3, North Side, Clapham Common, London, England.

In the 1911 model of the "Panros" folding focal-plane camera the makers have modified the construction of the shutter while retaining the conveniences of the previous pattern. These, as noticed in past issues of these pages, include a wide range of speeds, instant adjustment of the shutter to give bulb exposures while set at any instantaneous speed, and, lastly, similarly rapid movement to open the blind to full aperture for focussing. The large milled head seen in the drawing winds the shutter in less than a complete turn. The inner key serves to alter the speed: it is slightly raised and placed into one of nine different slots giving speeds, as marked, from 1/1000th to 1/15th of a second. For bulb exposures the small knob seen lower down is simply turned to B, when pressure on the release commences exposure which continues until the pressure is broken. This very rapid movement allows of the useful short exposures being given in circumstances where some kind of rigid support can be secured for the camera. Lastly, by turning the knob to F, the shutter being set, a full aperture of the blind is obtained for focussing. It remains open without further attention, and when the exposure is to be made the knob is turned to B or I, as required, and the shutter set by a turn of the winding key. In other respects the camera is issued in the excellent workmanship characteristic of the Ross factory.

A new model of the Ross 3½ x 2½ reflex is a further addition to the series which we have noticed in past issues of the "Journal."



It is built square and fitted with rotating back, thus providing the full facilities in the small convenient 3½ by 2½ size. The outside dimensions of the camera are 5 by 6¾ by 6½ ins. This new model is also fitted with a hood of the pattern seen in the drawing, the hood frame being hinged so as to lay bare the ground glass instantly. The extension from lens panel to plate is 9½ ins., and the rise of front (actuated by rack and pinion) is just over three-quarters of an inch. Mirror and shutter adjustments remain as in the previous models.

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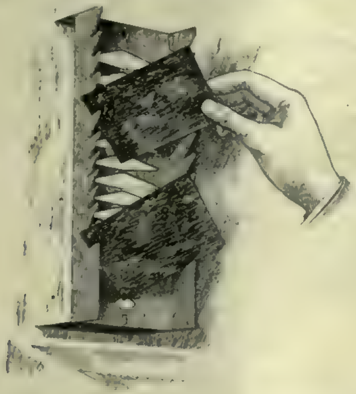
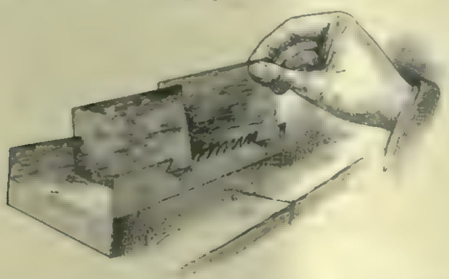
### The "Volus" Draining Racks. Sold by J. T. Cooper and Son, 23 to 25, King Street, Gravesend, England.

In this rack the makers have designed an accessory which can be either fixed to the wall or stood on the table, and in either position allows of the negative being placed film down and touching the rack only at two minute points. Moreover, the plate takes a diagonal position, so that any adhering water readily drips off, though not upon other negatives in the rack. The arrangement is such as to provide an excellent circulation of air among the negatives, and we can thoroughly recommend the rack as designed with evident regard to the rapid drying of plates. The "Volus" racks are supplied in cream enamel metal, at prices as follows:—No. 1, for negatives ¼ to 1 1 plate, 2s.; No. 2, for negatives, whole plate and upwards, 3s. 6d.





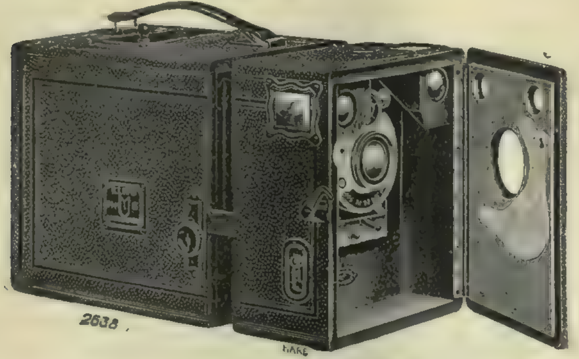
### "Klito" Box Hand Cameras. Made by Houghtons, Ltd. 88 and 89, High Holborn, London, England.

For the present and forthcoming seasons Messrs. Houghtons have remodelled their extensive series of box cameras, and in doing so have adopted what we are certain will be received by dealers as a welcome policy. They have reduced the number of models and at the same time have simplified the construction of the cameras, retaining the movements most useful to the absolute beginner. In this they are undoubtedly right, since cameras of this class are purchased by those who are practically ignorant of photography, and are, therefore, hindered rather than helped by a multiplicity of adjustments. Strong construction, reliability and efficiency within their limits are, however, essentials in such instruments, and these qualities we find excellently embodied in the "Klito" cameras at surprisingly moderate prices. To take the No. 000, made for 3¼ x 2¼ plates. In this we have a camera which is a reduction of the necessary movements to absolute simplicity, and yet, given bright weather, is capable of excellent work. It is of hard wood covered in black leatherette, is fitted with carrying handle, two finders, a single lens which gives crisp definition over the plate, and everset shutter providing one (not too fast) instantaneous speed and adjustable to "time," together with a sliding stop-plate for using the lens at a further reduced aperture. Finally the magazine-changing arrangement is simple and effective, the price of the instrument, for six plates, being 7s. 6d. In quarter-plate size, for six plates, the price is 10s. 6d.; for 12 plates, 12s. 6d.

The 000 "Klito."

The No. 1 "Klito"

These are the simplest models. In the No. 1 "Klito," for twelve quarter-plates, the general features are the same, but the camera is fitted with focussing scale, brilliant finders, and an improved shutter, also with bushes and tripod screw. With single lens the price is 21s. An alternative model is the No. 0, sold at the same price but fitted with R.R. lens and provided with three magnifiers on revolving plate for focussing, also with bushes and tripod screw. A rack-focussing pattern, similar to the No. 0, with R.R. lens, is sold at 25s. This is the No. 2b.

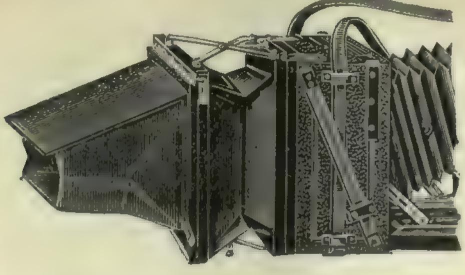


The No. 6K "Klito."

In further members of the series the general pattern is preserved—namely, rack-and-pinion focussing, etc.—the differences being chiefly in the lens and shutter fitted. In these somewhat more highly priced, but still extremely cheap, cameras, the front is hinged so that the shutter and lens can be immediately got at. The appearance, too—polished mahogany and brass fittings—is a notable feature from the dealer's point of view. We advise those wishing to make themselves acquainted with these most efficient and at the same time attractive-looking instruments, to study the particulars of the 3a, 6k, 6d, 6L, No. 1 P C, No. 5k P C, No. 5e P C, and finally the envelope model of the "Klito" pattern, which is fitted with the Houghton daylight loading envelope adapter.

**The M.C.C. "Excelda" Camera Set. Made by the Midland Camera Co., Ltd., Slaney Street, Birmingham, England.**

A feature of this hand-stand camera is that it is supplied with an extension adapter, fitted in the place of the focussing-screen, and converting the instrument temporarily into one of half-plate size. The drawing shows this adapter in use, the accessory folding, when closed, into the space of less than 6½ x 8 x 1¾ in. The camera, when in normal use for quarter-plate work, allows of an extension of 11in. from lens diaphragm to plate, or of 13½in. when advantage is taken of the swing front. This latter allows of the lens panel swinging each way, as well as of very considerable rise. The camera is also fitted with falling base-board for wide-angle work, brilliant finder, sunk level, two tripod bushes, and reversing back with folding hood. The top of the back frame also lifts up in order to allow of maximum rise in using short-focus lenses. Complete with three double solid-form quarter-plate slides, $f/7.2$ lens in "Auto" shutter, together with the half-plate adapter—with one single metal slide and carriers for the latter for postcard and quarter-plate, the price is £4 17s. 6d. A quarter-plate set of wide-range, and most useful to the worker who on occasion, while on tour, requires to make half-plate exposures.

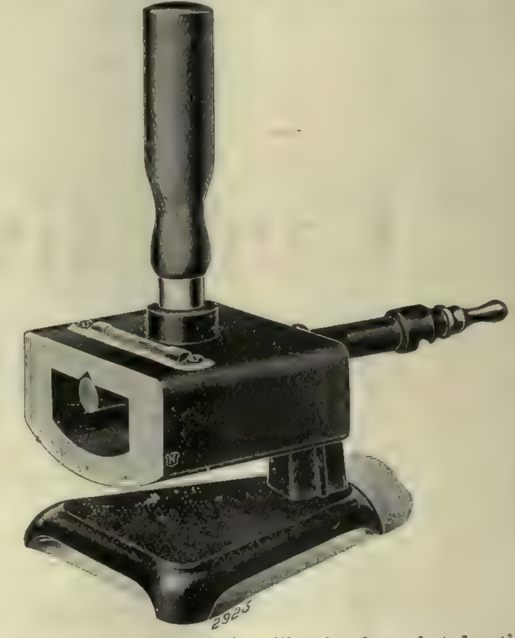


**Express Negative Boxes. Made by W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London, England.**

These are very convenient storage boxes for negatives, consisting of a light wooden drawer enclosed in a case of leather board, the drawer in each case providing space for fifty negatives in envelopes, the latter being printed with spaces for entries as to exposure, etc. The boxes are immensely more convenient than those of the ordinary type, since they can be stacked on each other to any extent, and the contents of any given one can be got at without disturbing the others. The prices, complete with fifty envelopes in each case, are: Quarter-plate, 1s. 6d.; postcard, 2s. 3d.; half-plate, 2s. 6d.

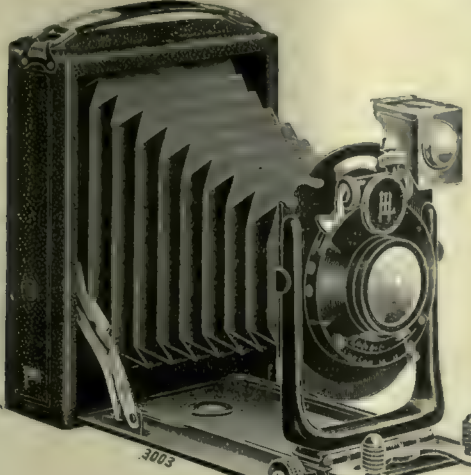
**The "Ensign" Dry Mounting Outfit. Made by Houghtons Ltd., 88 and 89, High Holborn, London, England.**

As shown in the drawing, this dry-mounting outfit consists of a heavy hollow iron fitted with a thermometer and heated by a gas-burner on which it rests. The iron attains the necessary temperature in three or four minutes, and can then be applied to prints to be mounted by giving it an even rocking motion. The appliance allows of the fixing iron (used in attaching the adhesive tissue to prints and to the mount) being likewise kept hot by the burner. Specially for mounting small prints in albums, etc., this outfit is a most useful one, but the iron can be used also for mounting larger prints by applying it step by step over the surface. Price 12s. 6d.; or a complete outfit, including print trimmer and zinc plate, the whole in a strong wooden box, 15s. 6d.



**Folding "Klito" Series B Hand Cameras. Made by Houghtons Ltd., 88 and 89, High Holborn, London, England.**

In this series of new models of compact folding hand cameras, designed and made throughout in their Walthamstow works, the makers have secured a most efficient combination of lightness, strength, convenience and smoothness in adjustment, and handsome appearance. These series B instruments are all of a type, built with mahogany body, aluminium base-board, black leather bellows, and nickelled fittings. The front, in each case, is of the stirrup pattern shown in the drawing—a one-piece aluminium casting which holds the lens-panel most rigidly in position. A most useful feature is the device by which the lens-front is drawn out when opening the camera: there is no possibility of the front catching or jamming when being drawn forward along the base-board runners. The rising front moves most smoothly, whilst the stirrup support itself is given an equally smooth cross-movement. These features are common to the whole of the B series, Nos. 3, 3d, 4, 4k, 4n, 4d and 4L, and the value given may be judged, for example, from the No. 3, which, in quarter-plate size fitted with "Ensign" anastigmat lens $f/7.7$, is sold at £2 15s. The features of the camera are clearly shown in the drawing, but an illustration cannot do justice to the most substantial wood and metal work which characterises these cameras. With Aldis "Plano" anastigmat $f/6.8$ the price is £3 5s.



The No. 3 "Folding Klito."

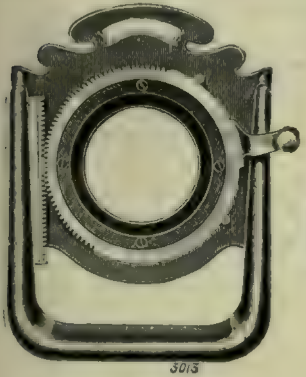


Fig. 1.

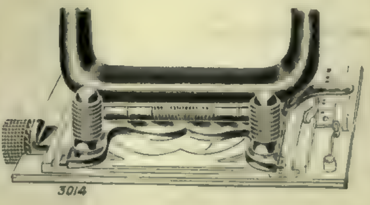


Fig. 2.

A further smaller series of folding "Klitos," the "De Luxe," are likewise British-made throughout. They are in general modelled on the preceding pattern, but are fitted with a number of movements conducing to still greater convenience and smoothness in working.

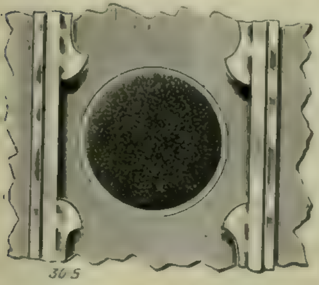


Fig. 3.

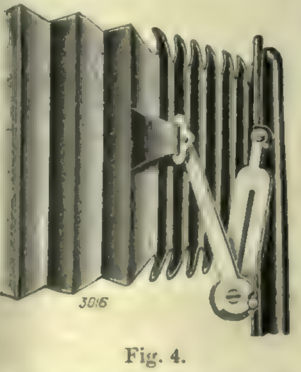
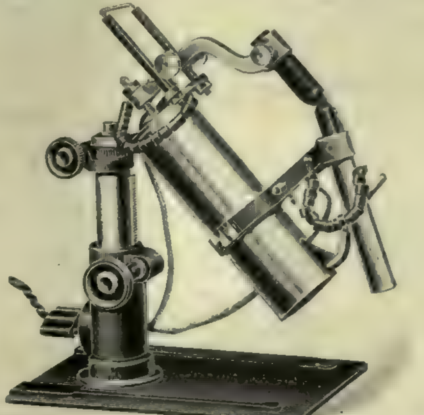


Fig. 4.

Thus, the rising front moves by rack and pinion as shown in the drawing. The lens-front draws out smoothly by means of the two milled heads shown in fig. 2, whilst a velvet pad let into the aluminium base-board seals the hood of the lense when the camera is closed (Fig. 3). A further accessory is the automatic bellows extension pieces, which bring the larger folds of the bellows forward, thus preventing cut-off when the camera is used at the normal extension (Fig. 4). Infinity catch, reversible view finder and level, and a specially rigid focussing hood are further features of these instruments. In the single-extension pattern the price of the folding "Klito" De Luxe, with $f/7.7$ "Ensign" anastigmat of 4¼in. focal length, "Ensign" Sector shutter and two single dark-slides is £3 15s. In the double-extension model, illustrated, the price is £4 7s. 6d.

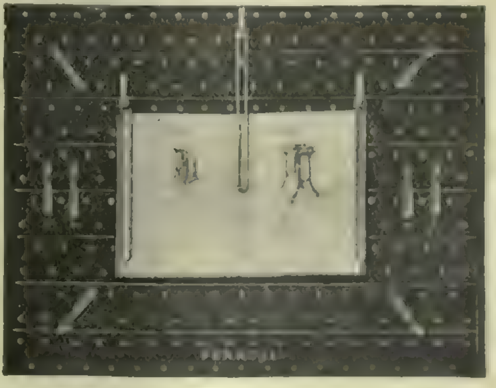
### The "Jewel" Portable Automatic-Feed Arc Lamp. Sold by C. M. Gibson, 24, Hatton Garden, London, England.

This newly-introduced lamp is an exceedingly useful one to the lanternist and enlarger, since it is entirely self-adjusting and requires no further knowledge of electrical matters than the ability to insert the plug supplied with the lamp into the holder of an ordinary fitting and to turn on the switch. It then supplies a powerful arc-light which can be used without attention for at least two hours at a time. The lamp, as shown, is supplied complete with resistance, the latter being adjustable to voltages from 70 to 250 volts, thus allowing of the use of a single lamp on different electrical circuits. The tray and pillar allow of the lamp being used in any ordinary lantern or enlarger, the up-and-down and cross-way movement of the arc being operated by the milled screws seen in the illustration. A special feature of the lamp is the constant direction of the arc secured by a small electro-magnet. The lamp is made in two patterns, each consuming 6 ampères:—No. 1 for continuous current, price £4 10s., and No. 2 for alternating current, price £5. A most excellent and convenient illuminant for the enlarger or optical lantern.



### The "Perkins" Clamp Copyboard. Made by A. W. Penrose and Co., Ltd., 109, Farringdon Road, London, England.

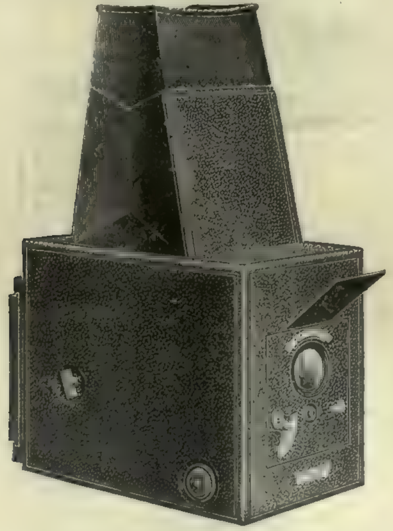
This appliance, though designed for the process engraver, is nevertheless an accessory most useful to any photographer who has any copying to do from books, manuscripts, or other originals which are awkward to arrange flatly before the camera. As will be seen from the drawing, the board is perforated by a large number of holes, all of the same size and taking two kinds of clips. The larger, three of which are seen in the drawing, serve to hold down the pages of



even a large and thick book; they are fixed to the board by metal plugs which enter the holes. The smaller clips are complete in themselves, and are used for holding thinner originals; they allow the use of a piece of plate glass in front of the original for the purpose of keeping it flat. The board is built up of narrow planks, separated from each other by about a quarter of an inch, and held rigidly together, so that they cannot twist or warp, by a metal clamp along each end and by two metal rods running the width of the board. In the 24 by 18 size the price of the board is £1 7s. 6d.; in 28 by 22 inches, £1 11s. 6d.; in 30 by 24 inches, £1 15s. 6d.; and in 36 by 26 inches, £1 19s. 6d., in each case inclusive of 3 large and 12 small clips.

### The "N.S." Non-Focal-Plane Reflex Camera. Made by James A. Sinclair and Co., Limited, 54, Haymarket, London, England.

While the past few years have witnessed an immense advance in popularity of the reflex type of camera, the direction in which makers have shown their enterprise has been strictly along the lines of the first really popular instrument. In these the focal-plane shutter was employed, and almost without a single exception makers have adopted this type of shutter as the only possible one in a camera of the reflector type. And such a course is natural, since the release of the shutter needs to be actuated by the upward movement of the mirror. Obviously the fact that the focal-plane shutter is a fixture in the camera and does not move with the extension of the lens-front or the rise and fall of the lens makes it easier to design a camera of the reflex pattern. The price paid for this facility is made up of a number of things. In the first place, the long moving blind of the focal-plane shutter is a surface which collects dust readily. But this drawback is less serious than others. It is less easy to construct a focal-plane shutter which will work with unfailing certainty year in year out, and under extreme variations of heat and cold. It is also more difficult to construct one which the unskilled user cannot derange. And, lastly, there is the further drawback—and one which perhaps the amateur worker does not realise as fully as he might—and that is the difficulty of providing in a focal-plane shutter speeds slower than the fifteenth or tenth of a second, which may be taken as about the slowest which can be obtained with the quarter-plate focal-planes. Most hand-camera work would be the better for a fuller exposure, and for that reason a reflex provided with a shutter which gives times of ⅛, ¼ and ½ sec. would be an instrument of real advantage as regards results. We may thus attach considerable importance to the introduction of a reflex camera in which the focal-plane shutter is dispensed with and one of the diaphragm type employed.



A camera of this description has been placed upon the market by Messrs. James A. Sinclair and Co., Ltd., its designation "N.S." indicating its joint designers, Messrs. A. S. Newman and James A. Sinclair. In this camera, the mechanical construction of which must be credited to Mr. Newman, two problems have been solved. The first is that of providing a conjunction of diaphragm shutter and mirror according to which the sequence of operations is as follows:—1. Lens open: Picture being focussed. 2. Release: Lens covered whilst mirror rises, then opened and closed to give exposure. 3. Shutter set again by turning mirror into down position. The second problem is to do all the foregoing and yet allow of the camera front being racked in and out and moved up and down as required in ordinary work. Mr. Newman has achieved the first of these ends by using underneath the mirror an opaque flap or screen, which covers the plate while the mirror rises (during which time the shutter aperture is covered), and then itself follows the mirror up, actuating the shutter and making the exposure.

The conjunction of the mirror mechanism with the shutter is done by an extremely strong yet flexible mechanical link, which allows of a to-and-fro movement of the lens-front of 3in. and simultaneously of the lens being given a rise of 1⅛in. Thus we have in the new "N.S." camera an instrument the bulk of which is only 6 by 7 by 7½in., which has an extension of 9in. from lens-diaphragm to plate, and is fitted with a diaphragm shutter of Mr. Newman's design, which is set in an instant to any one of a series of speeds from 1-100 to ½ a second in addition to "Time."

Though our description of the stages in the making of an exposure may have sounded alarming, yet in practice the manipulation is extremely rapid; a single turn of the outside lever puts down the mirror and a similarly rapid movement sets the shutter. And as regards release, in operation the mirror with its supplementary flap moves as though it consisted of one piece only, exposure of the plate following instantly on pressure of the release.

The makers frankly admit that, so far as the present design is concerned, they are limited to the 3 ins. to-and-fro movement of the lens front. This, of course, is ample for all ordinary work with a 6-in. lens, the camera allowing of 1⅛-in. rise with an *f*/4.5 anastigmat of this focus. When copying upon a scale not permissible with this lens, one of shorter focal length may be employed, whilst in place of a long-focus lens of the usual type the makers fit the Busch Bis-Telar of 10¼ ins. focal length, this lens being carried inside the camera and secured into the same threads provided for the 6-in. Zeiss "Tessar." Thus, within the limits imposed by the adoption of the non-focal-plane shutter, the reflex worker has still all his accustomed facilities, whilst the gain in reliability, range of slow speeds, and simplicity of manipulation are all highly positive advantages.

In a number of details the camera, as now placed upon the market, presents decided points of convenience. The sky-shade shown in the drawing is removable, so that it can be replaced by the Sinclair bellows form of hood. The focussing-screen is fitted ground side up, the makers finding this an advantage to users who have to wear glasses, as reflection of the latter in the focussing-screen is avoided. The hood may be supplied with a pair of focussing magnifiers, which spring into position on the hood being erected. The rotating back is provided with very simple stops; these latter consist of short slots cut into two opposite corners of the camera back.

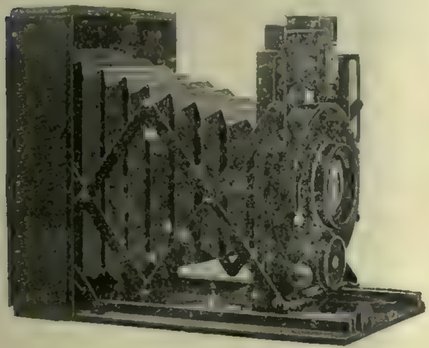
In setting the shutter, the mirror (and the flap below it) must first be put into the "down" position, thus automatically preventing accidental exposure of the plate. The adjustment for "Time" is readily done by turning a lever to T, setting the shutter to half second, and then pressing on the usual release in order to raise the mirror. Exposure is now commenced by pressing a second small lever on the camera front, and is ended by a second pressure.

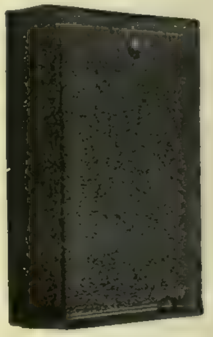
The position of the carrying strap—on the side of the camera to which the release is fitted (that not seen in the drawing)—makes for speed in working. The thumb being thrust under the strap, on bringing the camera up for exposure, the thumb comes naturally on to the release, and the fingers take a supporting position under the camera. A further minor convenience is the pair of slots provided on either side of the camera to take corresponding studs fixed to the sling strap. These studs have to be so fitted in the slots that no amount of "jigging" movement which the camera may get while being carried can dislodge them.

In conclusion, it need only be said that the new instrument in neatness of design and excellence of workmanship is all that the long experience and reputation of Mr. Newman in camera construction have led us to expect from him. Like any other reflex of the highest class, the price cannot be low. It is £23 10s. in the quarter-plate size, complete with Zeiss $f/4.5$ "Tessar" of 6-in. focus and three double slides. Extra for the "Bis-Telar," £3. It is not too much to signalise the new camera as the most notable departure in hand-camera construction during the past ten years.

### The Adams "Vesta" Pocket Camera, 1911 Model. Made by Adams and Co., 24, Charing Cross Road, London, England.

Since we noticed this highly portable pocket camera on its first appearance, Mr. Adams has embodied in it certain important improvements which provide within the same minute space additional facilities for the hand-camera worker. Focussing is now done by means of a straight winch screw fitted to the lens-front, and allowing of extending the camera up to focus for objects one yard away, whilst in the case of all objects from two yards distant to infinity the camera can be set at any given distance, closed, and when reopened will come automatically into the same focus. But perhaps the most important advance is the building of the "Identoscope" finder into the camera and of connecting it with the lens-front, so that the alteration in view when the lens is raised is shown in the finder both in the ordinary upright position and when the finder is reversed and the rise of the lens-front made landscape way of the plate. In each case the rise obtained is extremely great—in the upright position one inch; and landscape way of the plate, almost three-quarters of an inch. And this when using an $f/4.5$ anastigmat fitted in its diaphragm shutter. Such a result is an immense triumph of portability, and in the Adams "Vesta" is secured without the use of elaborate mechanism. All the working parts of the front and finder are exposed, though they and all other parts are perfectly covered when the camera is folded for carrying. In its rapid closing and re-erection for use, the wide range of its lens movements, the efficiency of its shutter, and the extreme compactness of the whole camera the new model "Vesta" is unique amongst instruments of the pocket class. Complete with six slides, single metal, hooded focussing screen, "Zeiss" $f/6.3$ "Tessar," and leather case for the slides, the price in 3½ by 2½ size is £14 14s.; in quarter-plate, £17 17s.

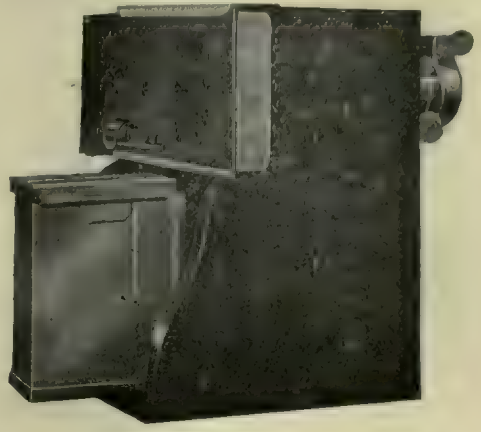




The Adams "Vesta" is likewise issued as a focal-plane model, fitted with the Minex shutter of this type, and the Identoscope finder, and rivalling in compactness and range of movements the lens-shutter pattern. Of the "Minex" shutter it is only necessary to say that no further refinement in focal-plane shutters can be imagined. With the shutter set the whole range of instantaneous exposures from ⅛ to 1-1,000 of a second, in addition to bulb and time, are instantly obtained, and the shutter remains at a given setting until intentionally readjusted, which is done simply by pulling out the winding key about half-an-inch and re-inserting it in its disc. The Adams "Vesta" is certainly the smallest focal-plane camera of its movements which has ever come into our hands. In the 3¼ by 2¼ size its price is £17 17s.; in quarter-plate, £19 19s. These include six double slides, focussing screen, Zeiss $f/4.5$ "Tessar," and a leather case for the slides.

### The "Fallowfield" Popular Ferrotype Camera. Sold by Jonathan Fallowfield, 146, Charing Cross Road, London, England.

In the 1911 model of this daylight loading camera for ferrotype portraits of size 1¾ by 2¼ins. a more substantial body is provided, all the brass parts being nickelled. The camera is fitted with a portrait lens working at $f/6$ in rack and pinion mount with stops for $f/11$ and $f/16$. The plates are supplied in a thin metal box, which is fitted into a chamber built by the side of that forming the camera. A spring presses the plates towards the back of this chamber, and the sliding frame carrying the ground-glass focussing screen brings each sensitive plate in turn into position for exposure. We found this arrangement very certain in its action. After exposure the plate is caused to drop into a German silver tank containing combined developing and fixing solution; from this it is removed, and is finished after a brief rinse. The apparatus is free from complicated working parts, but efficiently fulfils its purpose of providing the means of making numbers of ferrotype portraits with speed and certainty. The price is £3 10s., or complete with tripod stand, £3 17s. 6d., the outfit including a stained wooden box holding the camera, a supply of plates, and a water tank in which to rinse the finished pictures. Daylight-loading magazines, holding 36 plates, 3s. The combined developing and fixing solution is sold at 1s. per bottle of concentrated solution.



### "Glaukar" Projection Lenses. Sold by Emil Busch Optical Company, 35, Charles Street, Hatton Garden, London, England.

These are a new series of Busch anastigmat lenses made in focal lengths up to 6in., and of a working aperture of $f/3.1$. They are issued specially for cinematograph and other rapid photography on small plates, including the fastest description of instantaneous work on reflex cameras, such as the excellent instrument also made by the Busch Co., in several patterns, including one specially for nature-photography. The large aperture and excellent definition given by the lenses over the plates for which they are listed specially fit them for this work, as also for enlarging and projection. When using an illuminant of considerable size, such as the incandescent mantle or Nernst filament, a lens of this large aperture is particularly useful. The "Glaukar" anastigmats are issued in brass mounts, fitted with rack and pinion and with iris diaphragm of hard steel blades, which are thus uninjured in the enlarging or projection lantern. The following are the sizes and prices of the series:—

| No. | Diameter of Lens. | Focus. | For Plates. | Price. |
|---|---|---|---|---|
| 1 ......... | ¾in. | 2⅜in. | 1 3/16in. by ¾in. | £5 0 0 |
| 2 ......... | 1 1/16in. | 3⅛in. | 2¼in. by 1¾in. | 5 15 0 |
| 3 ......... | 1⅜in. | 4⅛in. | 3¼in. by 3¼in. | 6 10 0 |
| 4 ......... | 1¾in. | 5⅛in. | 4in. by 3¾in. | 8 0 0 |
| 5 ......... | 2in. | 6in. | 4¾in. by 3¼in. | 10 0 0 |

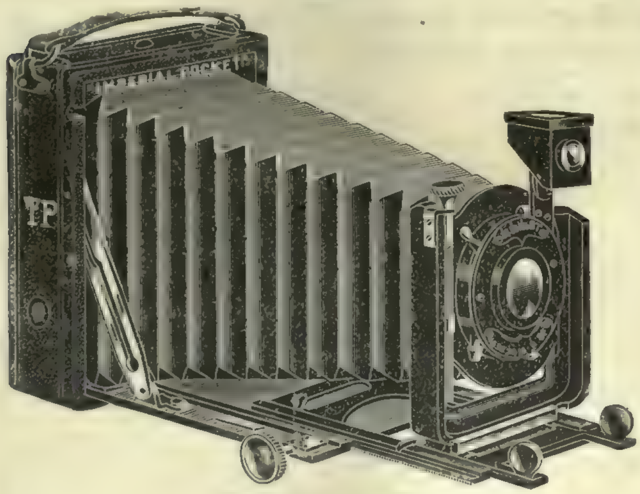
### Thornton-Pickard "Imperial" Pocket Cameras. Made by the Thornton-Pickard Manufacturing Co., Limited, Altrincham, England.

In this series of four hand-cameras of highly compact form, and made throughout by the Thornton-Pickard Company in their Altrincham factories, the requirements of the amateur worker demanding a camera of slim dimensions are excellently met. All four cameras are similar in type, being made with a stout wooden back, falling base-board of light metal carrying a U-form lens front of cold-drawn metal, this mode of manufacture being adopted for the strength and smoothness of finish attainable. In each model, even the cheapest, a winch-screw adjustment of the rising front is provided, and there is also ample cross-front movement. The metal parts of the camera are strongly made and well finished, affording convenience in use as well as handsome appearan[illegible] for attachment to a tripod are likewise provided in all four instru[illegible]

In the No. 1 "Imperial," sold at the low price of 30s., focussing is done by pushing the lens front along its runners, the movement being very smooth. On opening out the camera the infinity catch retains it in focus on distant objects. The lens is a single achromatic; the shutter, everset with "time," "bulb," and three instantaneous speeds; the finder, a brilliant reversible; and the dark-slides of the convenient single metal pattern. An excellent assemblage of movements for a camera sold at such a small price. The outside dimensions are under 5¾ x 4½ x 1¾ inches.

The No. 2 "Imperial."

The No. 2 is likewise of single extension, but is fitted with R.R. lens and rack-and-pinion focussing; the price in this case is £2 2s., or with Aldis anastigmat *f*/7.7, £2 17s. 6d.

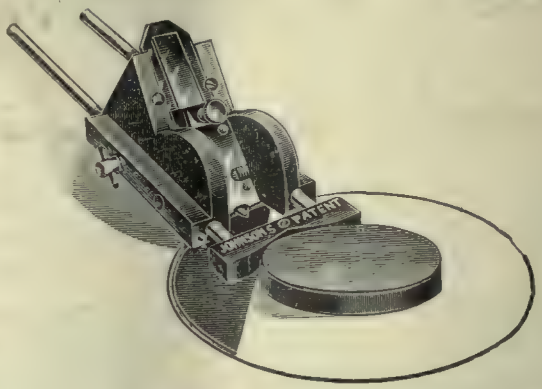


The No. 3 "Imperial."

Of the other two patterns, No. 3 is similar in general to No. 2, but is of double extension, allowing of 10 inches from lens diaphragm to plate. Price, with R.R. lens, £2 17s. 6d. In No. 4, also of double-extension pattern, the makers provide an instrument of the highest finish, sold complete with Aldis anastigmat *f*/7.7 and two metal slides, at the price of £4 12s. 6d. The whole series is one which can be offered with confidence by dealers to practical workers as embodying the actual movements which are required, and being at the same time of substantial workmanship.

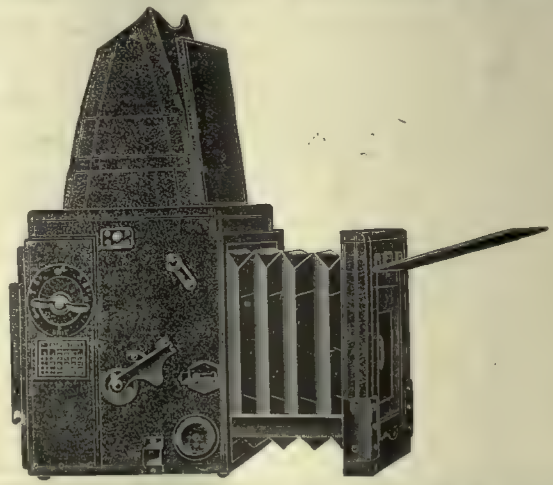
### The "Victor" Mount Cutter. Made by The Victor Co., 2, The Parade, Enfield Highway, Middlesex, England.

This is an exceedingly well-designed and strongly made appliance for preparing cut-out mounts with square, oval, or circular apertures of any size. It consists of a knife placed in a wooden mounting somewhat resembling a carpenter's jack-plane, and adjustable as required by the thickness of the card to be cut. The mounting of the knife gives the necessary bevel to the cut-out. As shown in the illustration, when cutting circular or oval apertures, the cutter is used with a frame or guide attached to it and fixed by a pair of set-screws, one of which is seen to the left of the drawing. This frame is then held against the wooden oval or circular template, which latter is held in place on the card by a couple of steel points projecting about ⅛-inch from the under-side. Any size of template may be used with the cutter. For cutting rectangular apertures the guide-frame is removed and the cutting knife then employed in conjunction with an ordinary straight-edge. The price of the cutter, inclusive of three oval and one circular template, is 12s. 6d. Extra knives, 6d. each. A most useful appliance for the commercial photographer, who is thus enabled to mount up odd-size prints in a most effective and workmanlike way.



### The Lancaster No. 10 (1911,) "Plano Reflex." Sold by J. Lancaster and Son, Limited, Camera Buildings, Broad Street, Birmingham, England.

Messrs. Lancaster, whose name is familiar as that of the pioneers of apparatus for amateur photographers, supply in this camera a demonstration of their sustained policy of providing up-to-date apparatus at popular prices. This, their latest model of reflex, is an instrument of thoroughly strong construction and modern design, the selection of the material and the accessibility of the working parts specially recommending it to workers abroad. In the quarter-plate size the camera takes a lens of 5½ inches focus in sunk mount, or 6 inches in standard mount. The lens is fully recessed with the camera used as illustrated; but the mount may be reversed for greater extension and then allows of 12 inches from lens diaphragm to plate. The hood is self-erecting and is mounted in a detachable frame, so that the ground glass can be immediately cleaned, and also the worker can take a sideway position, suggesting that an exposure is being made along a line at right-angles to the lens axis. The camera is fitted with Thornton-Pickard "Unit" shutter, the mirror being fitted with an automatic lock, so that exposures can be made with the camera held above the head, upside down. An outside lock of the mirror is a further convenience in making time exposures. Rack and pinion rise of front, a lens shade of large size, reversing



back are other good features of this soundly constructed instrument, the price of which in quarter-plate size, without lens, is £9 10s. Solid double dark-slides, 6s. 6d. each.

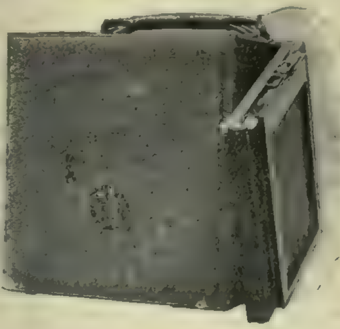
### The Adams "New" or "C" Pattern "Minex" Reflector Camera. Made by Adams and Co, 24, Charing Cross Road, London, England.

Our readers know Messrs. Adams as pioneers and specialists in hand-cameras of the reflector type, and they will, therefore, turn with more than ordinary interest to the following description of a reflex camera in which Messrs. Adams dispense with the focal-plane shutter without, however, restricting the range of movements of the instrument; also without increase of its weight or bulk, but, in fact, an appreciable reduction in these two respects. The problem to be solved in a camera of this type is the provision of an extensible mechanical connection or link between the mirror towards the rear of the camera and the shutter on the front. Such a connection, in order to maintain the range of movement sufficing for a double-extension camera, should allow of the lens front being moved forward, say, 5in., and of the lens-panel, even in the position of full extension, being raised an inch. How does Mr. Adams obtain this linkage of shutter and mirror mechanism without increasing the bulk of the ever compact "Minex"? By a device which, when it is inspected, seems the obvious and natural solution of the problem—namely, the Bowden cable, familiar in a miniature form to photographers in the "Antinous" release. Here you have a flexible connection which is itself light in weight, certain in action, and manipulated by a touch. The adoption of this device in the new "Minex" has allowed Mr. Adams to fit to the camera the well-known "Compound" diaphragm shutter, the range of speeds of which (from "bulb," "time," to 1-150th of a second), and the high efficiency, even at top speed, have been attested both by practical workers and those who have made measurements of the shutter's action. Despite the size of this shutter, when carrying an $f/4.5$ "Tessar" of 6 ins. focal length, the maker still gives us an extension of 11 ins. and an inch of rise (actuated by the convenient rack and pinion), and he mounts the shutter so that as a whole it is quickly removed from the camera in order to detach the back combination of the lens.

The extreme advantage of the Adams construction is seen in the readiness with which both "bulb" and "time" exposures may be given. The lever, seen in the recessed dial close to the shutter-release, is simply turned to "B" or "T" as the case may be. To set the shutter a lozenge-shaped lever on the other side of the camera, on being given a half turn, does three things in succession:—(1) Raises a blind close in front of the plate; (2) puts down the mirror; (3) opens the shutter, left closed from the preceding exposure. On pressing the release with the disc set at "time," the mirror rises and the plate-blind falls, commencing the exposure. A second pressure on the release closes the lens. With the disc set at "bulb" the lens remains open while the release is kept pressed, and for use with this setting the makers fit the Thornton-Pickard time-exposure valve, allowing of automatic bulb exposures up to three seconds. It is a matter of a second or two only to alter the adjustment from instantaneous to "T" or "B."

For instantaneous work the disc pointer is set to "I," and the shutter itself set by a half-turn of the two special pins mounted on it, the adjustment for speed being that familiar to users of the "Compound" shutter. Pressure upon the release, when the camera has been set as before, first closes the shutter and then raises the mirror, which movement in turn raises the blind in front of the plate; which latter, again, causes the lens to make the exposure for which the shutter is set. Though distinct operations, these follow so quickly upon each other that the worker would suppose that he was releasing the shutter in the ordinary way. In instantaneous work, therefore, the setting for each exposure simply consists in (1) turning the lozenge-shaped lever, which raises the back blind and puts down the mirror, and (2) giving a half-turn to the pair of shutter-pins. Any alteration in the speed of the shutter may, of course, be made, with the latter set, upon the usual circular dial.

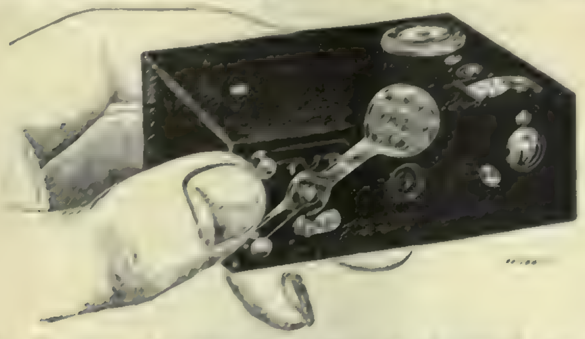
When we say that these conveniences are secured within the compass of a camera-body which, in the quarter-plate size, measures less than 6½ x 7 x 5½ ins., exclusive of the rotating back, it will be seen that we have here the art of the constructor *in excelsis*. Like its focal-plane predecessor—which pattern, of course, Messrs. Adams continue to manufacture and supply—the camera is fitted with large sky-shade measuring 4 x 4¾ ins., with self-erecting hood carrying within it magnifiers which spring into position, rotating back of German silver mounted on the same metal, the whole of remarkably light yet rigid construction. Complete, with three double slides and Zeiss "Tessar" $f/4.5$ of 6 ins. focal length, the price of the quarter-plate camera is £25 10s., that of the 5 x 4 £31.



It is at present impossible to say if the focal-plane shutter is to fall from favour as the exposing device in reflex cameras, but if it is reflex users will note with satisfaction that Messrs. Adams, always the pioneers in reflex matters, are the first to construct a reflex of the full extension to which we have been accustomed, of even smaller bulk than the focal-plane instrument, at the same time equipping it with a shutter of the high efficiency of the "Compound," and fitted to afford instantaneous, bulb, and time exposures, obtainable at will by the most rapid adjustments. It is difficult for the non-mechanical person to realise the difficulties which a constructor has to overcome in obtaining this end, and therefore we must congratulate Messrs. Adams on having produced a camera worthy of their past reputation—than which no higher praise can be accorded.

### The "Expo" Police Camera. Made by the Expo Camera Co., 256, West Twenty-third Street, New York, U.S.A.

In this camera we have another example of the perfection to which quite small pocket cameras calling for the minimum skill of the user have now been brought by makers who are able to issue them at an extremely moderate price. The "Expo" is a tiny camera measuring over all less than 3½ x 2⅜ x 1¼in. It takes a picture on roll-film practically 1 x 1½in., the negatives being of a shape which enlarges conveniently so as to secure the full subject on a postcard. The tiny camera is fitted with a focal-plane shutter giving one instantaneous speed in addition to time exposures. The lens is a single one, working at about $f/16$, and provided with a further diaphragm of $f/22$. The method of loading the camera is simplicity itself: the film spool of twelve exposures is simply inserted from the back of the camera into the space provided for it, the metal cover put on, and the winding key (shown folded flat in the drawing) turned until the figure 1 appears. After the twelve exposures have been made the whole spool is simply removed for development. The setting of the shutter is simply done by pushing the milled knob, seen near the thumb in the drawing, into the second slot for the instantaneous exposure, or into the first for "time." The drawing shows an exposure being made. On releasing the thumb the lens is automatically covered in readiness for re-winding of the shutter. The little camera is most strongly made, is quite free from complicated working parts, and should



enjoy an immense sale among those taking up photography for the very first time. Even the somewhat practised worker has no need to despise the "Expo," since, owing to the great depth of focus, the tiny negatives enlarge well up to lantern or postcard size, and thus allow of the instrument (it is not a toy) being conveniently used for obtaining many souvenirs of travel which would never be taken at all if a bulkier camera had to be used. The price of the "Expo" is 18s. 6d., complete in leather carrying case.

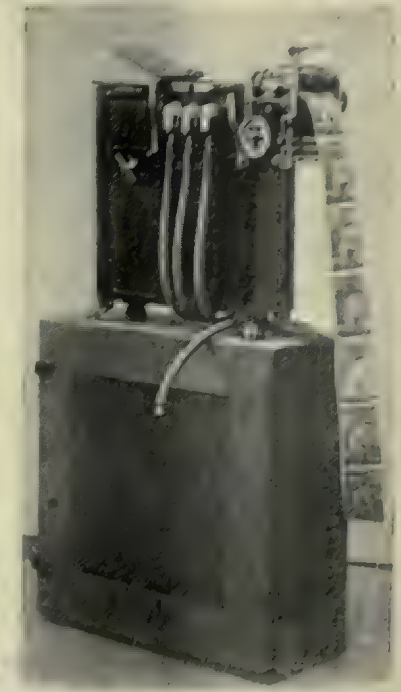
### The No. 0 "Graphic" Focal-plane Roll-Film Camera. Made by Kodak, Ltd., 57 to 61, Clerkenwell Road, London, England.

This new camera is one of fixed focus, taking a picture 2¼ x 1⅝in. The lens is either the Zeiss "Tessar," f/6.3 or the "Cooke" f/5.6. The shutter is the well-known multiple-slit focal-plane as fitted to the "Graflex" cameras. Here also the convenient adjustments of spring tension and slit-width are provided, affording a range of speeds from 1/10th to 1/500th of a second, the mechanism being of the high order familiar to "Graflex" users. In the "Graphic," automatic capping of the lens after each exposure is provided by the hinged hood seen in the drawing, so that the sensitive

film remains in position the whole time. The outside dimensions of the camera fall within 5¼ x 3½ x 3¾in. The finder is of a special pattern which can be used for holding at the eye-level both for horizontal and vertical pictures, and is fitted with a mirror for use when holding the camera lower down. The price of the No. 0 "Graphic," with either of the lenses mentioned above, is £10 10s.

### The "Thebugraph" Rapid Bromide Postcard Printer. Sold by C. Janzer and Co., 5 and 6, Gough Square, Fleet Street, London, England.

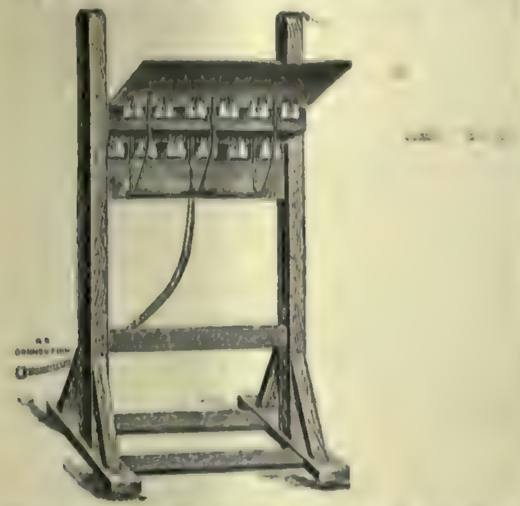
In any English speaking country the name alone of this apparatus will attract attention to it. We learnt with some interest from the English agents that the word is derived from the initials and first two letters of the surname of the inventor, M. Th. Busson. Hence "Thebu graph," pronounced "taybu graph." The "Thebugraph" is a bromide printing and developing machine which is worked in full daylight and produces printed, fixed, and washed postcards in strip form, as shown in the drawing. The lower part of the apparatus carries the roll of bromide paper, the negative being supported, film down, above this chamber, and being brought into contact with the bromide paper by suitable mechanism. The time of printing can be longer or shorter within narrow limits; but the best provision for the exposure of the prints is to screen, more or less completely, the negative chamber. The mechanism takes the strip of bromide paper (the length of which suffices for the production of 310 postcards) through the development tank, where it allows a time of development of one minute, thence into the fixer, permitting two minutes here, and thence for one minute through a washing tank. A fixing bath of



1 lb. of hypo. in 35 oz. of water, or roughly of 50 per cent. strength, is used, and suffices for complete fixation in the shorter time of fixing adopted. For the purposes for which the apparatus is chiefly intended—namely, the rapid production of postcards at public functions, on race-courses, processional festivals, etc.—the washing of one minute is found to be sufficient, the makers pointing to prints of two years of age which have proved fully permanent. On emergence from the wash-bath the band of paper passes through a system of rollers which squeeze practically all the water from it, and, at the same time, if required, produce a printed impression on the face of the card from inked type. Provision is made in the apparatus, as will be seen from the drawing, for the replenishment of the developing, fixing, and washing baths to make good the liquid carried away by the paper. This is done without opening the apparatus, and in the same way the negative can be likewise changed by closing the storage chamber by a sliding door. The apparatus is designed for the production of about 800 bromide postcards per hour, and in putting it before photographers the agents point to the sources of profit which may be utilised in producing quickly for sale postcards of events, ceremonies, etc., within half-an-hour or so of the actual occurrence. The novelty to the public of purchasing postcards wet from the press is no doubt one which will enhance this feature of the apparatus, the price of which, complete for working, is £45.

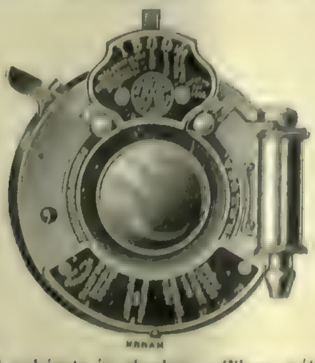
### The "Howellite" Portrait Lamp. Made by Howellite Burners, Ltd., 22, Farringdon Avenue, London, England.

Since some time ago we reviewed the excellent high-power incandescent burners of this firm, supplied for enlarging and lantern work, Mr. Howell has now introduced an installation of the lamps for portrait work which we are confident will fill a widespread want among photographers not having arc light available. The "Howellite" lamp, as shown in miniature in the drawing, consists of a battery of twelve of the "Howellite" inverted burners, all supplied from a single main, to which is attached a flexible metal tube and union, including (though this is not shown in the drawing) a main tap and by-pass. The former allows of the lamp instantly being turned down to the blue and then consuming only about three cubic feet an hour. A single turn of the tap instantly brings the light to full power. The battery of lamps is arranged on a light aluminium plate, readily coated with matt white to improve the diffusion of the light, which, however, even with a metallic reflector and without any diffusing screens, is remarkably soft and even. The colour is agreeable to the eyes, the light is without any sound, and the actinic power of the installation is such that fully-exposed negatives of three-quarter length figures are obtained with lens at f/6 in from one to two seconds. The lamp is mounted on a frame of the pattern shown in the drawing, but higher, namely 9 ft., counter-weights being provided so that the light is raised and lowered most smoothly and easily. From the constant enquiries which reach us for a powerful studio light, using gas, we are sure that the "Howellite" lamp supplies a present-day want. It is made in two sizes, No. 1, price £7 7s., No. 2, price £8 8s., the larger size being fitted with the No. 2 "Howellite" burner, as sold for projection lanterns. The makers name the candle-powers of the installations at 550 and 1,000, but as we have often said, such figures may often prove misleading, and the best indication is the practical results which a lamp will give. This in the case of the "Howellite" lamp we have had ample opportunity of confirming.



### The "Autotime" Scale. Made by Kodak, Ltd., 57 to 61, Clerkenwell Road, London, England.

This is a new device embodied in the design of the shutters for folding pocket and other Kodak cameras, its principle being that instead of troubling the user with diaphragm numbers, the diaphragm scale is marked with subjects, the smallest aperture corresponding with clouds, open views, whilst the larger are represented by near views and subjects in shadow. Thus, with the exception of moving objects (provision for which is made on the scale), the inexperienced worker sets his lens at the aperture simply by turning the pointer to the subject before him, whilst he sets the speed of the shutter in accordance with the prevailing light. The appliance is sold at 4s. 6d. for the majority of shutters, or at 6s. for the "Compound" shutter.



### The "Centrix" Camera. Sold by Marion and Co., Ltd., 22 and 23, Soho Square, London, England.

In this camera for hand-stand work the novel feature is the double-extension movement, which is made from the back of the camera, as shown in Fig. 2, and thus possesses the two advantages of: (1) very rapid change from single to double extension, and (2) even balance of the apparatus when employed, as it usually requires to be, on a tripod, when working at a double extension. The rear extension is provided with an engraved scale on the side of the camera to allow of rapid adjustment, and the whole instrument allows of a distance from plate to lens diaphragm of 10 inches, and thus with excellent rigidity. As will be seen from Fig. 1, the camera is well provided with all necessary movements—namely, rigid U front, rising and cross movement, in both cases by screw adjustment, "Compound" shutter, reversible brilliant finder and level, infinity catch, etc. The price complete, with three dark slides, is £5 10s., or £7 10s. with "Koilos" shutter, in each case without lens.

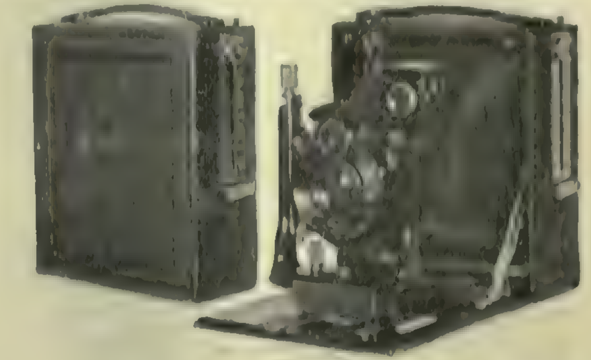


Fig. 1.

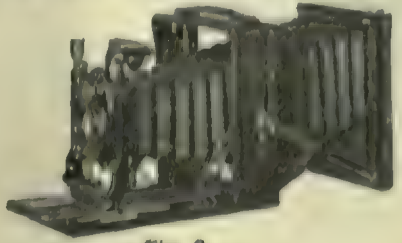
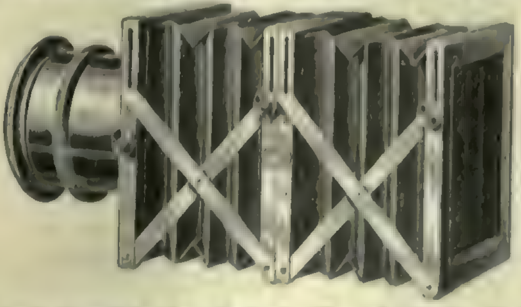


Fig. 2.

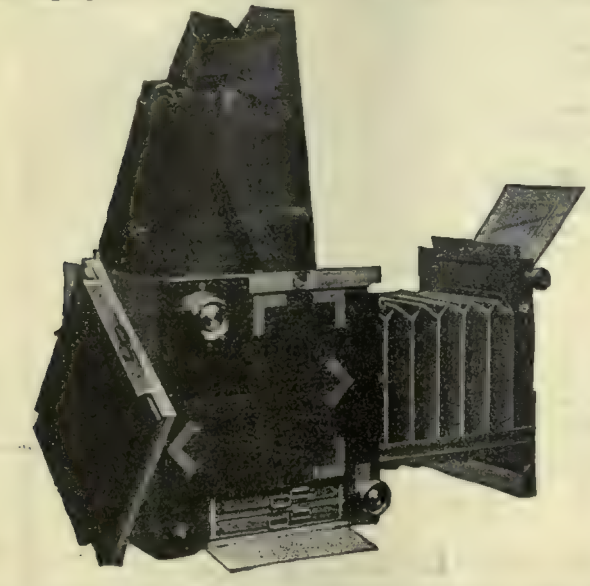
### The Sinclair Double-Extension Lens Hood. Made by James A. Sinclair and Co., Limited, 54, Haymarket, London, England.

A modified pattern of the Sinclair lens hood has recently been issued specially for telephoto workers or other users of long focus lenses. It is built from two hoods of the ordinary pattern held firmly together by a pair of clips. The advantage of this construction is that hood No. 1 can be used for ordinary purposes and the second hood attached when desired. The advantages of efficient screening of the lens, such as these hoods ensure, is so great in almost any branch of photographic work, but particularly telephotography, that the practical photographer will be wise in regarding this accessory as an indispensable part of his equipment. The price of the double-extension hood for lenses up to 2 in. diameter is 12s. 6d., for lenses up to 2½ in. 15s.



**The "Minex" Tropical Model Reflex Camera. Made by Adams and Co., 24, Charing Cross Road, London, England.**

In this model of the Adams "Minex" camera the makers have spared no pains to embody in the build of the instrument every security against the extremes of heat or damp to which a camera can be exposed in tropical countries. The body is built throughout of high-seasoned teak, and is both bound in brass and fitted with brass angle pieces set into the walls of the body. Brass is likewise used for the whole mechanism, including the rotating back, whilst the bellows is of Russian leather. While these features necessarily add somewhat to the weight of the instrument they provide the assurance that the worker will be free from troubles due to shrinkage of woodwork or binding of metal parts. The tropical models are issued at an additional price of £7 15s. in the quarter-plate size, £8 15s. in the 5 by 4, or £10 in half-plate.



**"Carbine" Roll Film Cameras. Sold by W. Butcher and Sons, Limited, Camera House, Farringdon Avenue, London, England.**

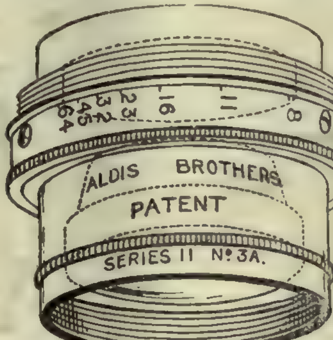
In the new "Carbine" No. 5 folding pocket camera for roll-film or plates Messrs. Butcher provide the fullest range of movements and adjustments. The camera is fitted with either the Aldis "Uno" anastigmat *f*/7.7, or with the Beck "Mutar" *f*/6. The latter is a lens of the unsymmetrical type giving foci of 4¾ in., 7½ in., and 9¼ in., the camera being provided with a focussing scale for use with the complete lens and with infinity marks for the separate components. In each case provision is made for proper setting of the lens for both plates and films. Thus, particularly for work on a light tripod, for which purpose the camera is "bushed," this selection of lens is particularly useful. The lens-front is of the most solid U-form pattern with screw rise, as well as cross-front sliding movement. It carries the Bausch and Lomb "Automat" shutter, as also reversible brilliant finder and level. The camera is also fitted with side struts for the bellows for bringing the larger fold forward when working at long extension. The spool chambers are fitted with nickelled frames, removable from the camera for insertion of the spool of film, and the back of the instrument allows of single metal dark-slides being used without adapter. Covered in morocco leather, and most solidly and rigidly made throughout, the No. 5 "Carbine" is as good a roll-film camera as can be desired. In the quarter-plate size the price is £4 12s. 6d. with the Aldis lens, or £5 15s. with the Beck "Mutar." In postcard these prices are £5 15s. and £7 5s.

The No. 5 "Carbine."

The No. 4 "Carbine" is on the general lines of the No. 5, but is of single extension, and is covered in leatherette. The price is £3 12s. 6d. with Aldis lens, £4 2s. 6d. with Beck "Mutar." In the postcard size these prices are £4 12s. 6d. and £5 5s.

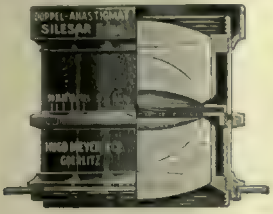
**The 3A Series II. Aldis Anastigmat f/6.3. Made by Aldis Brothers, Old Grange Road, Sparkhill, Birmingham, England.**

In this addition to the Aldis lenses an anastigmat of large aperture and of small dimensions is offered at a very moderate price. In the lens submitted to us the focus is 8 in., but the diameter of the lens-barrel is only a shade over 1½ in., so that, though a very efficient lens for half-plate or postcard work, the new 3A can be fitted to as small a diaphragm shutter as the No. 3 "Koilos," though in this case the effective aperture of the lens is reduced to *f*/6.8. The special construction of the lens includes a front component of deep curve, yet the definition over the full plate, even with considerable rise of front, shows that the lens is an excellent instrument for all descriptions of photography. The illustration shows the exact size of the lens, the price of which, with iris diaphragm, is £3.

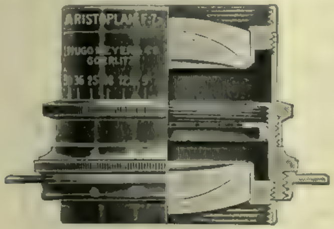


**"Silesar" and "Aristoplan" Anastigmats. Sold by O. Sichel and Co., 52, Bunhill Row, London, England.**

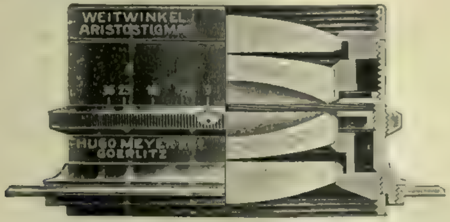
The first of these new lenses (the "Silesar") is an anastigmat of the extreme aperture of *f*/4.2, yet the constructors have secured this high speed in a symmetrical lens consisting of two entirely cemented triple combinations, and this, at the same time, with remarkable freedom from aberration. Each separate lens can be used as one of about double the focal length at an aperture of *f*/12. The powers of the lens are well exemplified in the No. 0 sent to us for examination, of focal length 4¾ in. and covering, at the full aperture, a quarter-plate, whilst with a smaller stop a cabinet-size picture is well covered. The advantage of securing the large aperture by other means than that of an air-space construction is one which practical workers have learnt to appreciate, a lens of this type calling for less shading and being particularly valuable in dealing with subjects where a strong light falls in the direction of the camera. The "Silesars" are made in a long series of focal lengths, from 1⅝ in. to 14 in., those of medium focal length 4¾ in. to 7 in. being particularly suitable for reflex and other cameras, whilst the larger lenses are particularly well adapted for studio and other portraiture. Although a lens of high quality, the prices of the "Silesar" are moderate—£5 15s. in the case of the quarter-plate lens mentioned above, or £18 for a 10½ in. focus suitable for studio portraiture on plates up to whole-plate and covering, at a smaller stop, a 12 by 10. The lenses thus appeal to the photographer who wishes to possess an instrument capable of the most rapid work in the studio, and, at the same time, one which he can use on plates of larger size when photographing groups, architecture, and other outdoor subjects.



In the "Aristoplan"—also a symmetrical cemented lens—the aperture is *f*/7.2, each combination being likewise available as a lens of about double the focal length. The lens covers up to an angle of 82 deg., and is, therefore, a most useful rapid anastigmat when used at the full aperture, and, at the same time, a fairly wide-angle lens when somewhat stopped down. The compact construction of the "Aristoplan" makes it specially suitable for hand-cameras. The price of the 4¾ in. focus is 39s., the lenses being made also in foci of from 3½ in. to 20 in.



A further new lens by the same makers, particulars of which we quote from the catalogue, though we have not been able to examine an actual instrument, is the "Aristostigmat," a wide-angle lens working at *f*/9, and covering up to the large angle of 100 deg.



This is a lens of aperture sufficient for many of the purposes of hand-camera photography, and, at the same time, serviceable for architecture, copying work, and other photography where extreme covering power is required. The price of the 4¾ in. focus covering a 7 by 5 plate at full aperture is £2 10s.

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### The "Holos Convertible" Wide-Angle Lens. Made by W. Watson and Sons, Ltd., 313, High Holborn, London, England.

In this new edition to the highly esteemed series of "Holostigmats" the makers provide a lens including the wide angle of 110 deg.—that is to say, a covering power of a half-plate in the case of the 3¼ in. lens. Such a wide angle is usually avoided if circumstances permit, but a reserve of covering power, when working at a somewhat narrower angle, is most frequently an urgent necessity in architectural and similar work, where ample use has to be made of the rising front. Thus, though the 3¼ in. "Convertible Holos" covers the half-plate, a photographer would usually be well advised to employ for half-plate negatives the 4.6 or 5 in. lens, either of which fully covers a whole-plate at the full aperture of the lens, namely, *f*/11. The lenses, it should be added, are separable, so that the front and back combinations may each be used as a single lens at an aperture of *f*/16. Thus, in the case of the 5 in. lens, foci of 8 in. and 9½ in. are available. In other lenses of the series the focus of each combination is the same; for example, the 4.6 in., which is made up of two components each of 8 in. focus. A note should be made of the two lowest foci in the series of 3¼ in. and 3½ in. focal length, which should be useful wide-angle lenses to quarter-plate workers, and of great service also to users of single-extension reflex cameras, who by their aid can use the reflex for copying same size. The prices of the lenses range from £3 7s. 6d. for the 3¼ in. focus, £4 10s. for the 4.6 in., and £12 for the 9.2 in. covering a 15 by 12 plate.

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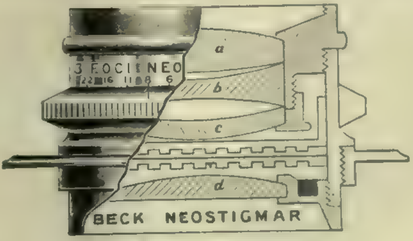
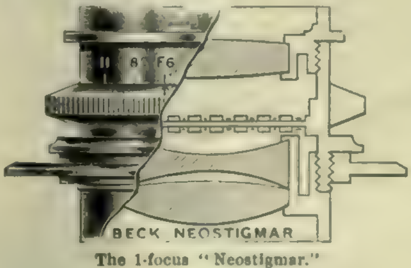
### The "Neostigmar" Lens. Made by R. and J. Beck, Ltd. 68, Cornhill, London, England.

In this lens, which is evidently a further development of the principle embodied in the "Isostigmar," the makers provide an anastigmat of aperture *f*/6, the separate components of which may be used as single lenses of foci 2 and 1½ times that of the complete lens. Thus, in the quarter-plate lens of 4¾ in. focus we obtain also lenses of 7¼ in. and 9½ in. focal length, and this, as our tests have shown, without sacrificing the optical qualities of the complete lens. Moreover, the "Neostigmar" is issued at an extremely moderate price—£2 10s. in the case of the lens just instanced. As will be seen from the sectional drawing, the "Neostigmar" is a four-lens system, but only one of the components is placed behind the diaphragm, this arrangement avoiding the production of flare spot, the liability to which, of air-space lenses, frequently deters photographers from taking advantage of them in preference to objectives of cemented glasses. We can say, however, that the lens which we have examined fully bears out the claims of the makers in this respect, as also in covering power and fineness of definition. The *f*/6 "Neostigmar" is also made in a non-separable, or one-focus, form, the price of the 4¾ in. being £2, of the 6¾ in. £2 14s., and of the 8¼ in. £3 5s., prices which it will be seen are under those of many R.R. lenses.



The 3-foci "Neostigmar."

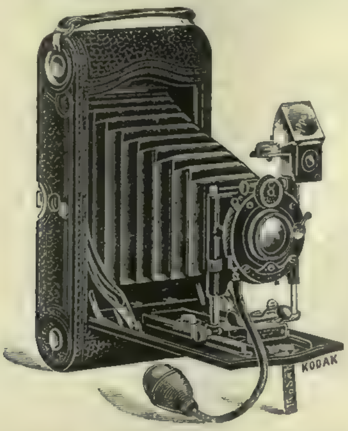


The 1-focus "Neostigmar."

Two further series are also made (3-foci and 1-focus, respectively), both working at *f*/7.7. The price of the 4¾ in. 3-focus lens is £1 17s. 6d., of the 1-focus £1 10s. In view of the great number of hand-cameras which now provide double extension, the advantage of an inexpensive lens such as this should be widely felt. The "Neostigmar" complete is amply sufficient as regards aperture for every ordinary purpose, whilst the single components used at an aperture of *f*/16 are most useful with the camera held on a stand in cases where the subject is required on a larger scale, or where the photographer is forced to take a somewhat distant standpoint.

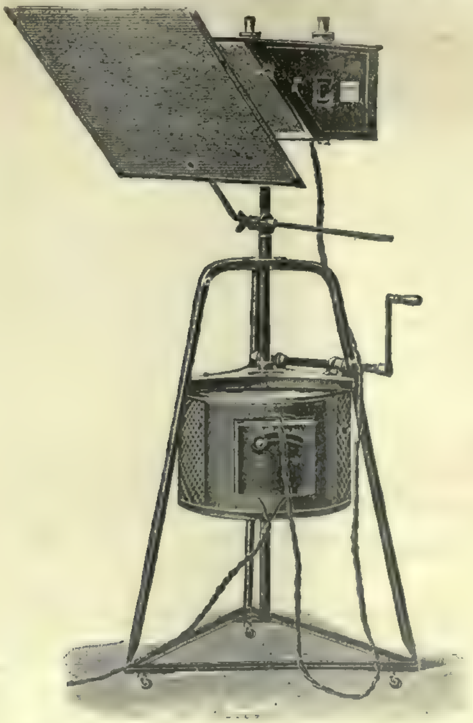
### The No. 3A Special Kodak. Made by Kodak, Limited, 57 to 61, Clerkenwell Road, London, England.

This roll-film folding pocket camera for postcard pictures (3½ by 5½) is of the general pattern of the F.P.K. instruments, but includes movements such as screw rise and fall of front, and is fitted with the convenient "Compound" shutter. The instrument before us carries the Cooke Series IIIA. anastigmat of 6⅞ in. focus and working at *f*/6.5. Complete with reversible brilliant finder and level, rack and pinion focussing, two bushes for attachment to tripod, the price is £11. With Zeiss "Tessar," *f*/7, £12 18s. 6d.



### The "Photo-Lumen," Studio Arc Lamp. Sold by the Globe Electric Co., Ltd., 11, Farringdon Avenue, London, England.

This new lamp for studio portraiture is of the open-arc type, the carbons being mounted at a somewhat acute angle to each other in holders which allow of either being quickly removed and replaced by fresh. The arcs are entirely self adjusting, remaining in work for any reasonable period without attention, and are mounted in a light metal chamber, the floor of which collects any fragments of carbon falling while the lamp is working. This enclosing case is likewise fitted with a ground glass screen, and with a hinged diffuser of thin fabric which can be turned about, by means of a universal joint, into any position. The resistance is contained in the drum-shaped enclosure seen in the lower part of the drawing, the standard which supports the arcs passing through this drum and being raised or lowered by a screw wheel. From our own inspection of the lamp we found it to give an extremely brilliant light when consuming 15 ampères of current, the light obtained being extremely steady and silent. The price of the complete lamp, which has already achieved great success among German photographers, is £30.



In addition to the "Photo-Lumen," the Globe Company also supply studio lamps of the open and enclosed type, both for portraiture and printing purposes, at prices ranging from £4, upwards. Full illustrated particulars of the very complete series of photographic lamps may be had upon application.

### "Klimax" Hand Cameras. Sold by W. Butcher and Sons, Limited, Camera House, Farringdon Avenue, London, England.

In the two new models of this series of cameras, the Nos. 1 and 2, the makers have adopted the most rigid and convenient U-front, with corresponding solidity in other parts of the instruments. The base on which the U-front is mounted is fitted with a spring hinge, so that on grasping the two convenient finger-pieces in the drawings the front is drawn forward most smoothly, catches at the infinity point, and is racked further forward on pressing down a small milled head. The fittings include screw rise, sliding cross movement, brilliant reversible finder and level, detachable "Luxos" shutter, and swing back, a special construction of the side-struts allowing of the camera-back being tilted away from or towards the base-

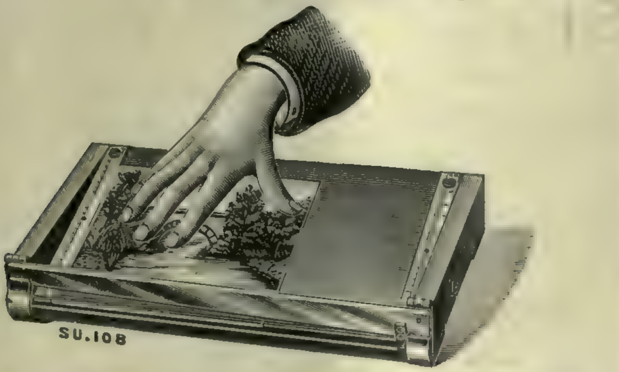
The No. 1 "Klimax."

The No. 2 "Klimax."

board. Fitted also with two bushes for attachment to the tripod, hooded focussing-screen, and two single metal dark-slides, the price of the single-extension model with Aldis "Uno" anastigmat *f*/7.7 is £3 15s. in quarter-plate size, £4 15s. in 5 by 4 or postcard. In the case of the double-extension pattern these prices are £4 7s. 6d. and £5 7s. 6d.

**The Eastman Trimming Desk. Made by Kodak, Limited, 57 to 61, Clerkenwell Road, London, England.**

In this new pattern trimmer the principle adopted is that of moving the print, held firmly on a board, against a cutting blade which has a little play. As shown in the drawing, the blade is placed slightly above the board, which latter has only to be pressed on the edge next to the worker in order to take off the portion of print not required at one even stroke. The springs of the board bring back the latter to its position on pressure being released. The trimmer is thus very rapid in action, and the further advantage is that the bar under which the print is guided is made of transparent celluloid, so that the whole of the subject right up to the cutting edge of the blade can be seen when trimming. The trimmer is fitted with graduated scale on either side of the board, and is most solidly made in varnished pine. It is issued in one size only, namely, with blade 12½ in. long. The price is 17s. 6d.



Stigmatic and Carfac Lenses.—These anastigmat objectives of Messrs. J. H. Dallmeyer, Ltd., Denzil Road, Neasden, London, England, are now issued in black mounts with a neat milled ring, actuating the iris diaphragm. This new construction allows of the mount being smaller, whilst the appearance, particularly for hand-camera work, is better. Moreover, a large number of the lenses themselves may be fitted in one standard mount.

"Ensignette" Accessories.—A new model of the "Ensignette" developing tank now allows of the spool being simply unrolled for a few turns and being then automatically extended in the developing tube on thrusting in the bar. This greatly simplifies the loading of the tank, the development (time) of the exposures being done in daylight without a dark-room. The price of the tank remains the same—namely, 7s. 6d.

The Thornton-Pickard Ruby Waterproof Focussing Cloth.—The Thornton-Pickard Company have just introduced this new focussing cloth prepared from the "Erebus" rubber-free cloth. The cloth is black outside, ruby inside, the inside surface having a texture which is comfortable to the head when the cloth is in use, whilst the glazed outer surface excellently repels water. Of large size, 36in. x 48in., and perfectly opaque to light, the cloth is a great improvement on the heavy velvet or semi-opaque silesia focussing cloths which many photographers use. The price is 4s. 6d.

The Zeiss "Magnar" Telephoto Camera.—In the latest model of this camera, specially made for hand-camera telephoto work, the complete telephoto lens of *f*/10 aperture and 32 ins. equivalent focal length is fitted so as to be quickly removable and replaceable by an 8¼ focus ordinary objective, such as the Zeiss "Tessar." For much of the work undertaken by Nature-photographers and others for whom the camera is specially intended, this extension of its powers should greatly add to the usefulness of the camera, which, with the telephoto lens removed, becomes a box instrument for work photographed at a normal angle.

Photographic Thermometers.—We have received from the Agathos Photo Requisites Co., 8, Coalbrook Mansions, Bedford Hill, Balham, London, England, a thermometer specially made for photographic use. It is of the convenient length of 6in., is graduated from 30 to 130 deg. F., though it will stand a much higher temperature. The solid glass stem with white enamel back and bold figuring of the degrees makes it highly convenient for use in the dark-room and elsewhere. The price is 1s. 9d. The Agathos Company also supply floating thermometers (with internal paper scale) of the more fragile type at prices from 8d. to 1s.

By-pass Gas Burners.—A most convenient pattern of by-pass burner is the "Eanco," a new introduction of the K. A. Co., 15, College Glen, Maidenhead, England. The valve of the burner is actuated by a small milled screw, like the focussing head of a hand-camera. A quarter-turn reduces the gas flame to the blue or raises it from the latter to full power. A separate adjusting screw is provided to allow of adjustment to any particular pressure of gas supply. The burner is made in two patterns, straight for fixing on upright gas fittings, or elbow where the gas connection is horizontal. The most convenient dark-room burners which we have seen. Price, either pattern, 1s. 3d.

The Dallmeyer Time-Exposure Valve.—A very neat and tiny valve for automatic exposures with diaphragm shutters is a new specialty of Messrs. J. H. Dallmeyer, Ltd., Denzil Road, Neasden, London, England, which can be recommended for its minute proportions. The little valve measures less than 1½ in. in length and is about ⅜ in. diameter. It is graduated for a series of exposures as follows:—1/50, 1/25, ⅛, ¼, ½, 1, and 3 seconds. The new valve is issued at 2s. 6d.

TIME EXPOSURE VALVE

The Bowling Hypo Jug.—A useful vessel for rapidly dissolving hypo or other chemicals is that shown in the drawing. The chemicals are placed in the perforated cup, the jug simply filled up, when the salts automatically dissolve without stirring. The jug is supplied by Messrs. Houghtons Ltd., 88 and 89, High Holborn, London, England. Prices, 20oz., 2s. 6d.; 40oz., 3s. 9d.

Electric Dark-room Lamps.—A useful fitting of Messrs. Houghtons Ltd., for dark-rooms where electric light is available is that shown in the illustration. It is an adapter, fitting into the holder of any electric lamp, and serving to hold two lamps, either or both of which can be switched on independently and thus allow of white or ruby light being obtained at will in the dark room. The switch of each lamp is differently shaped, so as to be recognisable by feel in the dark. The price of the two-light adapter is 4s. 6d., that for three lights 7s., in each case without lamps. Ruby or amber lamps of 16-c.p., 3s. 6d. each.

"Paragon" Border Negatives.—A series of most tasteful border negatives, producing the effects so much admired in the work of many American professional photographers, is being supplied by Messrs. O. Sichel and Co., 52, Bunhill Row, London, England. They are made on stout celluloid film, and in each case are supplied with masks ready for use. The series includes negatives for oval and square pictures, in each case for sizes of opening from 2 x 2¾ to 9 x 7 inches. Prices from 3s. to 7s. 6d. A further smaller series, specially designed for oblong pictures and suitable for small vignetted groups, is sold in sizes of opening from 4½ x 3 to 11 x 7¾. Prices, 8s. 4d. to 14s. 6d. Application should be made to Messrs. Sichel for a booklet illustrating these most tasteful designs.

Moss Acetylene Generators.—Messrs. R. J. Moss and Sons, 98 and 99, Snow Hill, Birmingham, England, send us several of the latest patterns of the acetylene generators, in which they have for years past so successfully specialised. Of these the square pattern "Moss-Abingdon" generator is as convenient a portable installation as could be desired, and one particularly suitable for enlargers, lecturers, etc., in foreign countries where gas or electric supply may not everywhere be available. Both in design and solid construction, this generator, like all the apparatus made by Messrs. Moss, is the work of thoroughly practical constructors, who understand the requirements for the steady and satisfactory generation of acetylene. The "Moss-Abingdon" is supplied with plugs facilitating clearing of the pipes, and is fitted throughout with most substantial gas cocks and carbide receptacles. To hold one pound of charge the price is 27s. 6d.; for 1½ lb., 32s. 6d.; and for 2½ lbs., 40s. Our readers requiring generators, jets, or any accessories for acetylene work cannot do better than apply to Messrs. Moss for their full 1911 list.

Ross Twin-Lens Camera with Multi-Speed Shutter.—Messrs. Ross., Ltd., 3, North Side, Clapham Common, London, England, have newly issued their well-known twin-lens camera of the reflex type with the taking lens fitted with the "Multi-Speed" shutter. We have referred in past issues of the "B.J." to the wide range of speeds from "time" to the exposures of extreme rapidity afforded by this new diaphragm shutter. In the Ross twin-lens the advantages of this instrument are secured in conjunction with a camera which, in the quarter-plate size, measures, when closed, only 7¼ x 5¼ x 5 ins. Like other models of the Ross twin-lens, the workmanship throughout is of the highest, the camera being covered in hard black leather which is practically indestructible.

New "Adon" Telephoto Lenses.—Some further additions to the most useful "Adon" series of lenses have recently been made by Messrs. J. H. Dallmeyer, Ltd., Neasden, London, England. A fixed-focus is adopted, the lenses being intended specially for snapshot work on short-extension cameras. By their use exposures may be given as with a lens of the ordinary aperture, but pictures obtained which are from two and a half to five times the scale of those made with a lens of the normal focus for the plate. The new instruments are lightly made in aluminium. The focal lengths and prices are given in the following table:—

QUARTER-PLATE LENSES.

| Series. | No. | Aperture. | Extension. ins. | Focal Length. ins. | Price Fixed Focus. £ s. d. |
|---|---|---|---|---|---|
| VII. | 2 | F/10 | 6 | 15 | 4 0 0 |
| X. | 2 | F/6 | 5½ | 12 | 6 6 0 |
| XI. | 2 | F/4·5 | 5½ | 12 | 9 9 0 |
| HALF-PLATE LENSES. | | | | | |
| VII. | 4 | F/10 | 8 | 20 | 7 15 0 |
| X. | 4 | F/6 | 7½ | 17 | 11 0 0 |

Nos. 2 and 4 Series VII. may be fitted with focussing adjustment at an extra cost of 15s. each.

Nos. 2 and 4, Series VII., may be fitted with focussing adjustment at an extra cost of 15s. each.

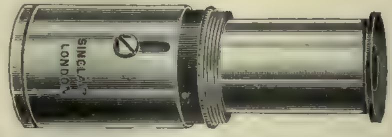
The Dallmeyer Process Lens.—An anastigmat, specially made in the Dallmeyer factories for the requirements of process workers, is supplied in a series of four focal lengths by Messrs. Hunters, Ltd., 26 to 29, Poppin's Court, Fleet Street, London, England. The lenses are fitted with iris diaphragm from $f/9.5$ to $f/64$, and with rotating ring to hold the diaphragms for use in half-tone and three-colour work. The sizes and prices are as follows:—

| | |
|---|---|
| No. 1, focal length 14in., aperture $f/9.5$ to cover a plate 12 x 10 in. | £14 15 0 |
| No. 2, focal length 19in., aperture $f/9.5$ to cover a plate 15 x 12 in. | 18 10 0 |
| No. 3, focal length 27in., aperture $f/9.5$ to cover a plate 20 by 16 in. | 29 10 0 |
| No. 4, focal length 30in., aperture $f/9.5$, to cover a plate 24 x 20 in. | 34 15 0 |

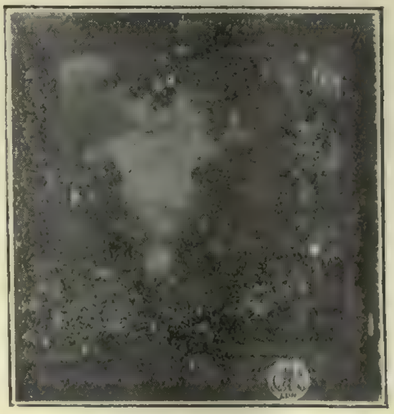
Prisms for use with these lenses, the mounts of which are threaded for the purpose, are sold (also of Dallmeyer manufacture) at the following prices:—

| | |
|---|---|
| No. 1, 2½ in. 12 x 10 in. | £7 5 0 |
| No. 2. 3in. 15 x 12 in. | 8 15 0 |
| No. 3, 3½ in. 20 x 16 in. | 10 10 0 |
| No. 4, 4in. 20 by 24 in. | 13 0 0 |

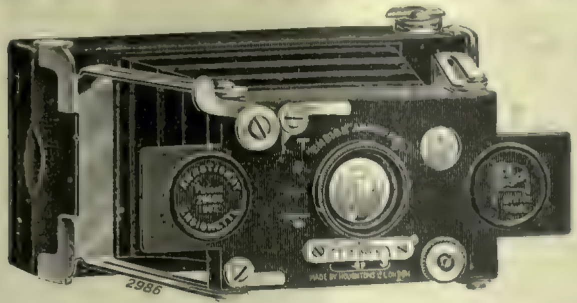
The Sinclair Focussing Magnifier.—A new model of the well-known Ramsden type of focussing eyepiece has just been issued by Messrs. James A. Sinclair and Co., Ltd., 54, Haymarket, London, England, its notable features being the sharp achromatic definition, combined with fairly high magnification, and the convenient distance (from 3¼ to 4in.) of the eye from the ground gless when using the magnifier. The eyepiece proper is supplied screwed into an extension tube, the length of which latter is made adjustable for different sights, and may be set at any given length by a turn of a screw. The eyepiece screws into this extension tube and then measures 2in. in length by 3⅜in. diameter. The price complete in leather case is 12s. 6d.



Tapestry Backgrounds.—A new series of backgrounds, which we can heartily recommend to the photographer anxious to secure handsome effects in his prints at little trouble, are a quite new introduction of Mr. C. A. Rudowsky, 89, Chiswell Street, London, England. The character of the grounds may be roughly judged from the reproduction of an interior and an exterior. Apart from the pleasing effect of a tapestried ground in the portrait, these new accessories contribute to the furnishing of the studio. They are supplied (8ft. x 6ft. 6in.) at 58s. each in monochrome, or 68s. each in colours.

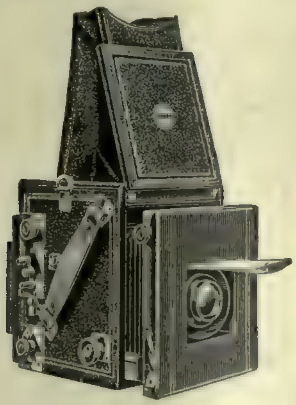


New Model "Ensignette."—The original "Ensignette" camera, the dainty instrument which at the price of 30s. still continues to enjoy enormous popularity, has now been supplemented by a focussing model allowing the use of anastigmat lenses by standard makers of aperture from $f/6.8$ to $f/5.8$. The drawing shows the new instrument, which is practically identical with the ordinary model, save for the milled head, seen to the right on the lower edge of the camera, which actuates the focussing. The lens may be the Ensign anastigmat $f/6$ or the Aldis anastigmat $f/6.8$. Price in each case £3 15s. With Cooke Series IV. $f/5.8$ lens, the price is £5 5s.; with Goerz "Syntor" $f/6.8$, £6 5s.; or with Zeiss "Tessar" $f/6.8$, £7 10s. This tiny camera, though simplicity itself in use, yields results which, when considerably enlarged, compare favourably with direct work on a larger plate. Messrs. Houghton likewise put up the 30s. "Ensignette" in cases specially fitting the camera, as a present to a lady or gentleman. The outfit for a lady includes the camera with one spool of film in a morocco wrist-bag lined with soft leather and supplied either in brown, purple, or green, price complete, 42s.

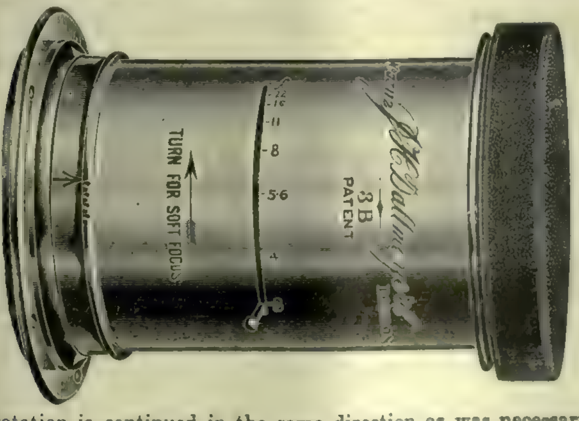


For a gentleman the camera is supplied in a solid leather case of brown pig skin, price 32s. 6d.

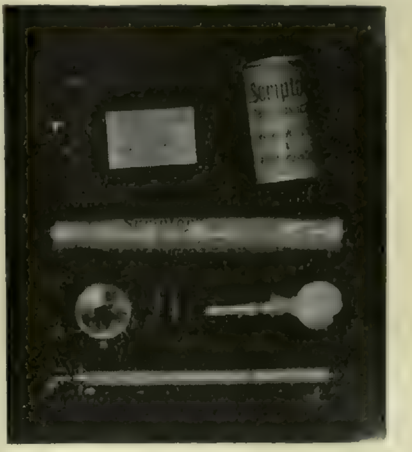
The "Challenge" Miniature Reflex Camera.—In this last addition to the "Challenge" series of reflector cameras, noticed in previous issues of the "B.J.," the makers (Messrs. Lizars, 101 to 107, Buchanan Street, Glasgow, Scotland) have provided an instrument of the 3½ by 2½ size possessing the ordinary movements of the larger sizes, such as quick-wind shutter, rotating back, rising front (½ in.), deeply recessed lens chamber, and extension of 7¾ ins. The camera allows of the use of a focus of 4½ ins., and is fitted with the "Challenge" focal-plane shutter. Lightly, but strongly, built, the outside dimensions of the instrument are 6 by 6 by 5½ ins. The price, with Aldis Series II. anastigmat and three double dark-slides, is £13 5s. The camera is also made of oblong pattern, and thus of somewhat smaller dimensions, the price in this style being £11 15s.



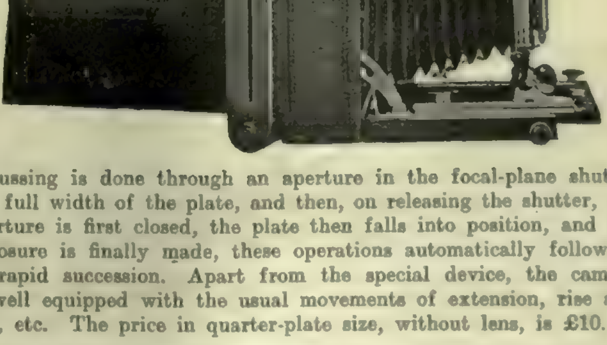
Dallmeyer Portrait Lens Mounts.—The mounts of these renowned portrait lenses have recently been improved in accordance with a recent patent of the head of the firm, being now lighter and smaller, and more simply adjusted to give the slight diffusion of focus now so much in vogue among portrait photographers. The lens flange is attached in the ordinary way to the camera front and the lens screwed in. It then gives brilliantly sharp pictures. If now rotation is continued in the same direction as was necessary to focus the lens, a portion of the mount gradually unscrews, altering the separation of the back components. This introduces spherical aberration, which softens the entire picture, and makes the definition even all over the plate. Reversal of rotation, of course, has the opposite effect.



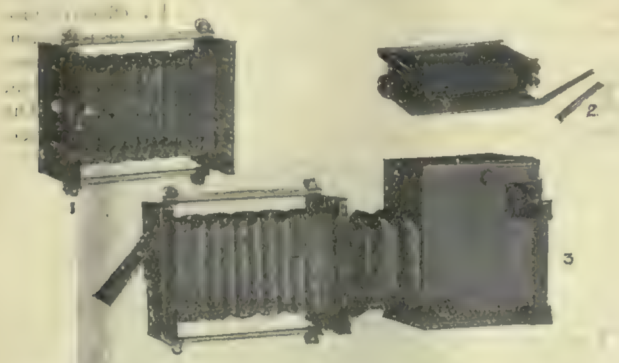
The "Scriptor" Relief Writing Pen.—For the effective production of decoration on mounts, window cards, studio or reception-room notices, the piece of apparatus sold under this name by Messrs. Janzer and Co., 4 and 5, Gough Square, Fleet Street, London, England, should be of frequent service to photographers. The "pen" consists of a barrel about 10in. long and ¾in. in diameter, containing within itself an air-pump which forces a special thick "ink" from the nipple of the apparatus. This provides a steady flow of the ink and allows of bold decorative work being readily done. At the price of 21s. Messrs. Janzer supply the "pen," a tin containing 2lb. of the "Plasticum" ink, together with a packet of bronze powder and a pulveriser for distributing this latter.



The "Bildsicht" Camera.—In this quite novel type of camera, made by Levie and Sasse, 15, Nordfelder Reihe, Hanover, Germany, the advantage of focussing up to the instant of exposure, as in a reflex camera, is obtained without the use of a mirror and within the bulk of an ordinary folding camera. The principle of the instrument lies in the insertion of a single metal dark-slide into the back part of the camera, the slide being then drawn into the upper portion of the apparatus (seen in the figure) when the shutter is wound. Focussing is done through an aperture in the focal-plane shutter the full width of the plate, and then, on releasing the shutter, the aperture is first closed, the plate then falls into position, and the exposure is finally made, these operations automatically following in rapid succession. Apart from the special device, the camera is well equipped with the usual movements of extension, rise and fall, etc. The price in quarter-plate size, without lens, is £10.



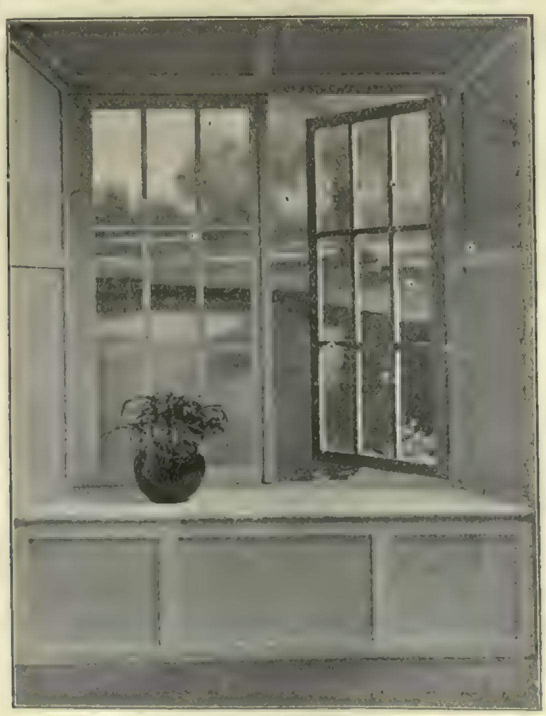
The "Soho" Reflex Extension.—Messrs. Marion and Co., 22 and 23, Soho Square, London, England, have recently issued an accessory for use with the "Soho" reflex when copying or telephoto work has to be done. It consists of a strong panel, which takes the place of the ordinary lens-front, and carries a light bellows supported by a pair of brass tubes. The ordinary lens-panel is removed from the camera, the extension fitted in its place, and then the camera-panel, with the lens still in position, is slid into the front board of the extension. In the quarter-plate size this allows of a total



extension of 18½in.: in postcard size, 17in., and in 5 x 4, 21in. The prices are 30s. in quarter-plate and 40s. in the two other sizes. In the drawing 1 shows the accessory, 2 shows it closed with the two brass supports detached, and 3 represents the camera with it fitted.

Messrs. Marion also send us their latest model of the well-known "Soho" reflex, namely, the 3½ x 2½ size, square-pattern, fitted with rotating back, rack and pinion rising front, large lens-shade, extension of 8½in., mirror-setting by lever in slot and full-view hood, instantly thrown back, giving access to the focussing screen. The camera in its outside dimensions falls within 6 x 7 x 5½in., and is sold (without lens) at the price of £12, instead of £12 10s. as listed.

Studio Accessories.—Messrs. John J. Griffin and Sons, Ltd., Kingsway, London, England, among other new introductions for the studio, are just issuing a window background accessory specially for children, its size and construction allowing of many interesting



poses of youthful sitters being obtained. The price is 42s. A series of backgrounds of design specially appropriate to the Coronation is also a new line with Messrs. Griffin, by whom it is put out primarily for postcard work. The grounds are issued in 8 x 6 size, well painted on stout paper, at the price of 8s. 6d. each. Another new series of backgrounds are of the coloured variety, frequently of service in enhancing the appearance of a studio, whilst a further series still are the "Sketch" grounds, for the production of this now popular type of portrait. These are issued both on canvas and paper, the price in the latter case being 8s. 6d. in the 8 x 6 size.

Studio Accessories.—Messrs. F. E. Jones and Co., Ltd., 22, Gray's Inn Road, London, England, have recently shown us a number of new accessories for the studio the character of which well maintains the reputation of this firm as specialists in studio decoration and artistic furniture. We select two for special mention. The first, the antique Charles II. chair shown in Fig. 1, is a piece of furniture both comfortable and of the most artistic appearance. The seat and back are of cane, the woodwork being treated by a special process to give the appearance of age. The price of this chair is £6 6s. Another example, somewhat more imposing in style, is that shown in Fig. 2, a carved walnut arm-chair with seat covered in a thoroughly good tapestry. The price of this is £11 5s. These are examples of the more expensive pieces of studio furniture supplied by Messrs. Jones, who, however, deal in professional requisites of all prices, as may be seen from their full catalogue, for which Colonial readers should make application.

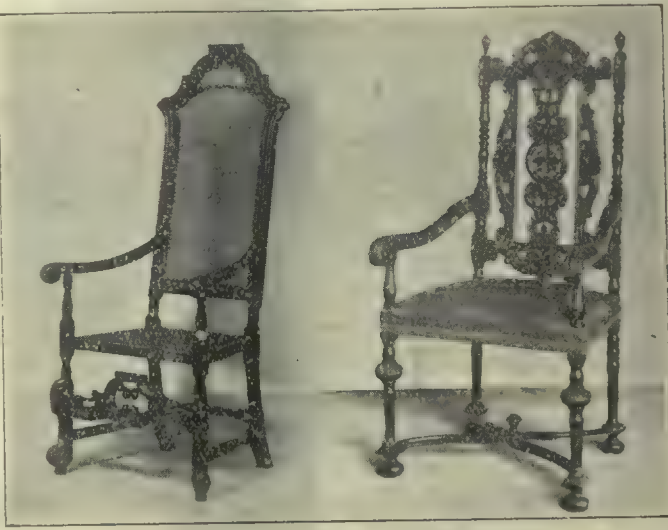


Fig. 1. Fig. 2.

# New Books.

"Cassell's Cyclopædia of Photography." Edited by Bernard E. Jones. London: Cassell and Co., Ltd.

This is the first of twelve fortnightly parts (price 7d. each) of a work which, if we may judge from the number before us, will be a most valuable reference volume on present-day photography. It consists of short articles and paragraphs arranged in alphabetical order, and written for the information of the practical and not too advanced worker. Thus, in the issue before us, the chief articles are as follows:—"Abrasion Marks," "Accelerator," "Acetylene Generator," "Actinometer," "Aerograph," "Albumen Process," "Alum-Hypo Toning," "Aluminium Flashlight," "Amidol," "Animal Photography," "Aphengescope," "Arabin Gum Process," "Arc Lamps," "Architectural Photography," "Artificial Light," "Asphaltum," "Autochrome Process," and "Automatic Photography." This list fails to include the very large number of shorter articles, including many paragraphs which practically amount to definitions of the terms or the briefest descriptions of obsolete processes. In the difficult task of allotting due space in proportion to the importance of the subjects, the editor is to be congratulated on the evident exercise of much discretion. The information is conveyed in clear, non-technical language, whilst a useful feature of the work is the equivalent term in French and German appended to a very large number of the entries. Photographers will do themselves injustice if they fail to obtain each part of the new Cyclopædia as it appears.

# Commercial & Legal Intelligence.

Affairs of a Middlesbro' Enlarger.—Aaron Lerman, photo.-enlarger, of 235, Newport Road, Middlesbrough, appeared for his public examination at the Middlesbrough Bankruptcy Court on March 17, before the Registrar. The statement of affairs, as filed by the debtor, disclosed liabilities amounting to £130 17s. 5d., and assets estimated to produce £17 5s.; there was a deficiency of £113 12s. 5d. In reply to questions put by the Official Receiver, debtor stated that about twelve years ago he was in partnership for about two years with a Mr. Sive, at Bishop Auckland, carrying on business as travelling drapers. The business was subsequently discontinued, and a composition of 10s. in the £ was paid to creditors. In 1903, without any capital, he commenced business at 16, Waldron Street, Bishop Auckland, as a travelling draper and watch seller, and afterwards as a canvasser for photo-enlargements, and picture-dealer. In May, 1910, he went to Middlesbrough, and in the October he removed to 235, Newport Road, these premises being taken by his wife, who carried on business as a second-hand furniture and book dealer. Since November last he had given up the picture dealing, and had been employed as a sewing machine agent, earning 24s. per week. Debtor stated that all the furniture was his wife's property, under a marriage settlement. The examination was adjourned.

Legal Notices.—The partnership between Charles Rowe Major and Francis Charles Darker, carrying on business as photographers at 152, Union Street, Plymouth; Courtenay Street, Newton Abbot; 22, Brook Street, Tavistock; Truro Road, St. Austell; and 4, Church Street, Camborne; under the style of Major and Darker, has been dissolved by mutual consent. All debts due to and owing by the late firm will be received and paid by C. R. Major, who will continue to carry on the business under the same style.

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

## BEVELLING MOUNTED PRINTS.

To the Editors.

Gentlemen,—I noticed in your journal of the 3rd ultimo an inquiry re bevelling mounted prints. Some time ago I was also in need of a machine suitable for this purpose. In 1907 you advertised in your journal (to which I am a subscriber) a machine for that purpose manufactured by the Shawver Co., of Springfield, Ohio, U.S.A., to whom I wrote and obtained one. I can safely recommend this machine, which is called the Springfield Oval and Circle Mount Cutting Machine. It not only cuts mounts on the bevel edge, but its capabilities also include cutting mounts on a bevel inside, outside, and upright. The machine cuts leather, opal, glass, and paper besides. There is with it a scrim attachment for giving a fancy border to the mounts. It cuts from a 1½ in. diameter to 22 in. diameter circle, and an oval from 1½ x 2 to 32 x 22 in.—Yours faithfully,

Dan W. Volkwyn.

Randfontein, Transvaal,
March 6, 1911.

Second-Hand Apparatus.—The City Sale and Exchange, 26 and 28, Sloane Square, London, England, send us their current list of second-hand professional and other photographic apparatus, including studio and field cameras, camera stands, lenses, and other accessories. In addition to supplying all items of photographic equipment, the Sloane Square "City Sale" has specialised in second-hand professional requisites, and from the large variety of apparatus held in stock is constantly able to meet its customers in supplying studio and other cameras by standard makers at substantial reductions on the list prices. Those wishing to add to their outfit may be well advised to state their requirements to 26 and 28, Sloane Square.

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, *24, Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., *24, Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be*

Photographs Registered:

E. Sternberg, 31, Dudley Street, Wolverhampton. *Photograph of Miss Olive Carlton in Harem skirt, outside Empire Music Hall, Wolverhampton.*

F. T. Taylor, Paternoster Buildings, Castle Square, Carnarvon. *Two photographs of Charles A. Jones, Esq., Deputy Constable of Carnarvon Castle. Photograph of Queen Eleanor's Gateway, Carnarvon Castle.*

A. Z.—Winsor and Newton, 38, Rathbone Place, London, W.

Marshall and Co.—The print is evidently on a collodion paper toned simply in the platinum bath.

Photo-Buttons.—All the appliances and materials for making photo-buttons are supplied by Jonathan Fallowfield, 146, Charing Cross Road, London, W.C.

Sussex Pro.—Practically every lens maker offers a choice such as you require. You had better write to one or two of the firms named under "Lenses" in the "B.J. Almanac," 1911, page 1,343.

Training for Optician.—I am a constant reader, and as your replies cover a very wide range of information, I should be glad to be informed as to the course of studies, examinations, and the best works necessary for my son to become an optician.—Hulma.

Apply to the Northampton Institute, Clerkenwell, London, E.C.

L. A. and Co. (Hong Kong).—Photographers in any part of the world, so long as they are proprietors or managers of a studio, are eligible for membership of the Professional Photographers' Association. Certainly the P.P.A. can be of great service to you in the way of advice on business matters and in connection with your Press work. The subscription is 5s. per annum, and the secretary Mr. A. Mackie, 89, Albany Street, London, N.W.

Sulphite Solution.—I remember seeing in the "Journal" some time past an article on a sulphite solution which would keep indefinitely as a stock solution, so that one could make up the amidol developer simply by adding dry amidol at the time of use. Could you give me the formula? and much oblige, yours, Yorkshire Boy.

The following sulphite solution will keep for a very long time:—

| | |
|---|---|
| Soda sulphite cryst | 4 oz. |
| Potass metabisulphite | ½ oz. |
| Water | 20 oz. |

Sulphide Toning.—As a rule I succeed in working the sepia sulphide toning method, but I come across times when prints tone a bad colour, and in some cases cannot be brought up again to full strength in the sulphide bath. Can you give me a hint as to the cause?—Effra.

The most common cause is staleness of the sulphide solution. Sulphide does not keep well in a solution of the strength advisable for the working bath. Dissolve 4 oz. of sulphide in water and make up to 20 oz., and for the working bath mix 3 oz. of this stock solution with 20 oz. of water. It is best to throw away this working bath after each day's use.

Improving Tone on Bromides.—I want to get as neutral a black tone on bromide prints as I can, but the colour with metol-hydroquinone, which I am now using, is too bluish. Can you advise me some better developer?—Engraver.

Amidol or diamidophenol will give you a somewhat colder black, or, better still, ferrous oxalate, now very little used as a bromide developer. A very simple method of after-treatment, which, with many papers, gives a fine black print and at the same time a little additional sparkle, is to bleach in potass bichromate, 10 grs.;

hydrochloric acid, 20 minims; water, 1 oz., and after washing until the yellow stain is gone, re-developing (by daylight) with amidol.

REDUCING P.O.P.—I should like to know if there is any solution I can use for bringing down density of P.O.P. prints which are a bit overdone. To be any good it must be usable on the toned and fixed prints, as usually I do not see prints until the assistants have got all into the washing tanks. Any help you can give me will be much appreciated.—Q. E. R.

Make 10 per cent. solutions of (A) ammonium sulphocyanide and (B) potass ferricyanide. Mix 5 oz. of (A) and ½ oz. of (B) with 24 oz. of water. This will act on prints gradually, at the same time reducing somewhat the warmth of the tone. We have found it greatly preferable to reducers, such as Farmer's, etc., which tend to stain prints and to eat out fine detail.

BROMOIL IN COLOURS.—1. Is it possible to give all the colours of the original subject on a Bromoil print? Or 2, is the Bromoil process principally used for monochrome effects? 3. Can the colours of a Bromoil be supplemented by ordinary oil colours?—BRUFF.

1. If you mean by local hand-working, certainly not, except in the case of subjects in very broad masses of colour. Some experiments have been made in using the Bromoil process for making three-colour prints from a set of colour-sensation negatives. 2. Yes, and is at its best when thus used. 3. Yes, coloured oil paints can be used, but except in subjects of light tones the examples hitherto seen have not been pleasing.

FINISHING NEGATIVES RAPIDLY.—Should be glad if you could recommend me a cheap and rapid method of clearing out hypo from negatives. I mean one not for regular work, but when, as occasionally happens, I want to make certain of removal of hypo within a few minutes.—ENLARGER.

A quite safe method is to wash the negative for one minute under the tap and put it in a dish of water containing enough of a solution of potass permanganate to give a faint pink colour. Remove the negative as soon as the colour goes (which will be in a second or two if hypo is present), and keep on treating in the very weak permanganate baths until the colour is not discharged. This will usually be the case after three or four treatments. Remember the hypo "kills" the colour *quickly*. Ordinary water will do so in time, so that you need not fear from the *gradual* disappearance of the colour that hypo has been left in the negative.

A PATENTED ACCESSORY.—I have recently worked out a little device which I have found a valuable time-saver in bromide and gaslight printing, and have thoughts of taking out a patent for it, and, if successful, putting it on the market. But could you tell me how I can find out whether anything of the kind has been patented before, and, if so, whether I can still get a patent if mine is any way different?—NEW SUBSCRIBER.

Since January 1, 1905, we have published abstracts of all photographic patents, and by referring to a file of our volumes you could see if anything of this kind has appeared during these years. You can also see at the Patent Office library classified abstracts of photographic patents for many years past. When applying for a patent the authorities themselves will search among past patents, and if they discover anything closely resembling yours will ask you to introduce a reference to it in your specification. If your device is anything in the nature of a printing frame you might refer to the "B. J." of February 11, 1910, in which practically every appliance of this kind then on the market is described.

ARTISTIC COPYRIGHT.—A photographer who photographs an accident for his own interests and afterwards sells copies of the same to the public or those interested in it, after some months he finds a reproduction of the same photograph in various journals, he not having supplied the journals with them. The photograph not being registered, can any fee be claimed by the photographer from the journals or from the person who supplied the photographs, and which is the party to approach? I am of opinion I saw an article in one of the photographic papers under the above title.—OLD SUBSCRIBER.

We have published articles and answered this same query over and over again. First, you must direct yourself to the proprietors of the journals; it is they, and not the people who supplied them with the prints, who are the infringers. But you cannot take action for any infringement committed before registration. After registration you can restrain further sales; therefore your best course is to register at once, and then approach the parties, pointing out that it is your copyright, and asking them what they propose doing.

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## THE JOURNAL FOR PHOTOGRAPHIC FIRMS.

THE policy of "The British Journal of Photography" is to interest individuals and firms to whom photography is a means of livelihood. Both the business and technical sides of portraiture and of "commercial photography" are kept constantly to the front in its pages by means of articles, notes, news items, and reviews of new books, apparatus, and materials. Photographers in distant countries can hardly keep themselves informed of progress in all branches of photography more effectively (and cheaply) than in its pages.

### "THE JOURNAL WITH THE READING IN IT."

We use this phrase to indicate our custom of publishing improvements in processes; the details of new inventions; notable legal proceedings of importance to photographers; translations of contributions to photography by workers in France and Germany; and news while it is news. This has been the policy of the "B.J." during its fifty-seven years of publication, and will continue to be its policy while its columns are read by photographers everywhere "from China to Peru."

### HELP AND INFORMATION.

In the "Answers to Correspondents" the help of our staff is placed freely at the disposal of readers, and in our "Correspondence" columns much valuable knowledge of business and technical matters may be gained by workers abroad.

### COLOUR PHOTOGRAPHY.

Progress in colour photography is dealt with specially in a "Colour Photography" Supplement, presented with the first issue in each month of the "B.J.," and serving the purpose of a separate publication in this branch of photography.

### AN OFFER.

Those in the Colonies and foreign countries who would like to make a further acquaintance of the "B.J." are invited to accept our publishers' offer to send it *free* for one month from date on receipt of trade or professional card from any photographer.

◆

"ILFORD PLATES."—A new edition of the handbook issued under this title reaches us from Messrs. Ilford, Ltd., Ilford, E. It contains much useful instruction in exposure, development, and the other processes of negative-making, in addition to a list of prices of the renowned Ilford products, including the latest introductions. Sent free on request, and worth getting.

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# THE BRITISH

# JOURNAL OF PHOTOGRAPHY.

No. 2657. Vol. LVIII. FRIDAY, APRIL 7, 1911. Price Twopence.

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## SUMMARY.

Photographs taken by H.M. Queen Alexandra, illustrating the life of the late King Edward VII., are to be a feature of the forthcoming R.P.S. exhibition. (P. 273.)

In a leading article we deal with some points in the working of the carbon process, recommending photographers to disabuse their minds of the largely imagined difficulties of this method of printing. (P. 262.)

The use which may be made of a focussing-scale in interior photography is the subject of a note on page 262.

Alleged "faking" of press photographs was the subject of an action in the High Courts last week. (P. 270.)

Some notes on the features of a reflex camera (p. 263) will doubtless be read with interest by those visiting the exhibition of reflex instruments now being held by the "Amateur Photographer." (P. 267.)

In the Ilford "Photographic Scraps," Mr. Chapman Jones describes and illustrates the uses of the graduated wedge-screen. (P. 265.)

Stereoscopic projection and a new four-lens anastigmat figure under "Patents of the Week." (P. 237.)

The application of Bromoil to flat printing is the subject of a note on page 266.

When photographing in a high wind, a stout piece of cord provides an easy means of steadying the tripod. (P. 262.)

Nine months' hard labour was inflicted on a young man who for months past had been representing himself as in the employment of the C.S.A. studios. (P. 271.)

### "Colour Photography" Supplement.

A Belgian worker, R. Moreels, has published working details of a system of, and apparatus for, two-colour and three-colour photography, using commercial dry-plates. (P. 25.)

M. V. Cremier, in a recent paper, urges upon colour workers the advantage of using the Autochrome transparency as a means of producing ordinary black-and-white prints. (P. 28.)

A report of Herr Valenta on the new colour screen-films now on the market in Germany appears on page 30.

An Austrian experimenter gives a formula for the extra-sensitising of the Autochrome plate, with a view to making hand-camera exposures. (P. 29.)

A suggestion regarding the three-colour carbon process is made on page 31.

Mr. Julius Rheinberg deals with the obstacles in the way of a diffraction colour screen-plate. (P. 32.)

## EX CATHEDRA.

**The "Colonial"—and After.** Last Friday's Colonial and Foreign Number of the "B. J." is not out of print. There is always a certain extra demand for special issues of a weekly journal, and our publishers are therefore only taking the customary course in ensuring that a number of this exceptional interest should be obtainable from dealers and through the trade in the ordinary course. While it is not possible to say into whose hands this additional local circulation falls, it is right that we should once more emphasise the commercial basis of the "B. J. Colonial," namely, the despatch by post by our publishers of 5,000 copies direct to photographic individuals and firms who have either applied for it or whose addresses have been verified since the issue of the preceding special number. We may reasonably hope that this fact is appreciated throughout the photographic trade, members of which will doubtless think within their own minds that Messrs. Greenwood and Co., at any rate, have not been sparing of reminders of it. However, when all is said and done, the most significant testimony to the esteem in which the "B. J. Special" is held is the fact that upon the day of publication a number of advertisers immediately booked their space in advance for the issue of 1912.

* * *

**Problems of Development.** We are continually receiving questions with regard to development which we cannot answer. For example, a correspondent this week wants to know the connection between grains per ounce of soda carbonate and the speed of development, and quite recently we have had several queries with regard to the functions of the various ingredients of a developer. Evidently our correspondents do not realise how little is really known with regard to development, and it is certain they have no idea of the magnitude of the work required to elucidate the apparently simple problems they suggest. Ferrous oxalate is the only developer that can be said to be understood, and this being a unique developer which is seldom used, the information available is not of much practical value. Hydroquinone has also been studied to a certain extent, but the work is incomplete, and this developer, like the rest of the alkaline developers, is made use of in a purely empirical fashion. Generally, we may say that the necessity of a reducer, accelerator, restrainer, and preservative, or anti-stain is recognised, but the ingredients are put together in quite a "rule of thumb" fashion, and a good working formula is only arrived at as the result of the process of trial and error. No one knows the exact value of the parts played by each ingredient, therefore a formula is generally arrived at by a process of the same scientific standard as that of making a pudding. Very diverse formulæ are found to produce much the same results in many cases, hence some have wrongly argued that proportions are of no consequence, and one formula is as good as another. On the other hand, some have found that an apparently small variation has made a difference, and have therefore argued that exactitude is of great consequence. In reality the whole matter is still an open question, and a vast amount of work has yet to be done before we can state positively what constitutes a good formula. We do know a little with regard to the action of bromide in the developer, but that is about all we know: the rest demands close and careful investigation.

* * *

**Steadying the Tripod.** Many ingeniously complex, but sometimes very unscientific, devices have been proposed for stiffening and steadying the tripod on a windy day, but the most scientific method with which we are acquainted is also the simplest and cheapest. Nothing is required beyond a couple of yards or so of strong string, which is used in the following fashion:—To the centre of each of the tripod legs a piece of the string is strongly attached, and the three pieces are then tied together so that when the tripod is set up each leg is connected to one common centre. At the centre knot, where the three strings join, another string, 3ft. or 4ft. long, is attached, and this completes the arrangement. When the tripod is set up and finally arranged in the proper position for exposure, the loose end of the long string is picked up and held in one hand, while the foot is put in the bight of the string to hold it down to the ground. By pulling on the end of the string a certain amount of tension is put on the strings, which brace the tripod legs together towards the centre knot, and when this tension is sufficient to keep all steady the end of the string is dropped, and the pressure of the foot alone is quite enough to prevent any shift during exposure. A little consideration will show that as the result of this arrangement not only is the tripod as a whole held down to the ground, but the legs are virtually straitened, and therefore rendered much less liable to vibrate. If we adopt another method sometimes advocated which involves holding the tripod down with a looped or weighted string attached to the tripod-head or camera-screw, the legs are thrown into a state of strain which renders them more liable to vibrate, hence this expedient is not nearly so effective in a high wind.

* * *

**Scale Focussing in Interiors.** In all but the largest businesses nowadays, there is a considerable quantity of technical work to be done, and many of the problems require no little ingenuity for their rapid and satisfactory solution. Some of the difficulties are overcome in a roundabout way and by a good deal of labour, when a better knowledge of the apparatus in use would enable a better result to be secured in less time. As an example, we may instance the photography of a dark interior, either by daylight or flashlight, such as a large wine cellar. The largest aperture in the lens which will give the requisite definition is naturally desired, yet there must be no doubt about the definition. It frequently happens that focussing is done as the lens is stopped down, the lessened brilliance of the image of any lights which may be utilised for focussing upon increasing the difficulties. In such cases it is a safe rule to take the nearest point included in the view and the most distant, and, roughly dividing the distance between these points into four, to focus sharply at open aperture on the first or nearest dividing point. If a strong light is then placed by the nearest object included, and the lens is stopped down until that light is quite sharply defined, it will be found that the most distant point is also sharp. A focussing scale, together with the now fairly common "depth of focus" scale, is also a great aid to rapid interior work, and at once shows the maximum aperture which may be used. It is an expensive matter to have such scales engraved for a battery of lenses, but there is no reason why it should not be done at home, using strips of hard thin card, such as visiting cards are printed upon, and marking the scales with a fine pen and Indian ink. Each scale should have the focal length and name of its own lens marked upon it, and if the base board of the camera has two small brass screws driven half-way in and the heads are filed off, all the scales may be punched with holes, so that they will drop over the screws, and so be held in position with accuracy. The "depth of focus" scale is really an elaboration of the pointer working against the ordinary focussing scale, and will be attached to the fixed portion of the base-board while the other scale is on the travelling portion.

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## "CARBON" AND CARBON.

It is a well worn, but not worn out, proverb which tells us that "Imitation is the sincerest form of flattery." This being allowed, then the carbon process is flattered above all other methods of printing. In nearly every make of sensitive paper there is one or more grades which are said to have "carbon" surfaces or to give "carbon" tones. This is a direct acknowledgment of the superiority of the carbon print, and it is surprising that so few photographers go in for the real thing when it is little more expensive or troublesome than the imitation, while at the same time a better price can be obtained not only on account of the quality of the prints but also for their guaranteed permanence. The large range of colours now obtainable allow of every subject being printed in an appropriate tone, and if a photographer desires any special tint, most of the manufacturers will make half a dozen bands to his order. Rather too much stress has been laid upon the permanence of prints by the pigment process, almost to the exclusion of other prints of equal merit. One of these is the absolute uniformity of tone which can be obtained no matter how many prints are required or over what period of time their production is extended. With all the developing or printing-out processes, directly any tone but black is required, there is more or less uncertainty as to the exact tone which will be obtained, and very few printers would guarantee to provide an exact duplicate of a sepia toned print after a lapse of three months without having the original for comparison. The carbon printer, on the other hand, while using the same colour of tissue cannot help doing so, and hard prints or soft ones, light ones or deep ones, will at least not show that variation of tone which emphasises the difference in their quality. The colour being a constant factor and the only "chemical" necessary for development being clean water, there is no change in tone when it is necessary to reduce a somewhat overprinted copy. With print-out papers it is, at all times, difficult to reduce a dark print without loss of gradation and next to impossible to do so without alteration of tone; with a carbon print it is simply a question of using hotter water for development with perhaps the addition of a little alkali. Even when the print is dried and mounted it may be considerably lightened by attrition with fine pumice powder, such reduction being not necessarily general, but localised at will. The power of choosing the surface and colour of the final support is also a valuable one to the professional photographer who does not always adhere to stereotyped lines. A minor advantage is found in the fact that spotting and finishing can be done with the same pigments that the image is composed of, thus not only ensuring a perfect match at the start, but also that the working up will not become unpleasantly in evidence in the course of time.

The difficulties in working the carbon process have been rather over-rated by many photographers, and have deterred others from even giving it a trial, while still others have been discouraged by failures in their early attempts, and have concluded that a special room was necessary to secure favourable conditions for the work, especially as far as the sensitising and drying of the tissue are concerned. Such is not the case, as the most recent methods of working permit of the tissue being sensitised and dried in a room used for many other purposes. This is rendered possible by the use of a calcium box for drying, and no one who has not tried it can imagine the great improvement in the quality of the tissue so treated. The box itself may either be an air-tight cupboard or a zinc-lined chest of the kind introduced by Messrs. Silver and Co., or even for experimental work an ordinary uniform case may be used. A wooden rack is fitted into this, so that the sheets of tissue may be suspended clear of the sides and bottom, and at either top or bottom space is allowed for an enamelled iron dish holding a pound or two of calcium chloride, which is thoroughly dried and put in position, the box never being opened unless it is absolutely necessary. The tissue having been cut to convenient sizes (12 x 10 is useful), is floated on the usual bichromate solution and fastened by glass-headed push pins on to laths. It is allowed to drip over the sink for a couple of minutes and any drops of solution blotted off. It is then transferred to the drying box, which is tightly closed, and in a very few hours, irrespective of outside atmospheric conditions, it will be found in perfect condition for use. In the warm drying method considerable variations in sensitiveness are caused by differences which occur in the time taken to dry, but by the cold or calcium method a very high degree of uniformity is obtained. Moreover, the box being almost hermetically sealed, gas and stove vapours can have no effect on the tissue.

Carbon printing, although simple, is not easily learned from books, especially as far as the transferring is concerned, but most of the tissue-makers are also printers, and are quite willing to give a practical lesson to any professional photographer desiring to take up the process. We know of photographers working single-handed or with only one assistant who turn out half their work in carbon, while the man with a dozen helpers is afraid to tackle it because it is "too complicated."

# THE RANGE OF POWER IN A REFLEX CAMERA.

Since the holding of the first exhibition of reflex cameras at the "British Journal" in 1907, this type of instrument has come into a preponderance of favour. It is not too much to say that a large proportion of the trade in hand-cameras has transferred itself to those of the reflex type: another new type of camera, which has likewise earned the same degree of fresh favour, is the quite small folding camera, taking plates about 2 5-16ths by 1 5-16ths. There are many reasons for the popularity of the reflex camera, despite its bulk, cost, and, usually, weight. Within the scope of this article I cannot enter upon a full description of the merits of the reflex system, but must refer my readers to an article in the "British Journal Almanac" for the year 1909, or to No. 99 of the "Photo-Miniature" series, in both of which places full justice is done to the advantages and as well as to the drawbacks of the reflex. But I may here point a few useful morals by reproducing one or two photographs which are typical of the powers granted to the photographer of outdoor subjects by the use of a reflector camera.

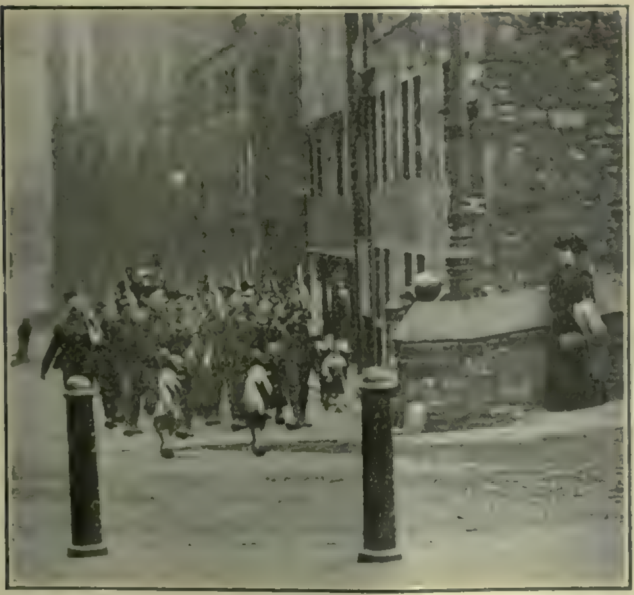


Fig. 1.

The first of these is the ease with which the position of sharpest focus can be obtained in the picture. The photographs here reproduced were all made during a day or two spent in Edinburgh, and are selected merely for the way in which they illustrate the various points. Fig. 1, Highland pipers entering Edinburgh Castle, is a common example of hand-camera work which presents no difficulties to the user of a scale-focussing camera who is in regular practice in judging distances: the reflex, however, allows of this being done even by the more casual worker. One sometimes sees a recommendation to keep an object, which is approaching the camera, in focus all the time by actuating the focussing pinion of the camera, but I have never been able to do this myself, nor have I ever been able to find a photographer who could. The really practical method is to decide on a point at which the exposure shall be made, to focus on this, and then to press the release when the subject reaches the spot. But, working in this way, the reflex, nevertheless, allows of the maximum sharpness being obtained where it is most required.

Focussing difficulties become much greater in the case of quite near objects, the depth of focus being then very much less. The "Heart of Midlothian" (Fig. 2), let into the pavement in the old town of Edinburgh in front of the Tolbooth, is a good example of a subject such as this, which calls for very nice adjustment upon the focussing screen, and, at the same time, of accurate focussing. Here again the reflex excels in both these respects, the subject being obtained in as many seconds as a stand-camera would require minutes.

These possibilities of the reflex become more pronounced still when exposure has to be made in a very dull light, such as that in which the statue of the Highlander in the gardens along Princes Street, Edinburgh (Fig. 3) was taken. For this the full aperture of the lens, $f/4.5$, was used, yet the necessary sharp focus is secured in the subject proper, the outlines of the Castle Rock in the distance being subsidiary.

Another example of conditions of quite a different kind, where, however, full exposure is necessary, is Fig. 4, a view in the churchyard of Glencorse, one of the early haunts of R. L. Stevenson. The dark masses of foliage, in conjunction with other parts of the subject in brilliant sunshine, call for ample exposure, and, at the same time, sharp focus. Here again it was a question of only a few seconds to adjust matters on the ground-glass of the reflex, using a comparatively large aperture of the lens.

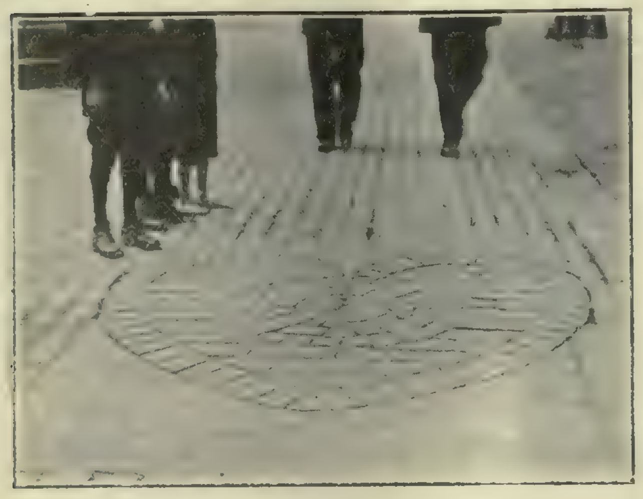


Fig. 2.

But perhaps the best example of all of the powers of the reflex is Fig. 5, a photograph of Swanston Cottage, in the Pentland Hills, the early home of R. L. Stevenson, and now the residence of Lord Justice Guthrie. A hedge, some six or seven feet in height, surrounds the small estate, and with no camera, hand or stand, other than a reflex, can one photograph over the obstacle. Fig. 5 is one of several photographs made by holding the camera at arms' length upside down above the head, in which position the view may be seen and focussed, and exposure made with almost as much readiness, though with somewhat more fatigue, as in the ordinary position.

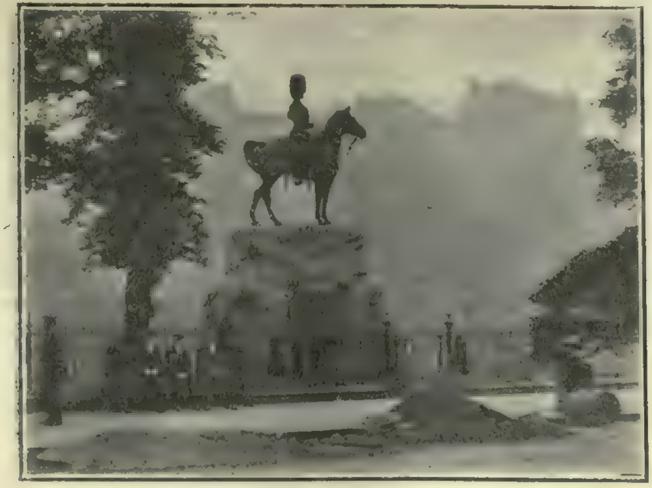


Fig. 3.

In order that the reflex should be used in this way, it is essential that the mirror should not be of the type which falls again automatically and by its own weight after exposure. In instruments of this type, the mirror "falls up" when the camera is held upside down and so prevents this expedient being used. Cameras in which the mirror is actuated by a spring and does not "fall up" are perhaps in a minority on the market, and are of the most expensive class, but, on this account alone, they are preferable to the cheaper type of instrument. Another reason for preferring this spring-actuated type of mirror to the cheaper form, which has to be raised by the shutter release, is that the release is less liable to vibration, and, at the same time, there is a smaller interval between the first pressure on the release and the making of the exposure, an advantage in photographing the most rapidly moving objects.

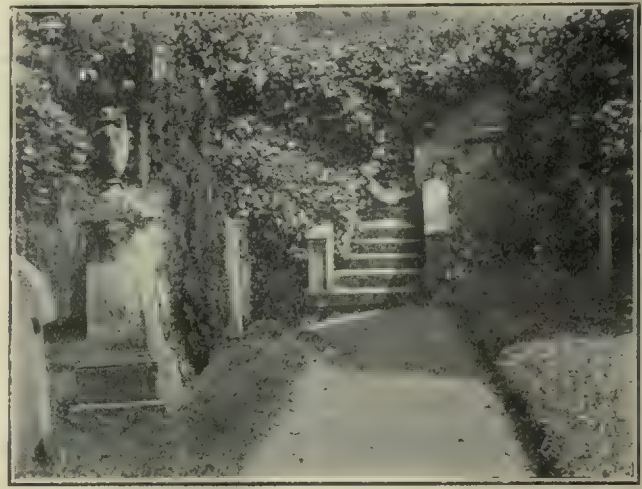


Fig. 4.

The would-be purchaser of the reflex often debates within himself whether he shall choose a camera of the single or double extension type. As regards bulk and weight there is not very much to be gained by forgoing the double extension: the chief difference is in cost, and in most cases is a considerable one. On the whole, however, I think that the balance of advantage lies with the single extension instrument, for the reason that the large-aperture fixed-focus telephoto lenses which are now obtainable, such as the "Bis-Telar" *f*/7, to name only one of a number, disposes of the necessity of double extension.

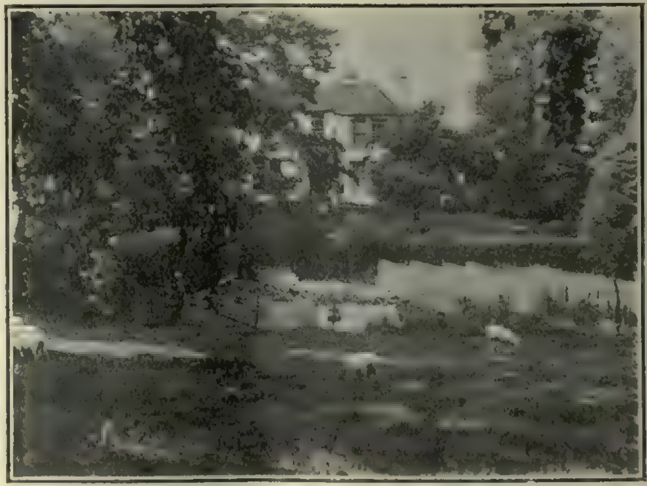


Fig 5.

As regards copying, if only one lens is available for use on the reflex, and this, say, a 6in., which is usually chosen for a quarter-plate instrument, then an extension of something over twelve inches is necessary to enable copying to be done same size; but such copying work out of doors is not a very common necessity, and when it does occur the bill is filled completely by including in the outfit an R.R. or anastigmat lens of about four inches focus. Most single extension reflexes allow of at least eight inches between the lens panel and the plate, sufficient, that is, for same size copying with a 4in. lens.

G. E. B.

## THE ILFORD WEDGE-SCREEN.

[The following article from the current issue of "Photographic Scraps" will be read with interest by those desirous of making use of the ingenious device of Luther and Goldberg, described at the International Congress of Photography at Brussels last year in a paper translated in our columns of August 26, 1910. Messrs. Ilford, Ltd., immediately announced their intention to supply the Luther-Goldberg wedge-screens, and the present notes by Mr. Chapman Jones apply to the screens manufactured by them.—Eds. "B.J."]

A wedge-screen, as its name implies, may be imagined as a wedge cut from a material that does not freely transmit light. The sides of the wedge being flat, the material that impedes or absorbs the light increases, in a simple arithmetical proportion, along a straight line drawn from the apex of the wedge. Such wedges form a convenient method of graduating light, and would probably have been much more used than they have been, had they not been generally either very costly, or faulty, or very small.

At the International Congress of Photography, held last year, Professor Luther and Dr. E. Goldberg showed how the characteristic curve of a plate could be obtained, without any photometric measurements, by means of a wedge-screen, if it were approximately square. And Dr. Goldberg described how sufficiently large screens could be made by casting pigmented gelatine in a mould made of two flat pieces of glass slightly inclined to each other.

If the pigment used for this purpose is not of a perfectly neutral tint, the colour is neutralised by the addition of small quantities of other pigments.

Recently Messrs. Ilford, Limited, announced that they were prepared to supply wedge-screens of various sizes, and it is the character and some of the uses of one of these (quarter-plate size) that I am about to describe.

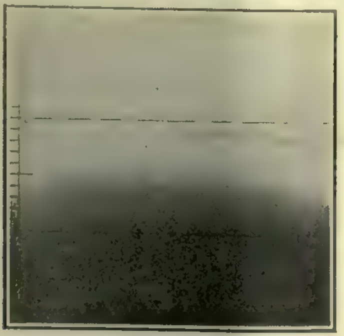


Fig. 1.

The grain in this particular screen is very uniform, and may be described as fine; the colour is a good neutral black.

The particular defect to be avoided in the preparation of any graduated screen, is the presence of irregularities, which may be either accidental and local, or general—that is, the amount of pigment present may not increase in direct proportion to the distance from the zero-edge.

I have tested the screen in various places and found no imperfection of either sort. My measurements of the density of the screen give a curve differing very little from that furnished by the makers, well within the range that might have been expected from the differences in measuring-instruments.

When a plate is exposed behind the wedge-screen and developed, the result is similar to the first figure (Fig. 1).

This shows the effect given by a plate of medium rapidity, and I have selected it because it shows also a fault in the plate that the use of the wedge-screen demonstrates at once and clearly, namely, that the plate is unduly sensitive towards its edges.

The illustration is from a print of the plate, so that the lighter part represents the thinner part of the wedge-screen, and it is obvious that the exposure-effect extends further along the scale at the edges than in the middle of the plate.

Fig. 2.

A defect of this kind is more easily recognised by the use of the wedge-screen than by any other means that I know of. This is the only plate of those that I used that shows it.

If now the graduated plate obtained is turned on the wedge-screen to a position at right angles to its first position, and another plate is exposed behind the superposed pair, we get a graphic representation of the characteristic curve of the plate. I give three examples, showing respectively the characteristic curves of a lantern plate (Fig. 2), a plate of medium rapidity (Fig. 3), and an ultra-rapid plate (Fig. 4).

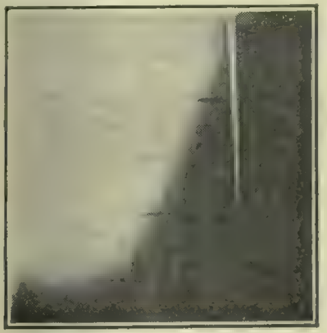


Fig. 3.

These, again, are prints from the results obtained on lantern plates, which are used because it is desirable to have as great contrast as possible.

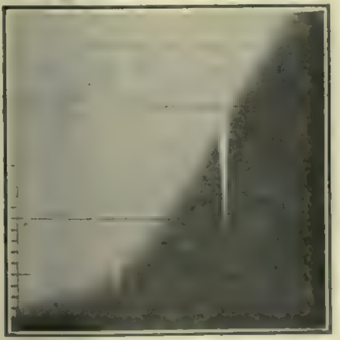


Fig. 4.

The curve of the plate of medium rapidity (Fig. 3) is seen at once to be faulty, as the plate tested was unduly sensitive at its edges. As this plate is differently sensitive in different parts, it has not a single characteristic curve, and an attempt to get one by any method whatever must lead to nothing better than a compromise. The difference between the curve given by this plate and the other two is obvious, especially at the ends of it.

The lantern plate and the ultra-rapid plate both yield good curves, the rapid plate showing a longer range or a less steep curve than the lantern plate, as would naturally be expected. It has been stated that this method is of little use except with plates that give great contrast, but a comparison of the curves given by the lantern plate and the ultra-rapid plate shows that even in such extreme cases there is little difference in the sharpness of the result. All the effects might doubtless have been rendered more sharply by using a smaller light-source or putting it further off, as either one or two thicknesses of glass intervene between the films of the screen and first plate, and the film of the plate being exposed.

These results show, I think, the usefulness of the method for plates of all degrees of sensitiveness. But the wedge-screen may be conveniently employed for many other purposes. To test two or more coloured materials as to their safeness for dark-room illumination or for any other purpose, half of the wedge-screen might be covered with one and the other half with the other material, and an exposure be made. By comparing the results with the scale on the plate, one could get a quantitative expression for the effective light transmitted in the two cases. Again, if such screens as these were standardised so that uniformity could be guaranteed, their issue might help to reduce or eliminate the differences that exist in the density estimations by various types of instruments, but that is a wide question. Other uses of such a screen will suggest themselves to all experimentalists.

Chapman Jones, F.I.C., F.C.S., F.R.P.S.

# Photo-Mechanical Notes.

### Litho' Reproductions of Plans and Other Line Drawings.

The following process of developing exposed bichromated plates printed from line drawings, etc., by exposure to light is the subject of a recent patent specification, No. 5,021, 1910, of Adolf Tellkampf, 6, Gervinus Strasse, Charlottenburg, Berlin:—

The tracing or drawing of which a plate is to be produced is placed in a printing frame with its back towards the glass, the coated plate, which, of course, must be dried, being placed against the tracing or drawing. The printing frame is exposed to light which passes through the glass, and the tracing or drawing, from the back of the latter, and produces a hardening effect on all parts of the plate which are not protected from light by the lines or spots of the drawing.

The plate, instead of being developed by means of water, as usual in collotype processes, is developed by means of suitable alcohols or lactic acid, and is simultaneously rendered capable of taking greasy ink on the developed lines or spots by the addition of suitable substances to the alcohols and lactic acid.

The alcohols used must be those which contain either two or three molecules of hydroxyl, such as glycol or ethylene alcohol, or glycerine, $C_3H_5(OH)_3$, as these alcohols but slowly dissolve those parts of the plate which have received no light (or but little light) during the exposure. It is therefore possible, by the use of such alcohols, to develop the finest details without injuring the ground. Alcohols containing only one molecule of hydroxyl may not be used.

The substances which are added to the alcohols or lactic acid, for the purpose of causing the developed lines or spots to take greasy ink, are those which are used for preparing the plates. For instance, citric, tartaric, oxalic, or acetic acids or alum could be used in the case of stone and zinc, while nitric or oxalic acids could be used in the case of aluminium.

When the development of the plate is completed, the action of the developer is stopped by washing the plate with any suitable liquid, such, for instance, as methylated spirits or any other suitable spirit.

The plate is then rolled up with a thin litho' ink. This ink adheres to the developed lines or spots, as well as to the bichromate film. The plate is then placed in a slightly acid bath, say one containing 1 per cent. of hydrochloric acid or sulphuric acid, so that the bichromate layer with the ink on it may be dissolved and the developed lines or spots left.

### Bromoil on Metal.

The Bromoil process applied to photo-lithography has several times been mentioned in these notes, and several workers are using this method successfully, especially for poster work. There seems no reason why the same idea should not be applied to producing "direct on metal" prints; in fact, this may be the principle of Messrs. Klimsch's "Immediography," which is claimed as an advance on "Paynetype," inasmuch as the intermediate insulating film is of a simpler character. Supposing the Bromoil plan to be adopted, then this insulating film has only to be a film that is soluble in hot water, and will prevent the reaction of the zinc with the gelatine emulsion. This might be perhaps a plain gelatine solution. Then the emulsion is applied to the plate, whirled until dry, exposure made, the plate developed, put in the bleaching solution, and the unexposed portions removed with hot water. It is perhaps possible that the plate might be enamelled by heating, certainly plain gelatine will bake in to form a good resist, but whether it will do so after this treatment we do not know. In any case, the plate can now be gummed up as a lithograph, the gelatine image removed, and the plate inked up. Or if a reverse is required, the plate may be inked all over and the gelatine image afterwards removed, carrying away the ink on top with it. The two solutions, the insulator and the emulsion, ought to be procurable, so that the plates can be coated as required—being gelatine they would have to be kept warm while being poured, otherwise there does not seem much difference between preparing the plates for this method and the usual one for the ordinary fish-glue process.

### PHOTO-MECHANICAL PATENTS.

The following patents have been applied for:—

Engraving Screens.—No. 7,132. Photo-mechanical engraving screens. Albert Bannister.

Focussing Device.—No. 7,175. Steel-wire operator for focussing back and front bodies of process cameras and spring stands. James Tilley.

Process Blocks.—No. 7,244. Process relating to the manufacture of blocks for engraving purposes. Leon Herbert.

# Exhibitions.

### HAMILTON NATURAL HISTORY AND PHOTOGRAPHIC SOCIETY.

The annual exhibition of the Photographic Section of this Society was opened in the Y.M.C.A. Hall by Provost Smellie. In his opening remarks the Provost spoke of the advisability of taking photographic records of the local Coronation celebrations. To stimulate such work, he would be delighted to offer two or three prizes. The committee departed from the usual medals, the prize for the best picture being a watch, while the other prizes were flower vases, etc. The best picture in the exhibition was adjudged to be "Mugdock Castle" (26), by J. Bruce Cameron, Milngavie. The open class had forty-seven entries, and these included many pictures that had taken honours at other exhibitions. First place was gained by "Exchange Arch—Night" (45a), by John McClure, Prestwick (the champion picture at the "Glasgow and West" Exhibition); second, "On the Ayrshire Coast" (24), Peter Orr, Govan; and third, "Stirling Brig" (4), by W. S. Crocket, Glasgow; honourable mention was awarded to "A City Highway" (42), S. Robertson, Glasgow. The members' classes filled up well, and contained much promising work. First prizes were awarded to Wm. S. Hamilton (3) and W. T. Hepburn; second to W. T. Hepburn, Wm. Frame (3); honourable mention to Wm. Frame, Geo. Beattie, Jas. Lohoar, I. W. Lightbody, and W. H. Lindsay. Mr. Arch. Cochrane judged. An enjoyable concert was given after the opening ceremony, and tea was provided by a committee of ladies. They conduct these exhibitions in an informal, enjoyable way "up north," and no doubt such shows are a good recruiting ground for new members.

## FOLKESTONE CAMERA CLUB.

The second annual exhibition of the club was held on March 20-21, and was judged by Messrs. A. D. Godbold and J. B. B. Wellington. The following is the list of awards:—

Class A.—Champion Class (any subject) for pictures which have previously taken open award:—(16) E. F. H. Crouch, gold plaque; (10) G. W. Perkins, silver plaque.

Class B.—Any subject which has not previously taken an open award:—(33) Hamilton Smith, silver plaque; (63) B. W. Fisk-Moore, silver plaque; (84) V. R. Cunningham, silver plaque.

### MEMBERS' CLASSES.

Class C.—Landscape and Seascape:—(111) F. W. Burton, silver plaque; (123) G. W. Perkins, silver plaque; (119) F. C. Skidmore, withheld.

Class D.—Portraiture and Figure Studies:—(167) Hamilton Smith, silver plaque; (164) F. C. Skidmore, silver plaque; (177) C. W. Allen, certificate.

Class E.—Architecture and Street Scenes:—(182) F. W. Burton, silver plaque; (186) C. R. Ogden, certificate.

Class F.—Still Life and Animal Studies:—(196) G. W. Perkins, silver plaque (withheld); (195) E. M. Ryan, silver plaque.

Class G.—Any subject (for those who have never won an award):—(221) F. C. Skidmore, silver plaque; (232) Mrs. C. M. Perkins, silver plaque; (213) N. E. Toke, bronze plaque; (209) Dr. T. Streatfeild, certificate.

Class H.—Lantern Slides:—(261) Hamilton Smith, silver plaque; (255) G. W. Perkins, bronze plaque; (254) G. W. Lewis, bronze plaque.

## REFLEX CAMERAS.

On Monday in last week, March 27, a small exhibition of reflex cameras was opened at the offices of the "Amateur Photographer," 52, Long Acre, where it may be visited free of charge daily, from 10 to 6. The lapse of four years since we arranged a similar exhibition at the offices of the "B.J." has had little effect on the design of the reflector camera. Fresh details of construction have been introduced, but the type remains the same, excepting only in the case of the instruments now available, which are fitted with a diaphragm in place of a focal-plane shutter. Of these, unfortunately at the time of our visit, we were unable to discover any examples, but those interested in this latest development of the reflex will find particulars of the new cameras in our issue of last week, among the reviews of other new introductions in apparatus. Meanwhile, in the "Amateur Photographer" exhibition Messrs. Marion and Co. show their well-known "Soho" camera in various sizes, including the new "Dainty," and a handsome tropical model in teak. The Thornton-Pickard Company are to the fore with Ruby reflexes, in ordinary and tropical styles, one having a good triple extension, and the Royal Ruby, with its great range of rising and swing front. Messrs. Fallowfield have a whole-plate studio "Fallowflex," and Messrs. Lancaster and Sons various types of their Plano-reflexes, one of which is fitted with the Unit shutter. Mr. J. Lizars shows a good selection, including his De Luxe and tropical cameras, also a simple form without focal-plane shutter.

Messrs. Houghtons show several of their Ensign A. reflexes, which are very moderate in price, and excellently made and finished. Their collapsible reflex attracts considerable attention, and meets with general approval. The Goerz folding reflex is also on view, and the facility with which it is opened and closed, and the very high quality of the workmanship, makes a good impression.

Messrs. Butcher and Co. are represented by one camera only, the Pressman, and this has the only shutter with multiple slits in the blind on view.

Messrs. Ross, Ltd., have several cameras fitted with their Homocentric lenses, including a twin lens model, which will be fitted with their Multi-speed shutter.

The latest naturalist camera, fitted with Grandac telephoto lens, is shown by Messrs. J. H. Dallmeyer, Ltd., and Messrs. Watson and the City Sale show their respective instruments. Messrs. Newman and Guardia hope to send their new models, but at present only show their well-known standard pattern, and Messrs. O. Sichel and Co. have two well-made examples of the reflex supplied by them.

◆

## FORTHCOMING EXHIBITIONS.

March 11 to April 8.—South London Photographic Society. Sec., Horace Wright, 180, Friern Road, East Dulwich, London, S.E.
March 25 to April 20.—Worcestershire Camera Club and Photographic Survey Society. Sec., G. H. Haycox, St. Wulstan's Crescent, Worcester.
March 28 to April 8.—Streatham Photographic Portfolio. Sec., F. E. Huson, 56, Salford Road, Streatham Hill, S.W.
April 17 to 21.—Southend-on-Sea Photographic Society. Sec., C. A. E. Chandler, 29, St. Helen's Road, Westcliff-on-Sea.
April 25 to 26.—Ealing Photographic Society. Entries close April 12. Sec., T. W. Bartlett, 20, Craven Avenue, Ealing, London, W.
April 25 to 29.—Barrhead Amateur Art Club. Entries close April 11. Sec., J. M'Grouther, Glenartney, Barrhead.
April 27 to May 4.—Malvern Camera Club. Entries close April 17. Sec., J. B. Nickolls, The Exchange, Malvern.
May 3 to 4.—Chelmsford Photographic Society. Sec., C. H. Wallis, Rosebank, Moulsham, Chelmsford.
May 8 to 31.—Royal Photographic Society. Latest date, carrier, April 24; hand, April 25. Sec., J. McIntosh, 35, Russell Square, London, W.C.
May 10.—London Secession. Sec., M. Arbuthnot, Winchester House, Old Broad Street, London, E.C.
May 12 to 20.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between March 20 and 25:—

PLATES.—No. 7,201. Collodion silver bromide instantaneous photographic plate and its method of manufacture. Louis Enjolras.

DEVELOPING TANKS.—No. 7,255. Photographic developing tanks. John George Higgs Brookes.

LANTERNS.—No. 7,004. Construction of electric lanterns used in conjunction with bioscope projection machines. Andrew Burns.

CINEMATOGRAPHS.—No. 6,896. Cinematograph rheostat. Frederick John Borland.

### *COMPLETE SPECIFICATIONS ACCEPTED.*

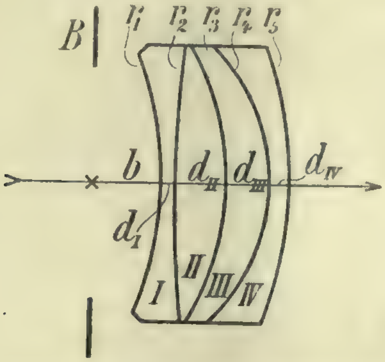
*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

FOUR-LENS ANASTIGMAT.—No. 23,604, 1910 (October 15, 1909). The invention consists in an improvement of the single objective, composed of four lenses cemented together, which was designed by Dr. Rudolph in 1894 as the first anastigmatic single objective, and has been supplied since 1895 by the firm of Zeiss under the designation Series VII. (Protar lens 1 : 12.5). In this objective, of the three cemented surfaces the front one (facing the diaphragm) is convex towards the front and collective, the middle one is concave towards the front and collective, and the rear one is concave towards the front and dispersive. The front lens has a concave front surface and the rear lens is dispersive, with a convex hinder surface. Hence the front lens is bi-concave, the second bi-convex, the third concavo-convex and collective, and the dispersive rear lens also concavo-convex.

A more perfect correction of the single objective is now rendered possible by a highly refractive glass being chosen for the third lens, a glass the index $n_D$ of which amounts to at least 1.57, while in the construction hitherto used this index was 1.51. The improvement in the correction may be directed to increasing the intensity, diminishing the spherical zones, or more completely removing the astigmatism. In a correspondingly less degree the benefit of the improvement can be given to two of these objects or to all three. At the same time, there is a lessening of the average curvature of the lens surfaces, whereby the manufacture of the objective is facilitated.

A constructional example of the new single lens is represented in the drawing and fully explained in the tables below.



This lens is further corrected chromatically and with regard to the sine condition. Its relative aperture is 1 : 12.5.

The radii and thickness of the lenses I., II., III., and IV., as also the distance of the lens I. from the front diaphragm B, are enumerated in the first table. They apply to the focal length 100. The second table characterises the kinds of glass by the refractive index $n_D$ and the index $n_{G^1}$ for the Hγ-line of the hydrogen spectrum.

Radii, distance and thicknesses

| | |
|---|---|
| $r_1 = -\ 12.0$ | $b = 2.34$ |
| $r_2 = +\ 44.2$ | $d_I = 0.48$ |
| $r_3 = -\ 9.3$ | $d_{II} = 1.70$ |
| $r_4 = -\ 6.6$ | $d_{III} = 1.50$ |
| $r_5 = -\ 13.4$ | $d_{IV} = 0.66$ |

Kinds of glass

| | $n_D$ | $n_{G^1}$ |
|---|---|---|
| I | : 1.4979 | 1.5074 |
| II | : 1.6227 | 1.6308 |
| III | ; 1.5813 | 1.5952 |
| IV | : 1.6275 | 1.6487 |

Carl Zeiss, a body corporate, incorporated under the laws of the Grand-Duchy of Saxe-Weimar, Germany, residing at Carl-Zeiss-Strasse, Jena, Germany.

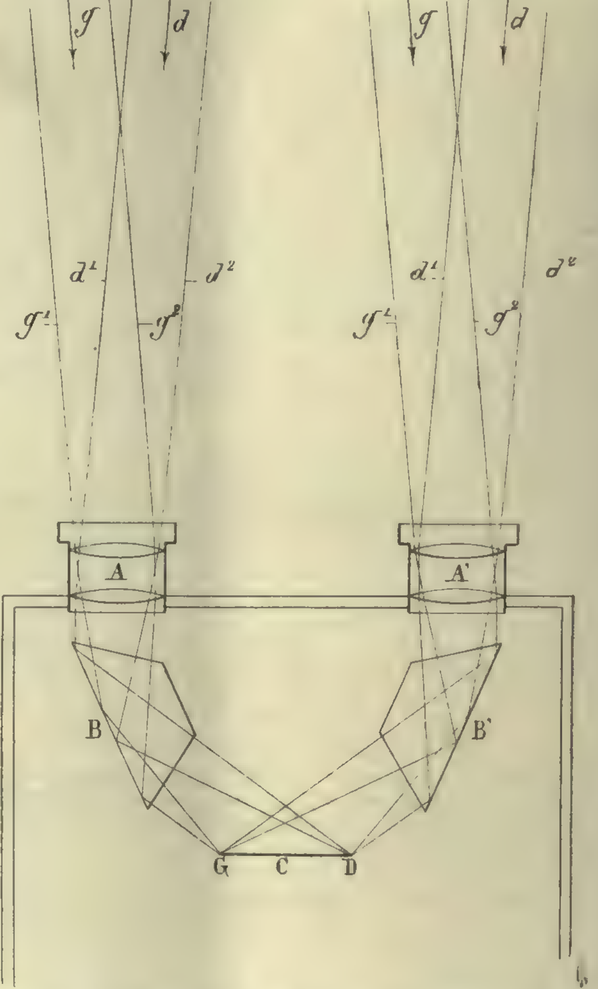
**Stereoscopic Projection.**—No. 9,760, 1910 (May 8, 1909). This invention, which relates to improvements in the projection of stereoscopic views of living pictures, is an improvement on part of the arrangement shown in Patent No. 26,135 of 1909 ("B.J.," November 11, 1910, p. 858), and practically differs only in the substitution of another kind of prism which admits of giving to the luminous rays a better course, and consequently of simplifying the apparatus and rendering it less bulky.

It has before been suggested in apparatus for superposing stereoscopic views to employ double-reflecting rhomboidal prism behind the lenses to effect the superposition.

The invention is illustrated diagrammatically in the accompanying drawing.

The bundles of luminous rays *d* and *g*, which come respectively from the right and left ends of the object, are transmitted by the lenses of the objectives A $A^1$ to the prisms B $B^1$, which, owing to the arrangement of their faces, reflect in the way shown the rays upon a plate or film C placed behind them equidistant from each of the prisms. The distance away of the plate is adjustable, so that the common point of intersection D of the four luminous ray bundles $d^1$ $d^2$ coming from the right side of the object, and the intersection point G of the rays coming in like manner from the left side of the same object, determine the exact adjustment of the sensitive plate or film C, which records the two superposed images.

In the case of living pictures, nothing is altered in the usual mechanism of the cinematograph, but the objective is removed and replaced by the present apparatus, adjusting the distance between the prisms and the film so that the luminous rays passing through the prisms combine and are superposed upon the film, as already described. Auguste Jules Toupillier, 4, Rue Vivienne, Paris.



**Photographing Meter Readings.**—No. 12,318, 1910 (May 19, 1910). The invention relates to photographic cameras for photographing meters or for other purposes. The object of the invention is to provide a simple device by means of which the indices of gas, water, and electric meters may be readily photographed, making an accurate and infallible copy, thus preventing errors arising from improper or erroneous readings. The invention could also be used for various other purposes, such, for instance, as in connection with watchmen's time clocks, in which case it could be used to photograph the watchman as he makes the record. For the details of construction, the text and drawings in the specification require to be consulted. Edward Clement Pond, 146, South Jefferson Street, Petersburg, Virginia, U.S.A.

The following complete specifications, etc., are open to public inspection, before acceptance, under the Patents Act, 1901:—

**Cinematographs.**—No. 27,784 of 1910. Arrangement for adjusting in correct position the pictures of cinematograph films. Compagnie Générale, etc.

**Cinematograph-Phonograph.**—No. 6,390. Automatic clutch for running a cinematograph and phonograph synchronously. Soc. des Etablissements Gaumont.

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At the Exhibition of the United Provinces of India, now being held in Allahabad, Messrs. W. Watson and Sons have been awarded the only medal for photographic apparatus.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Night Photography.

The lens used (writes Mr. W. L. F. Wastell, on a series of night photographs in "Photography and Focus" for April 4) was a twelve-inch Wray landscape lens, working at $f/8$. As it is intended for use on a whole-plate, it will cover a half-plate well at full aperture, even when the rising front is in use. The advantages of such a lens are, first, that, being of pretty long focus for the plate, very near lights can be excluded; secondly, there are the minimum number of reflecting surfaces, with consequently less risk of flare, rings, and other phenomena; thirdly, the long mount acts as an ideal hood. Fortunately, these old "single" lenses may be picked up at very low prices, and not only do they serve admirably for night photography, but they are extremely useful for many classes of daylight work. It is well to look for one whose focal length is about double the long side of the plate for which it is to be used.

A successful night negative laid down on white paper should show abundance of delicate detail, with scarcely any portions that are not slightly veiled in development rather than absolutely clear glass. Such negatives will give a pleasing and truthful rendering on a suitable paper, and are well adapted for making enlargements or lantern-slides by artificial light.

# New Books.

Class Books of Physics and Chemistry. London: Macmillan and Co., Ltd.

Photographers, who ought to study the principles of their craft but largely, we fear, never dream of doing so, doubtless seek to justify their neglect by the excessive dryness of the text-books which deal with the laws of chemistry and light, upon which the processes of photography and the construction of photographic instruments respectively depend. But in taking that view they are ignoring the strides which have been made of late years in the writing of text-books of science. In its design to cultivate the powers of observation and reflection of a student, there is an immense gulf between the text-book of to-day and that which did duty no longer ago than fifteen or twenty years. The modern writer, oppressed though he still is by the bane of an examination system, has, nevertheless, proved himself equal to the task of making his subject attractive, whilst preserving the strictly educative character of his text. We are frequently asked to name books on elementary science, and particularly "photographic chemistry," which those anxious to take up the study of the principles of photography may read with advantage. But we are afraid the student will never learn much from text-books which attempt to teach photography and the principles of chemistry, or light, in the same set of pages. The best advice which can be given is to choose a modern text-book which deals with the elements of natural science and to learn by study how these principles are applied in photographic processes. Two volumes which can thus be recommended to the student with a liking for home experiment, or with the opportunity of studying physics or chemistry at a secondary school, reach our table from the publishers, Messrs. Macmillan and Co. The first, "A Class Book of Physics," by R. A. Gregory and R. E. Hadley, is an introduction to the elements of mechanics, heat, light, sound, and electricity. Obviously, it cannot deal fully with the many branches of these large subjects, but its clear explanations and ample use of diagrams provide an educative introduction to these subjects. It is, of course, intended to be used as a class book, and the reader who has not the opportunity of so using it and of making, under supervision, the practical experiments, cannot, of course, obtain the full value intended from it. Yet the private student, who without these advantages takes the volume through a careful reading and endeavours to answer the questions at the end of each chapter, will, by this exercise alone, have learnt more than from the study of a more comprehensive text-book.

A volume upon somewhat the same lines, "A Class Book of Chemistry," by G. C. Donington, introduces the student to the study of chemistry in the simplest way, namely, by a consideration of the natural properties of a few simple substances, and of the changes which they undergo. We contrast a volume such as this with the books offered to the chemical student of twenty years ago, with their affrighting lists of elements and laws in Chapter I. The way is made easy for the student of science nowadays, and from such volumes as these he is brought to learn, first and foremost, the experimental laws upon which all science depends.

Readable Books in Natural Knowledge. London: Macmillan and Co., Ltd.

We hear a great deal nowadays of the stimulus which should be applied to amateur photographers to devote themselves more to the use of the camera in the sphere for which it is most qualified, namely, the recording of things seen, and, as we have many times said, we are in complete sympathy with any movement which encourages such application of the camera. But the unfortunate thing is that, while photographers are many, those of them with sufficient knowledge to use their craft in these ways are comparatively few. What is wanted is the means of interesting the amateur photographer in the things which archæologists, zoologists, botanists, and other students of folk-lore, natural history, etc., find to be so deserving of photographic record. We, therefore, welcome a series of books published at the uniform price of 1s. 6d. each, which may be commended to photographers' reading, not only for the information they give, but for the interest which they should assuredly awaken in things (many of them common things enough) to be met with at home or abroad. In "The Past at our Doors," by W. W. Skeat, M.A., we have a little manual which tells in a most interesting way the story of our food and dress and our homes, the portion dealing with the last-named subject containing much in particular which will provide fresh interest for the photographic worker. The second volume, "Tillers of the Ground," by Marion I. Newbigin, is not a volume on agriculture, but an interesting talk on the history of some food plants and of the results of recent scientific methods in the improvement and cultivation of plants and crops. In the third volume, "Threads in the Web of Life," by Margaret R. Thompson and J. Arthur Thompson, M.A., we have fourteen interesting chapters on the place of animals in nature, again not in any sense a systematic text-book of even elementary zoology, but a little volume which should excite in the reader an interest in the great processes of nature by which animals have secured or changed their characteristics.

The fourth volume, "Wonders of Physical Science," by E. E. Fournier, B.Sc., consists of a series of miscellaneous chapters on scientific work, ancient and modern, from Galileo and his discovery of the movement of the earth round the sun to the flying machines of Zeppelin and the Brothers Wright.

"County Court Practice Made Easy, or Debt Collection Simplified." London: Effingham Wilson. 2s. 6d. net.

Photographers, like other tradesmen, and, we fear, more than other tradesmen, are under the painful necessity of obtaining money from unwilling payers, and often, owing to the smallness of the amounts in question, are loath to employ a solicitor, whose charges they may after all have to pay themselves. A concise manual, therefore, of County Court practice such as this should have a place upon their shelves. The volume, now in its fourth edition, is written in a familiar conversational style, and deals with every detail of legal methods which may be followed in "pursuing" (we like the Scottish term) a customer in the County Court. The author is careful to point out the alternatives open at any given stage, and his advice should be the means of photographers obtaining the money for many accounts which they have reluctantly written off as "bad debts."

# New Apparatus, &c.

**Imperial Exposure Meter. The Imperial Dry Plate Co., Limited, Cricklewood, N.W.**

Most users of meters have experienced difficulty in securing accurate ideas of exposure when working in interiors or in a very bad light, and the Imperial Dry Plate Company have now supplemented their standard meter by a second one, specially adapted for use in bad conditions of light. The only differences in this new edition of the meter are the use of a much lighter matching tint, and of a modified time of exposure scale, in which the times marked appear to be about four times as great as those on the original or No. 1 meter. The test paper used is the same, and the manipulation of the No. 2 instrument is exactly similar to that of the other; therefore the photographer has nothing more to learn except when to use No. 1, and when to use No. 2 meter. In regard to this point the makers say that when the time taken to match the tint in the No. 2 meter is less than 20 to 25 seconds, then No. 1 meter should be used. The Imperial meter is well known, and its simplicity fully appreciated, so the new introduction should be well received. It can either be bought separately at 1s., the same price as the older one, or the two can be obtained bound together in leather, a highly convenient form, for 2s. 6d.

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## CATALOGUES AND TRADE NOTICES.

Wratten Plates, Filters, Etc.—Two new catalogues reach us from Messrs. Wratten and Wainwright, Ltd., Croydon, one a brief "Price List" of the plates, light-filters, safe-lights, and sundries manufactured by this progressive firm; the other a "Descriptive List," running to forty pages, and dealing with the distinctive features of the Wratten manufactures. These notes contain much of interest to workers who desire to make the best use of the commercial materials at their disposal, and while the "Price List" may be conveniently kept at hand for purposes of ordering, the "Descriptive List" is one which both photographers and photographic dealers would find it to their advantage to study. Both lists may be obtained on application to Messrs. Wratten

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, April 7.

Kettering Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Sunday, April 9.

United Stereoscopic Society. "The Stereoscope and Stereoscopic Projection." A. W. M. Dickins and F. Low.

### Monday, April 10.

Cleveland Camera Club. "Yorkshire Abbeys, Cathedrals, &c." A. E. Wright.

Kidderminster and District Photographic Society. "Art in Photography." C. A. Allen.

### Tuesday, April 11.

Royal Photographic Society. "Fogging in Development-" C. E. K. Mees and C. Welborne Piper.

Sheffield Photographic Society. "Oberammergau and the Country of the Passion Play." W. H. Houghton.

Leeds Photographic Society. Members' Annual Meeting.

Faversham Institute Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

Manchester Amateur Photographic Society. "Some Principles of Picture-Making." W. J. Pearce.

### Wednesday, April 12.

Croydon Camera Club. "A French Wonderland and the Devil's City." J. A. Sinclair.

West Surrey Photographic Society. "A Loon in London." W. L. F. Wastell.

South Suburban Photographic Society. "Ely Cathedral." H. W. Fincham.

G.E.R. Mechanics' Institution, Stratford, Photographic Section. "Pinhole Photography.' G. N Collyns.

South Essex Camera Club. "Art and the Camera." P. Bale-Rider.

Balham Camera Club. "Intensification and Reduction." C. W. Coe.

Ilford Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

### Thursday, April 13.

Maidstone and Institute Camera Club. "Flower Photography by Artificial Light." E. Seymour.

Oldham Photographic Society. "The Ruined Abbeys of Yorkshire." T. Burton.

Worthing Camera Club. Annual General Meeting.

Liverpool Amateur Photographic Association. Excursions, 13-18, Brittany; 13-18, Bettws-y-Coed

Handsworth Photographic Society. "Exposure and Exposure Meters." Discussion.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, March 28, Mr. Chapman Jones in the chair. A paper on "Surface Brightness: Its Measurement and its Application to Photography," by J. S. Dow and V. H. Mackinney, was read by the former. The authors dealt with the apparatus designed by them and termed the "Lu-meter" for the measurement of brightness of illumination; and they suggested the use of an instrument of this type as an exposure meter. The instrument is used to measure the brightness of the darkest parts of the subject, its employment being based on the same general principle as that of the extinction exposure meters of which there are several patterns on the market. Naturally, such a method does not allow for the chemical activity or inactivity of the light at different times of the day, but the authors' measurements had led them to believe that it nevertheless supplied a useful basis for the exposure of plates.

Meeting held Tuesday, April 4, Mr. Chas. H. Oakden in the chair. A paper by Mr. S. Gardner on "A Visit to some Irish Antiquities" was read by the author, giving special prominence to the old Irish round towers, and illustrating his remarks with a large number of excellent lantern-slides, also dealing at considerable length with the ancient and modern theories as to the construction and use of these towers. After a brief discussion, a hearty vote of thanks to the lecturer brought the proceedings to a close.

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# Commercial & Legal Intelligence.

Legal Notices.—A receiving order has been made in the case of Reginald Edwin Michael Bleasdale, photographer, etc., residing and carrying on business at Victoria Buildings, Church Street, Nuneaton, lately residing and carrying on business at 11, King Edward Road, Nuneaton.

A receiving order has been made in the case of Fred Molyneux, photographer, out of employment, residing at the George Hotel, Liverpool Road, Cadishead, Lancs. The first meeting is to be held on April 8, at Manchester, and the public examination on April 11, at Salford.

The partnership between Arthur George Barrett, Stanley E. King Richardson, and George Woods-Taylor, press photographers, trading as News Illustrations Company, 4, Johnson's Court, Fleet Street, E.C., having been dissolved by mutual consent, as from March 28, the business will be carried on under the same name and at the same address, to whom all debts due to, and owing by, will be received and paid by Stanley E. King Richardson and George Woods-Taylor.

The Graphotone Company.—At the London Bankruptcy Court, on March 23, the public examination was held, before Mr. Registrar Hope, of Charles Geard, who formerly carried on business as a photographic printer at Enfield, under the style of the Graphotone Company. The debtor's statement of affairs showed liabilities £8,768 14s. 10d., of which £3,794 1s. 3d. were returned as expected to rank against the estate for dividend, and assets estimated to realise a net sum of £305 5s. 11d. Mr. G. W. Chapman, Official Receiver, attended, and in reply to him the debtor, who resided at East View, Chase Court Gardens, Enfield, stated that he began the above-mentioned business in 1896, and carried it on for a number of years. It then came to an end in consequence of a fire. He had a stock of 125,000 negatives, which were destroyed, with the result that the basis of the concern was destroyed. He was insured, it was true, but for all that he sustained a loss of £5,000 by the fire. He made his prints from the negatives, and as they had absolutely been destroyed it was impossible for him to continue the business. The debtor added that for very many years before December last, when he voluntarily resigned, through becoming involved in other businesses, he acted as agent and manager in England for a French firm of printing ink manufacturers. He attributed his failure to loss through the fire at the Graphotone Company's premises, and to further losses sustained through financing two persons who had been carrying on business as a printer and paper agent respectively. The examination was ordered to be concluded.

Press Photographer's Successful Action.—In the King's Bench Division of the High Courts of Justice, before Mr. Justice Grantham on March 30, a special jury was empanelled to try the case of Montague Dixon and Co., photo-illustrators, of 15, Newgate Street, E.C., versus the Pictorial Newspaper Company, Ltd. Mr. C. F. Gill, K.C., and Mr. C. A. Bennet appeared for the plaintiffs, and Mr. F. E. Smith, K.C., and Mr. R. B. Murphy, for the defendants.

Mr. Gill, in intimating that a settlement had been arrived at between the parties, said that his clients were well known as a firm that supplied photographs to illustrated papers, and the case turned on a photograph supplied by them to the "Daily Mirror," which purported to be an illustration of the arrival of De Lesseps at Dover on a cross-Channel flight. On this occasion Mr Dixon sent a photographer down to Dover to take a series of pictures, and, although the operator was able to secure several pictures of the crowd awaiting the arrival, he was unable to bring the aeroplane within the focus of the camera, although the airship was distinctly seen. In order to indicate what the crowd were assembled to watch the plaintiff superimposed on the photograph sent to the "Daily Mirror" and other papers a Blériot aeroplane. On learning the facts of the case, the defendants inserted a paragraph in the "Daily Mirror" intimating that the photograph was "faked," and that the plaintiffs had specially posed a crowd of people for the occasion. It was added that, unfortunately for the plaintiffs, a "Daily Mirror" photographer was witness of this procedure. His clients asserted that this statement was without foundation, and that they were in a position to produce as witnesses people who were in the actual crowd awaiting the arrival.

His Lordship: I see there is a soldier waving a flag and a lady waving an umbrella.

Mr. Gill said that this was so, and these people could be called as witnesses. Continuing, Counsel said his client had had business dealings with the defendants for many years before this action which was brought, because such a statement as that they had posed a crowd was likely to do them harm in business. His clients had no desire whatever to carry the matter further.

Mr. F. E. Smith, for the defendants, said there were two statements to be considered, and he desired to make it clear that, as to the allegation that the plaintiffs had posed a crowd, the correspondent of the "Daily Mirror" had been misled by the fact that he had seen a small company posed for a photograph, other than plaintiffs', which also contained a soldier. As regards the insertion of the aeroplane in the picture, it was admitted by the plaintiffs that the machine was not within the focus of the camera, and in this respect his clients were justified in the remarks they made.

His Lordship: The result of it is that the defendants pay the plaintiffs' costs, and that is all that happens.

Judgment was then entered for the plaintiff without a verdict.

Stockton Photographer's Affairs.—At the Stockton Bankruptcy Court, Fritz Youngblutt, a photographer, appeared for his public examination, and said he was in debt £926 0s. 2d., and deficient £711 2s. 8d. His failure was due to paying too much for the business and too heavy expenses. The Official Receiver said there were 767 working-class creditors, from whom he had taken orders and obtained money by instalments on condition that at the end of the payments they would receive photographs. The bulk of these had, however, got nothing. Debtor admitted this, and several of the creditors were present. One lady said she had paid 31s. 6d. The examination was adjourned.

A Fraud on the U.S.A. Studios.—At the Westminster Police Court recently, Edward Gray, alias Thomas, of Copeland Road, Leyton, a well-dressed young man, was, before Mr. Francis, charged on remand with larceny as a bailee and with obtaining money by false pretences from young servants in different parts of London. The prisoner, falsely representing himself as a person in the employment of the "U.S.A. Studios," and producing a list of their branches, called on servants and solicited the loan of old photographs "for enlargement without cost," the frame only to be paid for. In several cases it was proved that he absconded with sovereigns and half-sovereigns entrusted to him for change, and in other instances the prosecutors paid money in advance on bogus receipts and orders for photographic work at the local establishments of the U.S.A. Company.

Mr. J. P. Woolfe, of the company's studios, said they had had complaints from practically all their ten metropolitan branches, and the frauds, which had been going on for eighteen months, had been most prejudicial. They employed no canvassers whatever.

The prisoner, pleading guilty to a number of cases, said he had been in a large way of business himself, and it was the ease with which other canvassers had got money from servants that induced him to misrepresent himself as the agent of a well-known concern.

Mr. Francis told the prisoner that he was nothing but a systematic and wholesale swindler, and sentenced him to nine months' hard labour.

A Canvasser Sentenced.—At the Ludlow County Police Court, Arthur Preece, described as a travelling photographer, was brought up on remand charged with obtaining by false pretences on July 10, 1905, and the three following days food and lodgings and several articles to the value of 10s., from Mary Jukes, formerly of 10, Railway Terrace, Craven Arms, and now of Upper Pulley, Shrewsbury.

Complainant stated that she now resided at Upper Pulley, near Shrewsbury. In July, 1905, she was living at No. 10, Railway Terrace, Craven Arms. On July 10 of that year the prisoner came to the house with her husband. He said he should require lodgings for four days, and would pay her 1s. per night for them. He told her he was working for Mr. Cadwallader, a photographer of Wolverhampton, and the firm would not allow him more than 1s. per night for his lodgings. He said he was canvassing for orders for Mr. Cadwallader, who would be coming round on the following Saturday and take photographs of the people from whom he (prisoner) had taken orders. Believing his story to be true, witness supplied prisoner with food and lodgings to the value of 10s. He stayed with her until midday on July 13. He then asked her if she could lend him a shirt, a pair of socks, and a towel, as he was going to have a bath. She lent him these articles, but she had never had them back, and she had not seen the prisoner since until lately. When prisoner left her house he left a small parcel behind, and when, some two or three days later, she opened it she found it contained nothing but paper. On the following morning she received a postcard (produced) from him saying he would be returning to her the next day, but he did not do so. The postcard bore the Ludlow postmark, and was written in pencil. Witness had received nothing in the way of payment for the debt incurred at her house, neither had prisoner returned the shirt, socks, and towel. On July 14, 1905, she gave information to the police, and a warrant was issued for the prisoner's arrest.

Cross-examined by prisoner, witness said she did not know that he was arrested in Worcester on the day after he sent the postcard to her.

Joseph Cadwallader stated that he formerly carried on the business of a photographer at Wolverhampton, and towards the end of June, 1905, prisoner was employed by him as a canvasser in the Brewood district. Prisoner was given definite instructions what to do, and he had no authority to canvass or incur any expenditure on witness's behalf in the district of Craven Arms or in Shropshire at all. Shortly after he was sent to Brewood prisoner disappeared. Witness was able to trace him to Penkridge, but no further.

Cross-examined by prisoner, witness said he did not suppose he told him not to canvass in other districts besides Brewood, and he certainly did not tell him to go to Craven Arms. He received no orders from Craven Arms or Ludlow. Witness added that orders from those districts would have been no use to him, as they were too far distant from Wolverhampton for him to attend to them.

Prisoner elected to be dealt with by the Bench, and said he would rather plead guilty than have the case further remanded. He, however, had no intention of robbing Mrs. Jukes, and if he had not been arrested he should have returned to her as he stated on the postcard. He handed in a long written statement in which he stated that circumstances over which he had no control prevented him from returning to his lodgings at Craven Arms. He had undergone a long term of imprisonment on another charge, and since his release he had led a straight life and tried to redeem his character.

The Bench retired to consider the case, and, on their return, the Chairman said prisoner had been convicted seven times for offences of a similar nature, and for this offence he would be committed for two months with hard labour.

## NEW COMPANIES.

**Elliott and Fry, Ltd.**—This company was registered with a capital of £1,000 in £1 shares. Objects: To carry on the business of photographers, etc., also to acquire the business carried on at 55 and 56, Baker Street, W., as Elliott and Fry. Signatories are to appoint the first directors. Qualification, £10. Remuneration, £150 per annum, divisible. Registered office, 55, Baker Street, W. Private company.

**Pathe Freres Cinema, Ltd.**—This company was registered with a capital of £400 in £1 shares. Objects: To take over the business and undertaking carried on in the United Kingdom by La Compagnie Générale de Phonographes, Cinematographes et Appareils Société Anonyme, in connection with the manufacture and sale of cinematographs and moving pictures as "Pathe Frères, London." Registered by Bristows, Cooke, and Carpmael, 1, Copthall Buildings, E.C. Private company.

**Hare and Company, Ltd.**—This company was registered with a capital in £4,000 in £1 shares. Objects: To carry on the business of manufacturers of, and dealers in, photographic or other sensitised plates, films, or papers, photographic or other chemicals, and cameras, lenses, and accessories of all kinds, etc.; also to adopt an agreement with L. E. Clift for the acquisition of the business carried on by him as Hare and Company. First directors, L. E. Clift (chairman and permanent managing director), S. Wenham, R. Andrews, W. J. Barnard, and A. D. Smith. Qualification, £20. Registered office, 1, Holborn Place, High Holborn, W.C. Private company.

## News and Notes.

**The London County Council** has accepted the tender of Houghtons Ltd. for photographic materials for all asylums. The estimated value of the contract is £65 11s. 3d.

**Photography of the Coronation Ceremony.**—Sir Benjamin Stone has received a communication from the Earl Marshal, the Duke of Norfolk, informing him that the King has been pleased to appoint him official photographer for the Coronation ceremony in Westminster Abbey.

**Photography at the Record Office.**—Mr. Scargill Bird, secretary of the Public Record Office, giving evidence at a recent meeting of the Royal Commission on Public Records, said there was a considerable demand for permission to photograph the records of the office, especially on the part of Americans and Frenchmen. There was no charge for this permission, and if anyone chose to bring his own photographer he could do so.

**Hypo-alum Toning.**—In reference to the commercial use of hypo-alum toning for postcard and other work, Mr. W. Trattles, 13, Victoria Mount, Leeds, informs us that he gives personal demonstrations at photographers' own works or studios of the method which he has in continuous successful use for the production of a toned card in imitation of P.O.P. The specimens of this latter which he encloses are excellent.

**The Illingworth Monthly Competitions.**—The prize-winners for February are as follows:—Open class, £1 1s.: F. W. Beken, Durbar, Mill Hill, Cowes, Isle of Wight, "A Breezy Day on the Solent." Print on "Zigas" paper. Novice class, £1 1s.: D. Henderson, 4, Maitland Street, Tayport, Fife, "Reflection." Print on "Slogas" paper. Junior class, £1 1s.: A. Lord, 41, Avon Road, Hale, Cheshire. Landscape. Print on "Slogas" paper.

**Photographers' Water Supply.**—The revolt of 2,000 amateur photographers of Leeds against the proposed camera tax has been successful. The Leeds Corporation, which expressed its determination to charge every owner of a camera 10s. per annum, has decided not to carry out the proposal, which, inasmuch as it would penalise the followers of an interesting hobby, was strongly denounced by all classes of ratepayers.

**Royal Institution.**—A general monthly meeting of the members of the Royal Institution was held yesterday afternoon (the 3rd instant), the Duke of Northumberland, K.G., President, in the chair. Mr. J. Devonshire, Mr. G. H. Griffin, Mr. W. E. Lawson Johnston, Mrs. Guy Pym, and Mr. A. E. Reed were elected members. The chairman reported the decease of Professor J. H. Van 't Hoff, an honorary member of the Royal Institution, and a resolution of condolence with the family was passed.

**"The Imperial Handbook, 1911."**—This issue of the yearly budget of reading and illustrations, distributed free by the Imperial Dry Plate Company, Ltd., Cricklewood, London, N.W., contains much useful advice on the choice of a plate, exposure, street photography, diaphragm apertures, nature photography, developing, etc. Amateurs of limited knowledge will derive much assistance from its pages. They may apply to their dealers for a copy, or may obtain one by directly writing to the Imperial Company.

**The Britisher Reflex.**—An omission from Messrs. Staley and Co.'s advertisement on page 20 of last week's (Colonial) issue of the "B.J." made it appear as though this modern reflex camera was issued only in the two sizes 3½ x 2½ and 7 x 5. It should be stated that the Britisher is supplied in 3½ x 2½ (or 9 x 6 cm.), in quarter-plate (or 9 x 12 cm.), in postcard, 5 x 4, half-plate, and 7 x 5 sizes. A list giving full particulars and prices is sent free on application to 19, Thavies Inn Holborn Circus, London, E.C.

**Messrs. Griffin's New Manager.**—Mr. A. W. Green, who has for many years been second in command of the photographic department of Messrs. John J. Griffin and Sons, Ltd., has now succeeded to the post of manager through the resignation of Mr. Frank Ibbetson. Mr. Green has long been a prominent member of the photographic trade, and his present appointment will doubtless be a source of gratification to his many friends therein.

Mr. A. W. Green.

**Mr. Alfred Watkins.**—Probably many of the innumerable users of exposure-meters and other most useful appliances supplied by the Watkins Meter Co. are unaware that the head of the firm, Mr. Alfred Watkins, has undertaken his photographic work in the none too ample leisure obtained from his duties as partner in the large flour-milling business of Watkins Bros., Hereford. We are now glad to learn that Mr. Watkins is to be relieved of a considerable share of his responsibilities in this branch of his interests, and will have greater opportunities for photographic experimental work.

# Correspondence.

**** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

**** We do not undertake responsibility for the opinions expressed by our correspondents.*

## ROYAL PHOTOGRAPHS AT THE FORTHCOMING R.P.S. EXHIBITION.

To the Editors.

Gentlemen,—I am pleased to inform you that the Royal Photographic Society has been honoured by the loan of a number of photographs belonging to their patroness, Queen Alexandra, taken by her Majesty and others: they are illustrative of the life of King Edward. It is hoped to gather together an interesing collection of photographs connected with the life of the lamented King for exhibition at the forthcoming show of the Royal Photographic Society at Prince's Skating Club in May.—Yours faithfully,

JAMES A. SINCLAIR,
Chairman, Exhibition Organising Committee.
35, Russell Square, London, March 29, 1911.

## THE STORAGE OF NEGATIVES.

To the Editors.

Gentlemen,—I find a stupid error in my article on negative storage. It is not really my own, though, of course, I am responsible. I took my figures from my architect's memorandum (given many years ago) without checking them, and it will be noted that he has reckoned each negative as a box of one dozen plates in calculating the total weight. Though this very materially reduces the total given, it, of course, does not interfere with the argument as to the need of precautions.—Yours faithfully,

G. WATMOUGH WEBSTER.
Studio, Grange Road, West Kirby, April 4, 1911.

## IRIS-DIAPHRAGM SHUTTERS.

To the Editors.

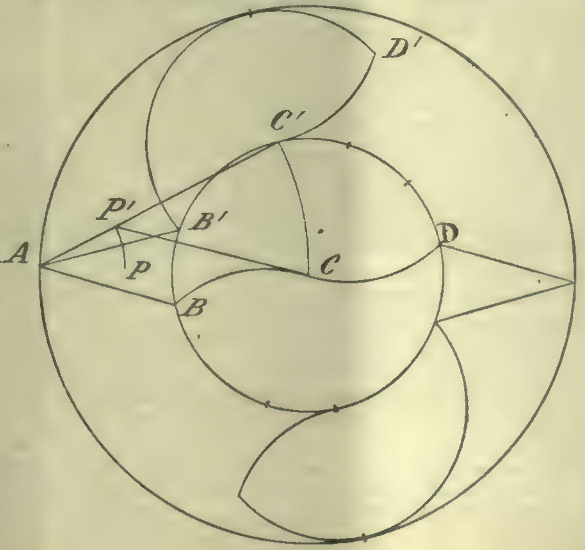

Fig. 1.

Gentlemen,—With reference to your very interesting note in the "B.J." for March 24 as to my paper at the R.P.S., allow me to point out that I showed that the use of only two leaves requires, theoretically, exactly the same size of case as is required for three leaves, such as are used in some of the well-known shutters. Theoretically the diameter of the opening may then be made half the diameter of the shell or case. As a fact, in the best between-lens shutters with three leaves, the outside shell is generally made about two and a half times the opening diameter. The outside diameter of the shell of the iris-diaphragm shutters on the market is also about two and a half times the opening diameter, so that it cannot be said that the two-leaved shutter, in comparison with any shutters now made, requires a bulky case. Certainly by increasing the number of leaves I proved that the outside shell could be diminished in size, but such has not so far been done in practice. In showing that the highest efficiency was obtained with only two leaves I certainly was assuming the diameter of the shutter aperture to be constant, and did not consider the interesting point of view which you suggest.

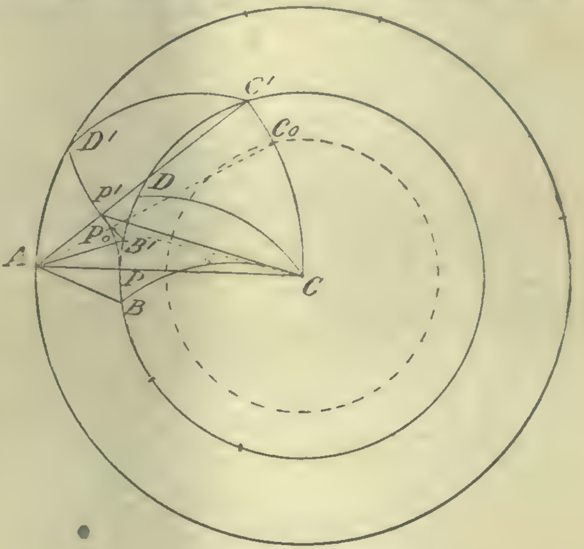

Fig. 2.

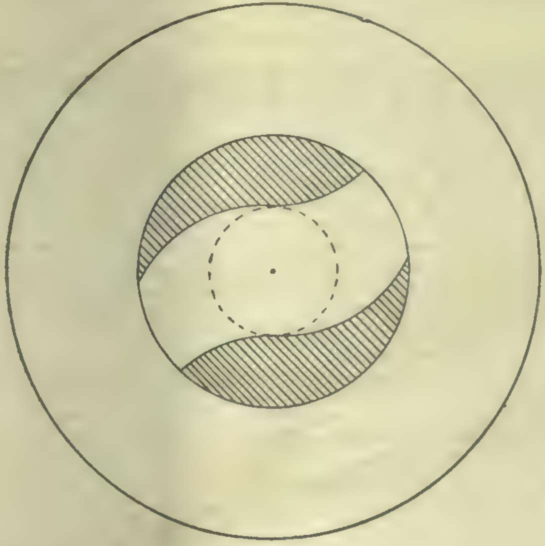

Fig. 3.

Let us now consider the shell diameter constant, and take a given diameter of lens for the two cases: of a shutter with two specially shaped leaves opening in a broad band from centre to edge, and a shutter with ten leaves opening like an iris diaphragm in an expanding circle. The two cases are shown in figures 1 and 2. In figure 1 I have taken the opening of the shutter equal to the lens opening. The positions of one leaf when the shutter is open and closed are then ABCDEA and AB′ C′ D′ B′ A. P and P′ are the two positions of the pin moving in a rotating plate which opens and closes the shutter. In figure 2 we have the same shell diameter, but in consequence of ten leaves the full opening of the shutter is considerably larger. ABCDBA and AB′ C′ D′ B′ A are the two positions of the leaf, when the shutter is open and closed, and the dotted circle shows the same opening as in figure 1, which is the size of the lens. $PP_o$ and P′ are successive position of the pin taken at the same distance from A as in figure 1. It is then clear from the figure that the angle PCP′ in figure 1 is equal to the angle PCP$_0$ in figure 2, so that for equal spring-tensions and equal openings in the two cases it takes as long for the ten-leaved shutter to open and close as for the two-leaved, and in the two-leaved case the efficiency is much higher, as shown in figures 3 and 4. The only advantage which might perhaps be claimed for the ten-leaved shutter is that, as the shutter is closing after the exposure is made, it would have a running start as it passed through the position C$_0$, whilst the two-leaved should have a standing start. If, however, sufficiently powerful springs are employed, I should not think that there would be any real difference, and this would certainly be less than the difference of efficiency due to the shape of opening in the two cases. Comparing figures 3 and 4, you will notice that the aperture uncovered in the two-leaved shutter is more than double that of the ten-leaved. Of course, this disproportion is greatest at the beginning and end of the movement, and is least when the shutter is almost fully open.—Yours faithfully,

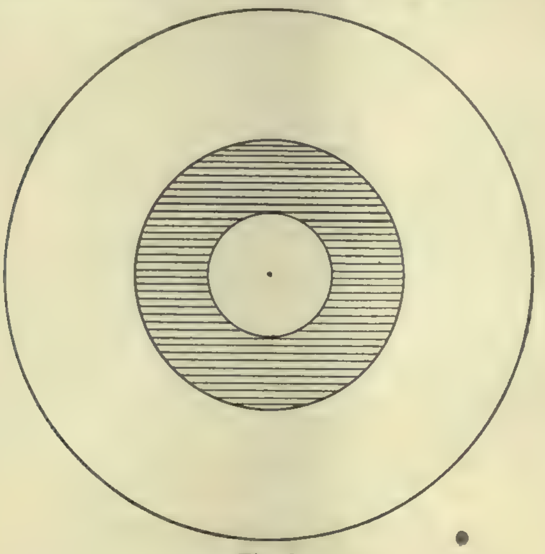

Fig. 4.

Cyril F. Lan Davis.

J. H. Dallmeyer, Ltd., Denzil Road, Neasden, N.W.,
March 24, 1911.

## Answers to Correspondents.

⁂ *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

Photograph Registered:

W. J. Clapham, 1, Trafalgar Square, Barking, Essex. *Photograph of entry in Register in Parish Church of Barking, of Marriage of Capt. Cook, the Explorer.*

**Frena.**—If the camera is the only one carried and is in use, it is not liable to duty.

**C. W.**—Notice should have been given to you on a Saturday to expire the following Saturday. You can claim for your wages until April 8.

**K. L. M.**—We cannot tell you, except to say that in the Australasian colonies cheap competition is as acute as here. In the larger cities of South America, West Indies, etc., there should be more opportunity.

**X. Y. Z.**—"The Studio and its Construction," by Thomas Bolas, 2s.; "Studio Construction," No. 50, of the "Photo-Miniature," price 6d. Both from Routledge and Co., 68, Carter Lane, E.C. When using a lens of 10 or 12 inches focus studio should be 20 to 25 feet.

**Suberit Corks.**—We should be much obliged if you would give us the address of the makers of the Suberit cork mentioned in the "B.J." of March 17 last, page 190.—Halstead and Co.

Mr. Chas. A. Gould, 125, High Holborn, W.C., is the agent for the "Suberit" Company.

**Colour Collotype.**—Will you kindly inform me, through the "B.J." if there is a book on colour collotype, price of same, and where can be obtained?—Tricolor.

There is no manual, and not likely to be one, considering the small use of the process, in this country.

**Pinacyanol.**—As I am unable to obtain the dye pinacyanol from any firm in Glasgow, I shall be much obliged by your informing me through the "B.J." where I can get it (also price, if possible).—W. R. P.

From Fuerst Bros., 17, Philpot Lane, London, E.C. Price 10s. per half gram (7½ grains).

**Book on Cinematograph Work.**—Should be greatly obliged if you will advise me through this week's issue of the "B.J." what are the best books to read on cinematograph work, and the same in two colours, and where I can buy same.—Operator.

The most recent manual is that published by the "Bioscope," Ganes, Ltd., 85, Shaftesbury Avenue, W.

**Premier Optical Company.**—Will you kindly give me, in this week's issue of the "B.J.," the address of the Premier Optical Company, London, full address? Having sent a parcel to them insufficiently addressed, same was returned to me "Not known."—J. H. Mumford.

Premier Optical Company, Ltd., 63, Bolton Road, Stratford, London, E.

**Various.**—Where can I obtain the Suberit corks for regular use, and where can I obtain the book, "The Calculus Made Easy," both described in your No. 2,654?—E. Fischel (Amsterdam).

The English agent for the "Suberit Fabrik" is C. A. Gould, 125, Holborn, London, W.C. We do not know the German address. "The Calculus Made Easy" is published by Macmillan and Co., price 2s.

**Hardening Celluloid Varnish.**—I should be glad if you could tell me of a means of hardening celluloid varnish (celluloid in amyl-acetate), so as to render it less liable to be scratched by the paper passing over it in machine printing.—Varnish.

We fear it is impossible to do what you want. Celluloid is already one of the hardest varnishes used. Possibly you do not use enough of it.

**Calico for Stretchers.**—Will you kindly inform me of a firm where I could obtain quotations for a cheap line of calico, or prepared cheesecloth, suitable for covering 20 x 16 strainers?—R. B.

We can only advise you to apply to a large draper, or to a maker of the stretchers—*e.g.*, Griffiths' Steam Works, Eyre Street Hill, Hatton Garden, E.C.

**Matting P.O.P.**—Will you be so kind as to inform me if there is any way of preventing glossy P.O.P. when put on ground glass (to get the surface rough) from drying off with small shiny specks all over? What should the glass be prepared with?—Pyro.

It is difficult to avoid this effect when using ground glass. Try making the very finest ground glass yourself with carborundum powder, or better, get the matt celluloid sheets or slabs sold for the purpose.

**Articles of Association.**—Will you kindly inform me where I can obtain a copy of Articles of Association of a photographic limited company, and reports of companies, such as Kodak, Marion's, etc.? If you could put me right on these points I should be thankful.—F. V. C.

You can inspect the Articles of Association of public companies at Somerset House. As regards the reports, you can only obtain these as an act of courtesy from the companies themselves.

**National Physical Laboratory.**—With reference to your recent remarks in the "B.J.," would you kindly let me know if the National Physical Laboratory restrict themselves to an examination of the higher-priced shutters, or if they would undertake the examination and testing of, say, an ordinary before-lens Thornton-Pickard, and the cost of doing so?—John Jenkins.

The Laboratory tests any shutter whatever. The charges are not high—from half-a-crown to five shillings.

Washing Negatives.—Would you tell me if a batch of negatives in an ordinary washing tank with an outlet at the bottom can be washed quicker by the tap running full on, than by using a smaller quantity of water with the tap running slowly?—L. G. Green.

Certainly, the greater flow of water will result in more rapid washing, though to what extent it is not possible to say. But with the tap either slow or fast, the method is wrong in principle. The correct way is to let the water draw off completely by a syphon or other means.

Dark-Room Safe-Lights.—Can you tell me what material I can safely have in place of red glass to dark-room windows? My dark-room is a basement, so never has broad daylight in. I should like something to use in place of a lamp, where enough light comes through in the day time to save putting up shutters and lighting lamp, as sometimes I want to develop or put plates in in a hurry. It is not convenient for other purposes to have glass windows fixed permanently.—E. W.

You cannot have a better material than "Ruby Cristia," purchasable in any length, 34 inches wide, price 3s. 6d. a yard.

Green Tones.—(1) Would you mind telling me how to get green tones, and what paper to use? I should like to know how to get other tones. (2) I should like to know what material to get for top of studio for shading purposes.—B. C.

(1) Best plan is to use the carbon or ozobrome process, using a green tissue. If you write to the firms, Nos. 1, 2, 4, 5, and 6, mentioned under "Carbon" in the "Almanac," page 1340, they will doubtless let you have sample prints in their green tissues. You can green-tone bromide or gaslight prints, but it is not so satisfactory a method. For other toning methods see "Toning Bromide and Gaslight Prints," No. 103 of the "Photo-Miniature," price 6d., from your dealer. 2. A material for this purpose is sold by Messrs. Reinemann, New Zealand Avenue, Barbican, E.C.

Toning with Gold.—(1) I would very much value your opinion of tone of enclosed print (on Kentmere P.O.P.). I may say it is obtained without the use of gold, and, so far as I know, by no published process. My estimate is that 100 prints could be similarly toned at a cost of one penny. Do you think this process would be of any commercial value? (2) Could you suggest any improvement in the lighting of enclosed head by one enclosed arc lamp?—Economy.

(1) Certainly there is a demand for such a process for the cheaper class of photograph, presuming that it is also easy and speedy in working, and applicable to all makes of P.O.P. (2) Much too hard and concentrated a lighting. You need to put the arc further away or diffuse the light more or use a reflector more effectively.

Painting Background.—Could you please supply me with a formula of a distemper for a background? I require one that is a very light shade of blue, suitable for sketch photographs.—Background.

Use a mixture of common whiting and water, of about the consistence of cream, to which add melted size to form a thin "shaky" jelly when cold. A very light blue may be made from ordinary white distemper by squeezing the domestic blue-bag into it and stirring till the desired tint is obtained, remembering that the distemper is several shades lighter when dry than when wet. We should, however, prefer to buy a packet of one of the ready-made distempers, such as Hall's or Temeraire, of the colour required, which can be seen in its dry condition on a colour chart.

Emulsion.—Can you assist me in the following question? After producing an ordinary negative, say of a landscape, I want to coat it again with a sensitive emulsion, dry it, and expose it by contact under a superposed positive. The speed of the emulsion is not very material, as I expose by artificial light. Only I must print by contact, and could not expose the plate wet. My question is: What kind of emulsion to use, what is its name, and where can it be purchased, as I do not want to attempt making an emulsion myself, according to the books? I prefer to buy it. —A. K. (The Hague).

You cannot buy gelatine emulsion, except by favour of a platemaker. We should think you would do best to use a collodion emulsion, such as that supplied by Penrose and Co., 109, Farringdon Road, London, E.C., price 7s. 6d. per 250 ccs.

Red Line Prints.—Will you kindly advise me through your "Correspondence" column if there is any solution, on the order of the ordinary blue-print solution, that, when applied to paper and printed under a negative and washed out or toned, will give a red, or a solution that will give a yellow?—H. E. B.

Paper can be sensitised in a 20 per cent. solution of uranium nitrate, printed, washed, and "developed" in 12 per cent. solution of potass. ferricyanide. This gives red prints, but it is not a very satisfactory method. We should say that a more satisfactory plan would be to sensitise with a single-solution silver-iron sensitiser, such as that on page 779 of the "Almanac," and tone for red in the uranium intensifier, or for yellow with a solution of lead nitrate and potass. ferricyanide (the lead intensifier), followed by potass. bichromate solution.

Developers.—1. Will you kindly say what is the smallest quantity of potass. metabisulphite which one can use per ounce pyro, as a practical preservative? 2. Suppose you just neutralise the acidity of same, by the requisite quantity of sodium carbonate in solution 2, what effect on speed of development would successive additions of ½ oz. of carbonate per 20 oz. of solution have? I want to get at the connection between grains per ounce of alkali (carb.) and speed of development.—Pot. Meta.

1. As a preservative, one dram will probably be effectual, but this will not be likely to prevent stain. 2. The speed of development will increase, but how much we cannot say. Your question relates to matters that have not been thoroughly investigated. Very little indeed is known with regard to development, but we understand the subject generally is under investigation, so possibly the points you raise will one day be elucidated.

Colour Process.—I thank you for your reply to my last query, but would point out that the Ives "Tripak" is not on the same principle as the idea I told you of in my last letter. The first plate falls down inside the camera and a mirror is then dropped to the correct angle above it. This arrangement requires a special camera and special dark slides, apart from the special manipulation. Now, in my method there is none of these disadvantages, no mirrors being used, and the pack is exposed as an ordinary plate. Is this original? and could it be patented by anyone else but myself? I would have no desire to patent it. —P. Davidson.

Such methods have been used for two-colour, and, we believe, for three-colour exposures, and we should say a patent in it could not be sustained. If you do not wish to obtain patent protection, we should think your best course is to publish your method. Obviously, this would be putting a spoke in the wheel of any coming after you.

Photographing Small Objects.—I have a small half-plate camera, fitted with about an 8-inch lens. I use this a lot for photographing small objects, about half to full natural size, which naturally means I have to use the full double extension, and in this position my camera (which I use usually out of doors) presents a very large area to the wind, and often vibrates very much. In order to get critical detail on my subjects I have to stop to *f*/16 or *f*/22 (nominally). Can you tell me if I could get these same results with just as much depth of field, etc., by the use of any special lens, so that I need not use such a long extension, and yet get large size pictures of objects at close quarters with only a short extension? Could I obtain similar results by means of a magnifier on my own lens?—S. E.

You should be able to do all you require with a fixed telephoto lens of the Bis-Telar type. You will see a list of these in the "B.J. Almanac." A so-called "telephoto" magnifier might help you, but it would not be likely to give such good results.

Reproduction Studio.—Will you inform me where I shall find the best data for the construction of a studio to be used almost entirely for copying oil-colour and other pictures, possibly of large size?—A. H. L.

We are not aware of any printed data on such studios. Probably you would find articles in the "Process Year Book" or the "Process Photogram" of recent years occasionally dealing with the matter, as in America there are several big studios of this kind, which we recollect having been mentioned there. Naturally, a very large room is required, with a high side-light and top-light; in fact, it would be better to have glass on both sides of the room if possible, so as to obtain light from both sides, with blinds to shut off when not required. Most paintings will give best results when photographed by daylight. If this is not possible, then a pair of searchlights is the best form of electric illumination. If the room is at the top of a house, a lift should be provided by means of which large-sized paintings can easily be brought up.

Copying.—(1) I want to copy, and usually have to copy from stamp size up to cabinet—that is, five or six times larger than the original. What way is best to do it? I usually get the largest result my lens will give, and then repeat this operation until I get it to proper size—that is, I keep re-copying. Would a very short-focus lens enable me to get direct copies? My lens is 8 in. focal length, Cooke *f*/5.6. Could I get an extra back lens to shorten focal length?—Bromona.

(1) It is simply a matter of having a camera of long enough extension. Taking the stamp photograph as 1 in. high and the cabinet print as 6 in. high, your degree of enlargement is 6. This means that distance from lens to plate is seven times the focal length of your lens, or 56 in. Your lens is of inconveniently long focus for this work, though if you care to make a long wooden box to serve as a camera, it will answer perfectly. But we should advise you to get a cheap R.R. of 4-in. focal length, which will bring your required extension down to 28 in.—within the reach of a half-plate camera, with the aid of an extension box for the lens. You could get a supplementary "copying" lens for your Cooke, but a good one would cost you as much as the R.R. (2) Shellac solution can be brushed over the backs of the prints, but the method has obvious drawbacks compared with a separate tissue.

Arc-Light Portraiture.—Can you please tell me if there is any book published on portraiture by electric light, arc-lamps, etc.? I find it difficult to get rid of the heavy shadows, both on the dark side of the face and on the background. I have two lamps, and use a muslin curtain and also a head screen, and a linen reflector for the shadow side, but I am very much bothered with the shadows. Any hint you can give me would be very acceptable.—Jandus.

There is no book specially devoted to arc-light portraiture, but numerous articles have appeared on the subject in past issues of the "B.J." Mr. Coward's article of January 10, 1910, may help you, while the report of the P.P.A. Congress in April last (pp. 283, 299, and 302), contains some valuable hints. It is possible that you are using the light too much at the side of the sitter, and also too near to him. Most users of the enclosed arc-lamp are now using an opaque reflector in front of the light, the illumination being all by reflection from an umbrella or white sheet. A very good arrangement is to have a semi-cylindrical reflector half way round the lamp, with a curved white sheet to throw the light on the sitter. This sheet is treated exactly as if it were a window, the light being controlled by translucent and opaque blinds, as may be desired. Contrary to what might be supposed, the cutting off of the direct rays does not unduly prolong the exposure, half a second with a quick lens and plate being generally sufficient.

An Order for View Negatives.—Some time ago our photographer received an order, verbally, for 250 each of six views for pictorial postcards. The photographs were to be specially taken for customer, and in accordance therewith he went and took the photographs, which were all different subjects, some of them a mile from each other. When the photographs were submitted (over a dozen views to choose from), a considerable time elapsed, and no reply was sent by the customer until we had sent him four letters with regard to same. He then replied saying he would have ten of the views reproduced, and we wrote him confirming his order for 250 each of ten views, at the price as quoted by our photographer, which was less than our usual prices, to induce customer to order at the quiet time of the year. He has now replied to the effect that we have made a mistake, and that he certainly should not pay the price we now quote nor stock so many of one view. We wrote him again, saying that if 250 each of ten was more than he required we would do the original order as given to our operator (six views only), if he would say which six he required. Although a fortnight has elapsed, he has sent no reply. Do you think we have a reasonable chance of recovering the amount at the County Court if we send him in a bill for the taking of the photographs? The place where the photographs were taken is a twelve-miles journey by train from our works.—Alpha.

Without having seen the correspondence, we should say you can. Presumably your photographer can attend to give evidence as to the circumstances of the original order.

Colouring Prints.—(1) Is there any reason why water-colour paint should fade more on a bromide or toned bromide than on a carbon print? (2) Can you tell me the cause of the colour on the enclosed print on the lips and cheek changing as it has done? (3) Can you give me a list of the most permanent water-colours to use on toned bromides, particularly for flesh tints? (4) If the metallic look on the mouth of the picture sent is caused by the bromide changing, is the same thing likely to occur with a toned bromide, as I believe this one is an untoned bromide? (5) Is gum used in colouring injurious to the print or colour? (6) Is water wax megilp better to use than gum?—Inquirer.

(1) There is no reason for water-colour painting to fade more upon a bromide print than upon a carbon, but the bromide image itself is naturally more liable to change than a carbon one. A carelessly made bromide will almost fade away and yet leave the working-up in almost its original strength. (2) We have consulted a maker of artists' colours on this point, and he is of opinion that a lead pigment, such as flake white, has been used for the body colour on the lips and cheek, and that this has been acted upon by sulphurous fumes, probably from gas. Chinese white should always be used for water-colour work. (3) Such a list will be found on p. 782 of the "B.J. Almanac" for the present year. (4) The metallic look is not due to the print, but to a change in the pigment. If properly prepared, a toned bromide should be less liable to change than a black one. (5) Pure gum is not injurious, either to the print or the colours. If much is used, it is liable to crack in dry atmosphere or go mouldy in a damp one. (6) Water-colour megilp or Newman's sizing preparation are both excellent for making the colours work smoothly, but will not glaze the shadows as well as gum.

◆

At a recent meeting of the Bermondsey Piscatorial Society, before a large audience, Mr. J. McIntosh, secretary of the Royal Photographic Society, delivered his lecture on "The Thames, from the Source to the Sea," illustrated with Autochrome transparencies. A member of the Angling Society, Mr. R. R. Beard, of lantern fame, informs us that the society is pleased to have photographers in its membership, since it is found that outings with a twofold object are readily arranged. The society's premises at Grange Road, Bermondsey, are well equipped for lantern and cinematograph evenings, and it is thought that photographers in the district may be glad to know of the disposition of their brethren of the rod to meet with them.

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THE BRITISH

# JOURNAL OF PHOTOGRAPHY.

No. 2658. Vol. LVIII. FRIDAY, APRIL 14, 1911. Price Twopence.

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## SUMMARY.

The views of Mr. William Crooke upon the methods of American professional photographers are expressed in an interview with Mr Crooke granted on his recent return from a tour in the United States. (P. 280.)

An American professional lays stress on the opportunities for increased business in enlargements. (P. 287.)

At the Royal Photographic Society on Tuesday evening last Dr. C. E. K. Mees and Mr. C. Welborne Piper, in a lengthy paper on development, brought forward a number of points which, it would seem, will lead to a revision of some of our ideas. They found that, with the hydroquinone developer, sulphite is a powerful cause of fog; also that a developer of hydroquinone (in large excess) and caustic soda alone gives neither stain nor fog. (P. 277.)

A miscellany of hints, offered by a young professional for the guidance of his colleagues, is quoted from "Camera Craft." (P. 283.)

M. G. Balagny, in a recent paper before the French Photographic Society, dwells upon the advantages of the spirit sensitiser in carbon printing. (P. 285.)

A method of tank development in which a test paper is used in place of development for a fixed time or inspection of the negative is described by a contributor. (P. 282.)

Photographing shop windows, copying with a reflex camera, etc., figure under "Correspondence." (P. 294.)

The practical advantages of the permanganate reducer is the subject of a note on page 278.

The methods to be followed in the measurement of the effective and angular aperture of lenses, is the subject of an article on page 278.

Several new books on nature and applied photography are reviewed on page 290.

The annual report of the Kodak Company records the enormous total of net profits of £1,850,552. (P. 288.)

The Tunbridge Wells Natural History and Philosophical Society is arranging a competition for geological photographs. (P. 293.)

Cinematography in natural colours by the Smith-Urban process is now presented as a nightly entertainment at the Scala Theatre. (P. 286.)

Sir Benjamin Stone has made a statement to the "Times" on his appointment as official photographer to the Coronation. (P. 293.)

## EX CATHEDRA.

**Fog in Development.** In the paper on "The Fogging Power of Developers," by Dr. C. E. K. Mees and Mr. C. Welborne Piper, which was read at the R.P.S. last Tuesday, several interesting and important facts were elucidated, chief among which we may place the one that sulphite of soda in the hydroquinone developer is a powerful cause of fog. As we have several times pointed out in these columns, fog is far too prominent a feature in the average modern negative, and we have heard many complaints from trade printers with regard to the quality of the amateur negatives sent to them. In all cases the complaint seems to be the same. The negatives are too foggy, and too weak in contrast to render good prints. The authors of the paper referred to above point out that with quantities of sulphite such as are commonly used a maximum fogging effect can be produced, while bromide loses all control over the fog in a development of ten minutes. Apparently, then, the only way to minimise the fog is to cut the development short, and the attempt to strike a mean of safety produces the very results of which we hear so many complaints. The experiments recorded in the lecture were confined to the hydroquinone developer, and while this is not very generally used in its simple form, yet hydroquinone in conjunction with metol is perhaps the most popular developer of the day. It is a comparatively modern developer, and possibly its most popular predecessor was pyro soda, in the days of which we heard few complaints with regard to fog. Many good workers still keep to this developer, and we believe they meet with little trouble from fog, even though they use sulphite. We understand that the effect of sulphite with pyro has not yet been tested by Messrs. Mees and Piper, but it is interesting to note that Messrs. Hurter and Driffield in one of their papers stated that sulphite appeared to have no effect. If this is confirmed, then it will seem that sulphite fog is more or less peculiar to hydroquinone, and that the general use of this particular developer with sulphite is responsible for most of our troubles.

* * *

**A New Hydroquinone Formula.** Another very interesting point brought out by the authors of the paper on "Fog" is the fact that a developer containing hydroquinone and caustic soda alone, and without any sulphite or bromide, gives neither stain nor fog if the hydroquinone is in large excess. Further than this, it appears to greatly increase the speed of the plate. These very material advantages are counterbalanced to some extent by the fact that it is incapable of giving any great contrast even when development is very long. Possibly, however, this apparent disadvantage may really be an advantage, for a developer that raises the plate speed, and yet will only give a soft result with prolonged development, should certainly have advantages in the case of high-speed shutter work, and intensification will always remedy want of contrast. The fact that this developer works at all satisfactorily affords a confirmation of what we said in a note last week with regard to the little that is known about developers, for possibly no one would have anticipated that a developer without either sulphite or bromide could be both non-staining and non-fogging. Two very common fallacies are also disposed of by the results given in the lecture. Most practical workers would probably assume that a large excess of alkali would increase fog, whereas it appears that it has absolutely no effect on fog. Again, others would be likely to assume that greater contrast would be assured by increasing the proportion of hydroquinone, whereas it appears that the direct contrary is the case, a greatly diminished contrast being the natural result of an excess of hydroquinone. This, we believe, is not a new fact. It was mentioned in Sheppard and Mees' book on the theory of the photographic process, but still practical workers are probably not familiar with it.

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**Quinhydrone.** In the lecture on "Fog" quinhydrone was mentioned as being formed in the hydroquinone developer, and the probable parts that it plays were referred to. This little-known compound, though a most expensive one to buy, its price being about six shillings per ounce, can nevertheless be prepared at very small cost, and it is worth while to make a little for the mere purpose of seeing what is generally described in the chemical text-books as one of the most beautiful compounds known to organic chemistry, which, by the way, is about all the information they usually offer. The cleanest and simplest way of preparing it is to mix equal parts of solutions containing equal weights of hydroquinone and quinone; but the latter for some obscure reason is also a very expensive compound, and a cheaper method is to simply add a solution of ferric chloride to a hydroquinone solution. The latter solution should be a strong one, 4 to 5 per cent., otherwise the quinhydrone will dissolve. Dark coloured, needle shaped crystals are formed the moment the solutions are mixed, and as these float on the surface of the liquid they present the golden iridescent colours of beetles' wings. A mass of the crystals thus floating has a very fine effect. If collected and dried the crystals mat together into a sort of felt-like mass, with a metallic, greenish-brown lustre. A little should be thus collected, washed, dried, and dissolved in alcohol. If a drop of this solution is then allowed to evaporate on a glass slip, and the result is examined in a micro-polariscope, one of the finest effects possible is obtained. The crystals arrange themselves in feathers, the colours of which are extraordinarily brilliant, and vary with the direction in which they lie. Often the feathers group together in most beautiful patterns, and a number of slides should be prepared, for the chances are that the patterns will differ in each one.

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**Repairing and other Leases.** Photographers buying or starting businesses are not infrequently disposed to pay too little attention to the conditions on which they are to hold the premises where their business will be conducted. We have known instances where the photographer has actually purchased the concern without troubling to enquire on what terms the property was held by the vendor, only to find later that he had taken upon himself the responsibilities that vendor had incurred with regard to repairs to the property. The residue of a lease may be a very expensive matter, and in some cases we have met with so expensive that, were the goodwill and equipment of the business thrown in as a gift, the bargain would only be a good one for the individual who was unloading. Quite recently a photographer of our acquaintance took over a going concern, and it was only after considerable pressure had been exerted by his surveyor that the landlord agreed to the insertion of a clause in the agreement to the effect that he would be responsible for any defects in the drainage system. The usual excuse was made, that he knew the drains were all right; it was pointed out that, this being so, the insertion of the clause could do no harm, and only when it appeared the tenant would be lost did he give way. Yet within six months the surveyor for the district sanitary authority inspected the drains and ordered their complete renewal, the cost totalling something like £80! Enthusiastic young workers anxious to get into their own business are often apt to overlook, or lack courage to press, such points, fearing they may lose the concern; but better this than to be landed in an expense that would be a burden to a large business and ruination in a small one.

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**Permanganate Reducer.** Few professional workers realise what a convenient reducer a weak acidified solution of potassium permanganate is for negatives which are a little too strong in contrast and yet not sufficiently so to necessitate the use of ammonium persulphate. The negative which has been fully or slightly over-exposed and fully developed may call for reduction with hypo and ferricyanide, while the slightly under-exposed and too fully developed negative is certainly best treated with persulphate, but many negatives may be reduced very effectively by means of permanganate. Not the least of its advantages is that no subsequent washing is necessary, and thus time is saved. The process is simplicity itself, and the reagent so cheap that it may almost be said to cost nothing. The permanganate is best kept as a 10 per cent. solution, of which one dram is taken and added to ten ounces of water. Five drams of 10 per cent. sulphuric acid must also be added. If the reducer is applied to the dry negative, sweeping it across the plate in an even wave as when developing a plate, the high-lights are reduced to a greater extent than the shadows, while applied to a wet negative reduction is even. Should the solution become decolourised, the presence of hypo in the negative is indicated and a fresh quantity of reducer must be applied after rinsing the negative. As soon as reduction is sufficient the plate may be rinsed under the tap for a few seconds, say half a minute, and set up to dry. The quantity of sulphuric acid given is sufficient to prevent the formation of any brown stain.

## THE MEASUREMENT OF LENSES.

In measuring lenses it too often happens that the more essential features of which measurements are really desirable are neglected, while undue attention is given to the amounts of aberration and to the degrees of correction. As regards aberration the user of the lens is well content if the corrections reach a certain general standard, and the precise amounts of any residual degrees of imperfection are not of any consequence to him. On the other hand, he does want to know the optical constants of the lens, and in regard to these the information he possesses is always imperfect and seldom accurate. We propose in this article to deal with this part of the subject of measurement alone, and to enumerate and describe the necessary constants.

The constants that it is desirable to know are as follows:

First, there is the focal length; this constant needs no special comment in our pages, but closely connected with it is the question of the positions of the nodes from which all conjugate distances are to be measured, and, considering the variety of positions which the nodes can occupy, a knowledge of their actual situation is often very necessary, especially to the camera maker. The camera extension required with a lens of a particular focal length is determined solely by the positions of the nodes, and therefore the construction of a camera for a particular lens or the selection of a lens for a particular camera often depends on the nodal positions. The next constant is the position of the lens pupils, or more particularly the entrance pupil, with regard to the position of the nodes. Very few ever trouble to ascertain this constant, yet the behaviour of the lens to some extent depends upon it. The pupil position is, however, of less importance than the next three constants, which relate to aperture.

These are, first, the effective aperture, which governs relative exposure with different stops; second, the efficient aperture, which governs exposure with different lenses working at the same effective aperture; and, third, the angular aperture, which governs depth and may differ from effective aperture. Efficient and angular apertures are seldom considered, and therefore mistakes often arise owing to making the effective aperture alone serve for all three constants. The difference between effective aperture and efficient aperture may perhaps be best understood by the following illustration:—Suppose we adopt the familiar method of using a pinhole to measure the effective aperture of a lens. The pinhole is placed at the principal focus of the lens and a disc of bromide paper is inserted in the lens cap, which is then placed on the hood of the lens. A bright light is placed behind the pinhole for a few minutes, and then the bromide paper is removed and developed. The result is a dark disc, the diameter of which is the diameter of the effective aperture of the lens. If, however, we make the exposure with the aid of a standard light, expose for a constant time, and also develop with a standard developer for a constant time and at a fixed temperature, then the density of the dark disc measured in a photometer will afford the means of measuring the efficient aperture. That is to say, it will give a fairly accurate photographic measure of the efficiency of the lens, making full allowance for loss of light due to absorption of the glasses and a fairly adequate allowance for loss due to reflections. A mere measurement of the diameter of the effective aperture gives no information whatever as to loss of light due to absorption and reflection, and therefore the assumption that lenses of the same effective aperture are of the same rapidity is often entirely wrong.

The difference between angular and effective aperture is of far less importance than that between effective and efficient aperture, but neglect to note the difference that does exist leads to various minor mistakes. In most lenses angular aperture differs from effective aperture, and while Continental makers often mark the lens with its angular aperture, English makers and lens-users almost universally mark and measure the effective aperture. This difference of method not being generally understood, it is sometimes assumed that the marking is wrong, when the only cause of the discrepancy is that the marking is being checked by the wrong system of measurement. Another small error arises from the same cause. The difference between angular and effective aperture is too small to generally affect the question of exposure, small variations in which are covered by the latitude of photographic plates, but it may be quite big enough to affect questions of depth in the case of very near objects and lenses of large aperture; and if depth is calculated upon effective aperture, as it usually is, the results will vary from those actually obtained, since angular aperture is the real factor that should be considered. In the case of near objects questions of exposure and depth are further complicated by variations due to the positions of the lens pupils, and therefore to estimate the relative advantages of two types of lenses in the matters of exposure and depth we want to know all these constants.

With regard to methods of measurement, a turntable or "tourniquet" apparatus will allow us to measure focal length and angular aperture, and also to fix the positions of the nodes and pupils with the greatest facility. Effective aperture can also be measured on the same instrument, but efficient aperture requires a different type of apparatus, and this may easily be arranged so as to measure both the effective and the efficient aperture. One method of doing this was suggested in an article in our issue of December 3, 1909, in which we proposed taking the intensity of the light at the lens pupil as a unit standard of comparison. A measurement thus obtained would give the efficiency of the lens as regards light transmission, and the exposure required would, of course, be in inverse proportion to the efficiency.

Suppose we had two lenses, both working at an effective aperture of $f/8$, but one with an efficiency of .6 and the other of .7, the relative correct exposures would then not be equal, but be as 7 to 6. This is perhaps the simplest way of making use of the known efficiency, but the actual efficient apertures can be determined if required by dividing the effective aperture numbers by the square roots of the efficiencies. To avoid unnecessary alterations in the numbers in present use we might consider a lens passing, say, .6 of the light incident at the pupil as possessing unit efficiency. In this case a lens passing .7 of the light would have an efficiency of 1.16 and at an effective aperture of $f/8$ its efficient aperture would be $f/7.4$, while $f/11$ would be $f/10.5$. Comparing this with another lens of unit efficiency, the exposures for the apertures marked with the same numbers would be as 54 to 63 or 6 to 7. For practical purposes it would be most desirable to have all lenses marked with their angular apertures and with the efficiency, but such a revolution is, of course, impossible in the case of existing lenses. It is, however, desirable to know the efficiency so as to permit the comparison of the rapidity of different lenses, and apparatus for measuring it is much wanted. A standard unit of measurement must, of course, be fixed, and we suggest that .6 of the incident light might prove a very serviceable one, seeing that this figure probably represents the average efficiency of most of the lenses in common use. We suggest that new lenses should invariably be marked with their angular apertures and with their efficiency, and recommend this course as preferable to that of marking their true efficient aperture. By adopting the former course we shall always know the true aperture governing depth, and we shall also have all the information wanted for calculating exposures with different stops. When comparing different lenses the efficiency number can be brought into use, for, owing to the latitude of the plates, the difference between angular and effective aperture can well be ignored.

By adopting this course we reduce our list of necessary optical constants by one, for efficient aperture can be ignored altogether. For many reasons it is a pity that this method of considering aperture was ever invented, for it has given rise to many misconceptions, and its practical value is almost nil. For rigid accuracy we should, in theory, adopt the efficient aperture for exposure and the angular aperture for depth, but practical considerations show that angular aperture and efficiency are really sufficient.

# A SCOTTISH PHOTOGRAPHER IN AMERICA.

Mr. William Crooke, Edinburgh, has just completed a tour in the United States of America. His position as a portrait photographer of note is such that anything that he might have to say on photography in the States is bound to be of much value. With the view of getting his opinions, our special representative called on him at his studio in Edinburgh. The studio is situated in Princes Street. From the windows of the reception room a beautiful view is obtained of Edinburgh Castle, that "dream in masonry and living rock," and across the Princes Street Gardens to where the smoky houses of the Old Town look down on the magnificent thoroughfare of the Northern capital. The studios leading off the reception rooms are spacious and convenient, and contain many original features that owe their origin to Mr. Crooke's experience and artistic taste.

On the walls we see prints that have done their part in maintaining the Crooke fame. There is a majesty about all the pictures from these studios that is so prevailing that it might well be termed the dominant note in the scheme of Crooke harmony. Even childhood, when photographed by Mr. Crooke, assumes an aristocratic mien; one can hardly imagine him photographing a slum child and retaining the slum atmosphere.

We got Mr. Crooke, who was good enough to reserve an hour for our benefit, to tell the story of his tour, and we will endeavour to reproduce it, as far as may be, in his own words:

When we (Mr. Walter Barnett and myself) landed at New York, we were met at the quay by Colonel Marceau and Mr. B. J. Falk. We were introduced to many photographers, including Pirie Macdonald ("Photographer of Men"), whose work I remember seeing at an exhibition many years ago at Blairgowrie, when I was judging there.

An itinerary? Well, we went from New York to Baltimore, thence to Washington, St. Louis, Chicago, Indianapolis, and Rochester. At the latter place we were shown through the Kodak works, and afterwards entertained to lunch by Mr. George Eastman in his palatial offices, where we had the pleasure of meeting all the heads of the departments.

Mr. Crooke's Studio, Princes Street, Edinburgh.

At Washington, through the instrumentality of Mr. Harris, we were introduced to the President of the United States, Mr. Taft, and we found him a very interesting, affable personality.

At St. Louis we held an exhibition of our work. Mr. Barnett had over two hundred pictures, I had sixty of a large size. Yes, many people came to see the exhibition.

What seemed to strike the visitors most in your work? we asked.

The composite pictures (such as Edinburgh Town Council and those of the Merchant Company) seemed to tickle the professionals most; one man vouchsafed the remark that he had tried that class of work but found it exceedingly difficult. At the pressing requests of Mr. Rau, Philadelphia, I left my pictures with him, as he wanted to exhibit them at some of their famous congresses. No, I did not attend any of the congresses; I was there at the wrong time for them.

The folk we met were very hospitable—exceedingly so. Mr. Strauss was hospitality itself; he seemed unable to do enough for us, always devising some fresh idea for our entertainment or comfort. Mr. Cramer (St. Louis) of plate fame, gave a reception on the occasion of our visit, but it is impossible for me to mention all the names of kind hosts. We met photographers many; they think little of distances there, one man came a thousand miles to meet us.

There was a friendly little game they played there that was new to me. You had a model placed at your disposal; there were ten of us in the game, ten minutes being allowed to each. I was unable to work up any enthusiasm in the business, and only took three negatives, but how some of these fellows did get ahead. What with changes of dress, and immediate exposures following, the model had a busy time. I will not tell you how many plates the record man exposed, because I know you won't believe me, and I have no ambition to earn an undeserved reputation for romancing.

The photographers seem to associate more with one another than they do here. Here, unfortunately, photographers resident in the same town frequently display feelings toward each other that can hardly be termed affectionate. There they appear to have more of the sociable spirit; of course, I cannot say whether it is real and earnest, or whether it is merely the style of the country—but it was good to see.

There was one man I met who interested me greatly—a wonderful man—Rau, the official photographer for the Pennsylvania Railway; he does huge panoramic prints, say, six feet by two. These are direct prints from film negatives, taken in an immense panoram camera. He is a man of great ingenuity, and I was privileged to see his apparatus, all ingeniously conceived, much of it specially made, to meet his own special requirements. I also saw a print from a negative he had recently taken of the new front of Washington Railway Station, where the minutest details of the building were really microscopically rendered.

The professional in America does not seem to bother so much about a great variety of processes as we do here. Artura, Cyko, and other development papers, generally used with an "art" surface, are the favourites, and they turn out very pleasing work with them. We met one professional, however, who does all his work in bi-gum—no other process; if his bi-gum does not please you, then you must go elsewhere. Of course, his clientele is distinctly a better-class one, and he gets good prices for his work. Goldensky, Philadelphia, is the bi-gum man; he turns out good work, varied in treatment, each picture being separately considered according to the subject.

Mr. Crooke's Edinburgh Studio.

There are more people photographed in America than here—there is no question of that. For instance, in Princes Street here we have six photographers—there used to be more, but they are now reduced to that number; in Fifth Avenue, New York, there must be at least sixty photographers. If the Americans did not get their photographs oftener taken than our Scots do, how could all these professionals live? Our people are slow to be photographed and pass away off the face of the earth without any portrait left behind; except, perhaps, a snapshot taken by some friend in the backyard, up against the henhouse—that is taken to some long-suffering professional, and he is asked to try and make something of it.

What means does the American take to pull business?

The methods are many; the main idea seems to be to get the client inside the studio. In many instances cash is not even mentioned until after the exposures. There, as here, the "invitation" trouble is present. Here, for instance, if a man receives any title, say even J.P., that is made an excuse for a photographer to come down from London, ostensibly to photograph the new dignitary. He gets into the dignitary's house, photographs *him* for nothing, persuades his victim's wife or daughter to get photographed; and the probability is that that pays all the expense of the journey. This deprives the local man of work he might otherwise get, and makes the entry into these "worth-entering" houses more difficult. It is against human nature to pay for what you can get for nothing.

What about the American professional's methods.

Well, they are somewhat different from here; there's an independent sort of spirit in the air, that probably excuses what would not be tolerated here. Here the photographer must be well groomed, and what we term "gentlemanly" (using the word in this restricted sense) in his appearance. Over there the photographer—and I allude to some members in the higher planes of the profession—appear clad in trousers and shirt, and in that attenuated costume they do their work. If you allude to their appearance, they will reply, "Well, if they don't want me this way, I guess they can do without me." I had almost omitted to point out that in addition to that costume there is frequently added a big cigar.

Do they make money?

Well, they get good prices, and seem to have no scarcity of cash. Many of them keep their own motor-cars, and that is not done with an empty exchequer. Their average earnings? No, I do not know that; I did not ask; it would have been a trifle too inquisitive to have asked that—don't you think so?

The studios are mostly of the single slant construction, many of them with only a big side window. There are few span-roof studios, at least, I saw few. They seem to depend little on nominal top light. The side light will be about ten feet high, while with us it frequently terminates at seven feet. The height of the side window, as you can see, does away with much of the need for a strictly top light.

The studios contain many accessory dodges; they are not afraid to use anything new. I was particularly struck with the very good methods of holding backgrounds—they are inventors and ever ready to take advantage of any new invention. One time-saving plan I noticed—a photographer will have a great stock of dark slides, perhaps as many as fifty; these are filled in the morning, and they never think of going to the dark room during the day to change plates; all the work is done with these plates filled in in the morning. Another item I noticed was that they go to a great deal of trouble in treating the negative; the background is frequently "illuminated," and so worked on that there is often little or no resemblance between the finished print and the original negative.

We had, however, exhausted Mr. Crooke's time, and, a sitter being in waiting, we left, convinced that the reputation of the profession in these islands had suffered nought by Mr. Crooke's visit to the Land of the Stars and Stripes; and confident that his tour would have intensified any good opinion the American had of the work of the British professional.

# TANK DEVELOPMENT BY A TEST-PAPER METHOD.

The pages of the "British Journal" during the last few months have given ample evidence that tank development is receiving more and more consideration at the hands of the professional. At one time it was considered an amateurish kind of fad, and one that was only taken up by those who were not sufficiently in love with photography itself to take the trouble to get the best results out of their exposures. Perhaps under these changing circumstances a record of the experiences of a professional with many years' work in photography behind him may be acceptable.

### Limits of Tank Development.

Like everything else, tank development can suffer, and has suffered, at the hands of its too-exuberant enthusiast. It has been said that it will make the best negative possible out of an exposure, whether that exposure has been ridiculously below the correct exposure, or, on the other hand, it has exceeded the ideal exposure many times. This is true, *with reservations.* My own practice has shown me that it is *not* true if the two extremes of exposure are developed in the same tank for exactly the same length of time. Again, it has been said that it is equally efficacious for all makes of plates, fast or slow, ordinary or orthochromatic, and just as good for one manufacturer's products as another. This also is true with the same reservations. As the result of my own experiences, I confidently assert that fast or slow plates take different lengths of time to arrive at what a professional would call "printing density." Ditto in the case of ordinary or ortho' plates; whilst two plates having the same speed, but emanating from two different manufacturers, are almost sure to differ. They differ in dish development, so we should expect them to differ when put into a tank.

Some time ago, when first I used this method, I made a practice of saving all the M.Q. developer that had been used for bromide and gaslight prints. This once-used developer I diluted somewhat to make my tank solution, and used it repeatedly, day after day, just strengthening it for each fresh batch of plates by a small addition from the stock solution. Considering this practice from the theoretical standpoint, the wonder is that I got any printable negatives at all; but, of course, the secret lay in the fact that I was consistently over-exposing, and the bromide-laden developer from the printing-room was just putting this error right. It speaks well for tank development as a method that I consistently got such good negatives when apparently I was violating theory. Reason, however, came to my rescue, when a change of studios (into one much slower) caused me to look around for the cause of failure in a method I had previously adopted successfully.

### Developer and Temperature.

First, then, my developing solution is compounded as follows: metol 1, hydroquinone 3, sulphite 20, carbonate 20, water up to 320. I do not pretend to claim anything extraordinary for this solution. It is a convenient one, and gives the results I wish, and it is cheap. Probably any other well-balanced developing solution will do just as well, but if I am to make clear my method of working you must know the sort of solution I use. Before going into tank development in a very wholesale manner I purchased a cheap "developing box"—just a rack holding six plates enclosed in a plain metal box with a light-tight lid; the very sort of apparatus which the editor has recently cautioned us against. For half a dozen quarter-plates I used two ounces of the above strong developing solution, and added to it fourteen ounces of water, expecting to get a working solution which would complete its work in about half-an-hour. The weather was very warm just then, and I immediately began to find the difficulties which arise from varying temperatures. From Boots' catalogue I got a table of times and temperatures, and from Burroughs Wellcome's pamphlet I got another which differed slightly. I averaged the two, and did not experience much difficulty until the weather got considerably colder, when I found that the time of development with this strength of solution began to grow uncomfortably long, running over an hour. This necessitated making stronger working solutions and working out fresh calculations to get the same sort of results.

### Timing by Test Paper.

As the weather altered this became a frequent occurrence, and about this time I remembered the suggestion which had been made in the columns of the "Journal" about the use of gaslight paper as a means of testing the time required by a developing solution. Since then we have had no need to trouble about thermometer readings or any intricate calculations. The method is to fog a small piece of gaslight paper, plunge it midway into the developing solution, and as soon as the portion is appreciably developed to totally submerge the paper, and time how long the second half of the paper takes to develop up to an equal blackness with the first half. This length of time is then multiplied by a factor which has to be ascertained once for all with a given brand of plate. It will certainly vary with different plates, and also it will vary according to the character of the negative which the individual worker is aiming for. Again, it will vary when the best is to be made of grossly over-exposed plates on the one hand, or those which have received the minimum on the other hand.

The point which I wish to accentuate just here is this: the vast majority of professionals do *not* use a lot of different brands of plates; they have just one make which is their mainstay for the regular routine of their work, and anything extraordinary, outside that routine, requiring a different plate would not, certainly *should not*, be put into a tank with the "usual thing." Also in professional practice it is not at all likely that extremes of exposure will occur. In any studio where the operator has had even a year or two of experience the exposures are practically equivalent, not differing more than in the proportion of 5:6, and while this is so there is no need to alter the factor. From these facts it is easy to see that if any class of photographer would be likely to gain by the use of tank development it should be the professional rather than the amateur.

### The Method in Practice.

Returning to my own practice. I find it very convenient for the development of the plates to take about 20 minutes, and as I find that a factor of 18 with the M.Q. solution described is correct for the results I desire, I mix the solution so that the time which the paper takes is about one minute. This, of course, means that I use stronger solutions in cold weather than in warm. Some plates require different factors with this developer—even up to 30 times. With some plates (presumably made with a harder gelatine) peculiar markings occur (as illustrated in the "B.J." lately), when dilute developer is used at a low temperature. Developer at similar temperature and similar dilution will produce the same markings in dish development; so the trouble is not inherent to the tank system of development. Raising the temperature cures the evil in both cases. The necessary calculation is a very simple one. The paper is timed in seconds, this is multiplied by 3, and the result read as minutes, omitting the last figure, or inserting a decimal point before the last figure if in a fastidious mood. Example: Paper takes 27 seconds. 27 × 3 = 81. Then 8.1 minutes (8 minutes 6 seconds) is the exact time required. This, of course, is too quick for ordinary tank development where a lot of plates are being treated, but the case may occur where strong developer is being used in a dish. The rule still holds good with the same developer. A better test time to aim for is about 60 or 70 seconds. 70 × 3 = 210. Twenty-one minutes is then the correct time. At 60 deg. F. this time is generally got by a dilution of about one in eight.

### Twenty-four Negatives per Thirty Minutes.

Once I felt certain of my ground, the little box holding half-a-dozen plates had to give way in favour of larger quantities. Messrs. David Allan made me a simple box with a light-tight lid and five racks to fit it, each capable of holding twenty-four plates. These racks are made of German silver, because I use an acid fixing bath. If a plain hypo bath is in use they can be made of the cheaper zinc. Twenty-four plates are put into the developer, lowering gently to prevent bubbles forming, and then receiving a violent up-and-down motion to remove any that *may* have formed. They are covered up for the necessary time (receiving perhaps two or three shakings up to circulate the developing solution) and removed bodily, rack and all, with an intermediate swilling under the tap, to a plain porcelain fixing box which will hold two such racks. Another lot are treated in the same way, and still another, when the first lot are removed in their rack to a wooden box holding two racks and started washing under the tank. From now the whole thing proceeds automatically. Developing, fixing, and washing are all going on at the same time at the rate of twenty-four plates every half-hour (allowing 10 minutes for changing, &c.)

### For the Professional.

I have outlived the desire to watch the progress of development in a plate, wonderful as it is, and I have no desire to return to dish development. Further than this, I can tell the dark-room assistant exactly what to do, and can depend on him getting the same results. TEETOTALLER.

# SOME STUDIO SUGGESTIONS.

[The recorded experience of a professional one year after starting in business on his own account, communicated to our Californian contemporary "Camera Craft."—EDS. "B.J."]

IT has not been over a year since I started in business for myself, after serving a full apprenticeship with a good, capable, although somewhat old-fashioned, professional, located in my home town in another part of the State. As I have made a success of my maiden venture, a success greater than either my friends or myself expected, I may be pardoned for assuming to instruct or advise others. In doing this last, I am not prompted by a feeling of superiority engendered by my small success, but rather by a feeling that, having so recently launched my own little business craft upon the sea of professional photography, I may be able to give a series of suggestions of a more close-range type than might be possible by the time my experience shall have extended over a longer period. Dropping, as far as possible, this first person singular in favour of the rather dogmatic-sounding second person, I will proceed.

The real sale is made under the skylight, particularly if the proprietor does his own operating. A young lady behind a counter in the front of the establishment may secure from the customer an order for a certain number of pictures of a certain style and size, but the customer, in reality, does little more than suggest, approximately, what is desired, and does this mainly because there seems no way of avoiding it as a preliminary. Experience will teach you that the customer is quite likely to prefer something entirely different when the proofs are shown, and you will also learn that the style and size selected are no good criterion of the amount the customer is willing to pay—if pleased with the work. For this reason, use plenty of plates, except as you may be quite sure that it is unnecessary and useless; and, above all, keep your sitter well pleased with herself, which is only another way of keeping her well pleased with you, while under the skylight. The difference in the size of the final orders, and the ease with which such difference is created, will more than pay for the extra plates; and cultivating a tactful and pleasing manner should be your first thought, regardless of the money value it has. The sitter who, upon examining a set of proofs, recalls a pleasant half-hour spent with the operator, is pretty sure to like the results, particularly if there is a generous number of proofs, showing that he spared himself neither work nor material in his effort to please. How different is the effect when but two or three proofs are shown, proofs that recall the earlier feeling that the operator had gone through the business as if wishing to have the matter through with and the sitter away in the shortest possible time. To use a slang expression, "jolly them along" while under the light; of course, doing it in a different way with different subjects. Take a leaf from the book of the successful salesman. You know when he is "jollying" the man who hauls his trunk up from the station, and gets, in consequence, more attention for his money than anybody else in town, but he "jollies" you in a way that is less crude, and you like it—and like him for it. And, what he is really after, you give him larger orders.

If the sitter has some preconceived idea that her picture should be taken in a certain way, humour her by doing the best you can to carry out her ideas. It gives you a chance to get acquainted and time for the sitter's reserve to wear away. Keep on talking, and then make the rest as you wish. If friends or other members of the family are in attendance, make negatives of them. Quite often they may feel a desire to have their pictures taken, but hesitate in the matter. They think they will wait and see how the others come out, and perhaps never find time to come back. And before you are through with the original sitter make one large negative. Unless your clientèle is a very poor one, you will find it pays handsomely to do this. And here one caution: do not use your sitters to experiment upon. Be perfectly acquainted with your light. Call in some friend and try for different poses, effects, and lightings whenever you have time. Then you will be in a position to give each one of your sitters something different; and remember that while fancy poses are rarely asked for, few of your customers will be able to resist ordering extra pictures from such negatives if the results are pleasing and the expression natural.

Do not confine yourself to one or a few schemes of lighting. An angle of forty-five degrees may be the proper one, but not a few subjects look better with almost a direct side light. A certain type of face almost invariably takes on a hang-dog, dissipated look, except as the light is curtained down quite low. This is one reason why the amateur, and even the professional doing at-home portraiture, so often scores a success. In addition, this type of sitter really never sees herself under this unfavourable forty-five-degree angle, because her own mirror stands in such a position that she sees herself only in a side light. Have a good side screen and learn to use it intelligently. As a rule, use your light wide open and depend upon the screen, particularly with ladies. With men, cut the light down and try for the Inglis style of lighting.

In making full-length figures of officers and soldiers, the same platform can be used, the relatively higher position adding dignity to the pose. A stout person, or one quite tall and thin, does not look well in a full-length picture. Old people should be taken seated, and a lady whose skirt does not touch the floor will rarely be pleased with a full-length picture. If the weight of the body is thrown on one foot, a standing figure will be more pleasing, through having more action. The effect can be increased by having the body lean slightly forward. Many good standing figure poses can be found in the work of the artists who illustrate the stories in the popular magazines.

When a subject is quite stout, use a ground that contrasts but slightly with the dress, and make the pose a seated one if the full figure is wanted; but if head and shoulders only are required, use the camera quite low and make them standing: the superabundance of flesh falls away from the head and neck somewhat better. In posing men seated be sure that the seat is high enough so that the knees have a downward inclination; and, unless the hands are small, keep them as far back as possible. Do not make the too common mistake of allowing your sitters to hide their hands, much less yourself suggest so doing. The hands, or at least one of them, should always be in evidence in three-quarter and full length pictures. In addition to keeping them well back, one can minimise their size by avoiding the full or flat view, but, instead, turning them so that the side is presented to the lens.

As a rule, the lens should be on a level with the sitter's chin, or a trifle higher. If the subject has a long neck, use the camera much higher than usual, lower when the neck is short. A drooping mouth is also improved by raising the camera. If the jaws are too prominent, raise the camera, bringing the lens on a level with the forehead, and bring the top of the head towards the camera. Do not pose both head and shoulders square to the lens. If the shoulders are square to the camera, turn the head to one side; with the head front, seat the sitter with the shoulders at an angle to the camera. The best pose will depend upon the attention given the ears, the hair, and the shape of the head. Never make a full view if the ears are large. Hollow cheeks require almost a full front view.

If the nose is long, tip the head upward: if short, downward. Do the same when the chin is either too long or too short. If the mouth is crooked, make a three-quarter view with the crooked side away from the camera. Long faces should also have a three-quarter view, and using a long-focus lens will widen the face and shoulders. Using a lens of shorter focus, and making almost a full view, is best for round faces. Large eyes should be looking a trifle downward, and the head so turned that the whites show as little as possible. Deep-set eyes require a side and front light. Pale blue or grey eyes should be kept in shadow.

If the cheeks are full or the hair light, or both, make a shadow lighting. In case of high cheek-bones use a low key of lighting. If the subject is wearing thick glasses that cause troublesome reflections, make a three-quarter view and bring a black ground close up in front so that there will be nothing to cause reflections. In making profiles, one will often find that the effect just misses being good through the nose or chin being too long. Quite an improvement can be made by tilting the top of the head toward the lens, or perhaps away from it, if the arrangement of the hair permits the latter. And do not forget that you must do full justice to these elaborate coiffures that come before your camera.

In taking children use a good, large platform, one on which they will not fear a tumble, and have it at least eighteen inches high; twenty-four or twenty-eight inches is better. Use a light background and bring the extension out over the platform. Give them plenty of toys to play with, and allow the mother to be present all the time. You can get acquainted with the youngster much more quickly, and no exposures should be made until you have the entire goodwill and confidence of the little subject. Never neglect to make a negative of the mother and child together; and if grandpa or grandma is along be sure to get a picture of the old gentleman (or lady, as the case may be) with what is, undoubtedly, their particular pet. You are almost sure of an extra order.

It may be necessary to ask the parents to quietly step outside for a moment, but if they are allowed to share in the work of securing a picture, and find you are capable of displaying tact, skill, and patience, they will be pleased; and being pleased they will prove good customers, and always ready to sing your praises.

But that must wait until another opportunity presents. However, a few words on the photographing of white drapery are appropriate, as belonging to the work under the skylight. I have found that white drapery, such as wedding gowns and evening costumes, are best rendered in the following manner: First, make the exposure with the lighting just as you would have it under ordinary conditions, but have a piece of fine, even mesh black veiling across the lower part of the lens hood, just high enough up to screen only the white drapery. Next, after developing and fixing, and before washing, reduce the drapery part of the negative with a wad of cotton dipped in a straw-coloured solution of red prussiate of potash. This combines with the hypo in the film and forms the well-known Farmer's reducer. Do not allow it to remain on the negative too long, but rinse under the tap from time to time, placing again in the hypo bath should the prussiate fail to act through lack of hypo. Lastly, after the negative is dry, coat the glass side with ground-glass substitute and work in, with a soft pencil and with a stump and powdered lead, high-lights on the edges of the folds and where bits of white embroidery suggest so doing. All of these will require a little practice, but practice that is easily obtained. Using the veiling in front of the hood may require an experiment or two to determine the right distance at which the threads are entirely out of focus, and give just the desired amount of softness. One operator I saw working in a large city used ordinary red mosquito netting in the same way and for the same purpose.

ARTHUR P. BOARDMAN.

# SPIRIT SENSITISER FOR CARBON PRINTING.

(A Paper read before the French Photographic Society.)

IN 1877 the Abbé Laborde, to whom we are indebted for many useful methods in carbon printing, suggested a sensitising bath composed of ammonium bichromate, 1 gm., dissolved in 20 ccs. of water and 20 ccs. of alcohol. He stated that he found the mixture of water and alcohol imparted a hardness to the gelatine, but he does not make further claims in regard to the process. During the last few years, particularly among workers of the gum process, the addition of alcohol to the bichromate sensitiser has been much discussed. All those who have experimented on the subject have found that this addition of alcohol is a powerful aid to the drying of the tissue, or paper, and is, moreover, a valuable remedy against what is commonly known as reticulation. In our experiments we have used a bichromate bath containing, per 100 volumes, 20 of methyl alcohol of good quality, 15 gms. of bichromate being dissolved in 1,000 ccs. of this mixture. This is the bath which we recommend for use. The carbon tissue is sensitised in it in the usual manner. During this operation it is seen that the action is somewhat different from that when using the usual sensitiser. The tissues immersed in this liquid remain stiff. It might almost be said that they do not absorb the sensitising liquid: in fact, their stiffness is such that the worker may feel some anxiety as to whether he is not dealing with tissue which has become insoluble. On pressing the sheets of tissue under the liquid between the fingers it will be noticed that the gelatine is not softened, it swells only, and the sheet becomes flat in the bath. About four minutes is required for this effect to be produced.

Every carbon worker knows the precautions which are customarily taken in order to keep the bichromate bath at the same low temperature during sensitising. Hence the use of ice in summer. This source of trouble disappears immediately when a spirit sensitiser is used: there is then no need to fear a rise of temperature of the bath, nor of the room in which one is working.

We have made the following experiment. A dozen large sheets of tissue were sensitised in a spirit bath, the temperature of which was 86 deg. F. Everything went on quite satisfactorily. The sheets of tissue remained flat and stiff in the bath, and were then put to dry in the same room: which was, for ordinary work, somewhat too warm. In two hours the tissue was perfectly dry, and this without any running of the coating, every sheet being in good condition for work.

So much for the advantages of the spirit bath in sensitising. We will now see something of its merits in the after-part of the process. Here again we are relieved from the necessity of safeguarding ourselves from a greater or less temperature of the water in which the tissue is transferred. A bichromated tissue placed even in warm water in order to transfer it prior to development does not soften. Somewhat longer than the normal time is necessary in making the transfer; but as soon as this latter operation has been done, the print and transfer paper are put under pressure as usual, and the print is ready for stripping 20 minutes afterwards.

As regards the behaviour of the tissues, it is surprising to notice how well they transfer, considering that in the spirit bath they have the stiffness of almost thin wood or card. In no single case has adhesion to the transfer paper failed.

We must next say a word as to the part played by the spirit in the bath during sensitising. The spirit renders the gelatine indifferent to a greater or less extent to the temperature of the bath. There is no liability for the gelatine to run, and a moderate heat of drying no longer leads to the insolubilisation which frequently takes place when working in the ordinary way.

Finally, reticulation—that *bête noire* of carbon printers—is not liable to occur, even without precautions as to the temperature of the developing bath. In fact, we were able to use absolutely boiling water in dealing with a much over-exposed print. In short, it may be said that the presence of alcohol in the bichromate sensitiser removes the difficulties commonly met with in carbon printing; and not this only, for the alcohol also plays the part of a preservative, and allows of the tissue being kept for a much longer time than usual, for at least 15 days—we might even say three weeks.

GEORGES BALAGNY.

# ON REDUCING CONTRASTS IN NEGATIVES.

[A writer, M. H. Prunier, in the current issue of the "Photo-Gazette," records his satisfaction with certain methods of bleaching and re-developing as the remedies for excessive hardness in negatives, his prescriptions being recommended primarily to stereoscopic workers who are liable to obtain an excessive degree of contrast in negatives and thus to produce snow effects when the prints are viewed in the stereoscope. M. Prunier, of whose article an abridged translation is given below, has found the methods more effective for his purpose than the use of ammonium persulphate.—Eds. "B. J."]

The principle of the method consists in first converting the whole of the silver in the negative into silver chloride, which latter is then exposed to light. The action of the light, although invisible, gives rise to a description of molecular change in the chloride, and the action is completed by the re-developer. The depth of the film, however, where the light does not reach, remains unaffected by the developer and subsequently dissolves in hypo, so that the silver is altogether removed, and as a result the masses of opaque deposit in the negative are reduced, giving a plate of softer gradation. The two methods most commonly employed are those known as the "copper" and the "bichromate."

In the copper process the bleaching agent employed is chloride of copper, i.e., a mixture of copper sulphate and sodium chloride (common salt). The materials are thus quite inexpensive and may be obtained anywhere. If the negatives have dried, and especially if they have been made for any great length of time, it is necessary to allow them to soak first for an hour or two in water.

They are then transferred to the following bath:—

| | |
|---|---|
| Copper sulphate | 5 gms. |
| Sodium chloride | 5 gms. |
| Water | 100 ccs. |

which is allowed to act until the negative is bleached completely through to the back. This will require about ten minutes as a rule, but in some cases half an hour or more if the film has hardened by age or other cause.

The negative, having been bleached through to the back, is well washed, in order to remove every trace of the bleaching bath, and is then ready for re-development, or reduction, as it is more correctly called

This should be done in moderate daylight, never in sunshine, otherwise the light will act through the whole thickness of the film. It is not difficult to hit the correct degree of exposure. The negative image should be seen to be uniformly darkened on the face, whilst it remains still slightly opalescent and commences to become grey on the glass side. In order to secure this result a developer of the ordinary working strength would be too violent in action.

Practically any developer may be employed, diluting it, however, with about its own volume of water. An excellent developer is metol-hydroquinone or diamidophenol made up with boric acid as directed by Professor Namias,* or adurol. I myself use this latter, employing the single-solution concentrated bath, which I dilute with twelve times its volume of water, adding ten drops of 10 per cent. solution potass bromide per 100 ccs. of developer. It should not be forgotten that with any developer, excepting possibly diamidophenol, too low a temperature will give rise to negatives which are too soft, clear in the shadows but without sufficient intensity in the highlights. The temperature should be 60 deg. F.

This influence of heat is particularly noticeable in very cold weather, for, if the negative be held for long in the hand when examining the progress of development, it will be found that the parts touched by the fingers will come up with much greater intensity than the others.

The plate, after development, is rinsed and then fixed in the ordinary way.

It sometimes happens that, in spite of every precaution, the negative, while improved to the degree required as regards lessened contrast, is somewhat too thin altogether and requires intensification. In this case I have invariably found it well to employ the Lumière iodide of mercury intensifier, followed by development. In order to prepare the intensifier I use the following formula:—

| | |
|---|---|
| Soda sulphite, anhydrous | 10 gms. |
| Water, warm | 100 ccs. |
| Potass iodide | .75 gm. |
| Mercury bichloride | .75 gm. |

Solution takes place immediately, the potassium chloride formed from the iodide and mercury dissolving in the liquid.

Coming now to the bichromate method, the formula recommended by Eder in 1881 is the following:—

| | |
|---|---|
| Potass bichromate | 1 gm. |
| Hydrochloric acid | 2 ccs. |
| Water | 100 ccs. |

The method followed is that already described, except that an extra operation is required if it is considered necessary to remove the yellow bichromate stain before re-developing. This, however, need not be done, for it is a slight advantage to have a little yellow stain in the film, since the latter is then not acted upon by daylight during re-development. In the case of the copper process it sometimes happens that the film receives too much light during re-development, and it is therefore best, after the one exposure to light, to re-develop in a ruby or orange light.

H. Prunier.

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* "B.J.," Oct. 22, 1909, p. 820.

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**Kinemacolor at the Scala.**—The programme of Kinemacolor performances to be given each evening at the Scala Theatre, Charlotte Street, W., opened on Monday evening last with a private view, at which Messrs. Charles Urban and Albert Smith presented a most comprehensive series of pictures demonstrating the achievements of their process of cinematography in natural colours. The projections included a great variety of subjects, farmyard and agricultural scenes, topical events, portrait studies, and a moving-picture play. One of the most novel and fantastic series was that showing the progress of a large number of flowers from bud to bloom, the cinematograph exposures made in many instances over a period of many days being compressed upon the screen into the space of a few seconds, and bringing before the audience, by a species of scientific magic, the unfolding of the petals of many well-known flowers in the stage of development to the full bloom. The extraordinary patience which the production of this series of films alone must have required can scarcely be realised, but the beauty of the results was thoroughly appreciated by the spectators. Another sensational series, this time in the world of insect life, included most beautiful living photographs in colour of mantis preying upon caterpillars; also some striking examples of animal mimicry. The entertainment concluded with a spectacular play, adapted from the German piece of Frau Luna performed some eight or nine years ago at the Apollo Theatre, Berlin. The promoters of Kinemacolor may be congratulated on having originated an evening of combined instruction and entertainment which is unique of its kind, and should prove capable of taking its place among the established attractions of the London theatres.

# ENLARGEMENTS AS A SOURCE OF EXTRA PROFIT.

[In the following article a photographer, writing in "Wilson's Magazine," urges, with characteristic American insistence, the additional business to be obtained in a studio by keeping enlargements to the front. The advice is not new; it is as old as professional photography almost, but it does no harm to impress it, as is done here, with the full emphasis of the American idiom.—Eds. "B.J."]

You want to make more money. I will point the way—a tried and proved way—but you'll have to pedal yourself along, for there is no road over which runs a free bus. You must walk, and you must bend your back to gather the shekels. Perhaps you need to make more, but you'll never do it or be able to do it unless you really want to make more. If you have that determination you can and you will, for I'm going to propose how you can—a way, as I said, which is tried and proved.

*Make enlargements;* don't wait for customers to ask for them, as you have been doing, but get busy and ask them to have them made. How many have you made in the last year? Perhaps twenty-five at the outside. Well, you should have made enlargements for two-thirds of your sitters. Now, don't stop reading here, thinking this is some preposterous dream—it isn't; it is an exposition of a practical studio system whereby two-thirds of your sitters can be sold an enlargement where none were sold before. I will merely point out your greatest oversight in your past conduct of business.

### Opportunities for Business.

As a basis of calculation, we will presume you do an average business of 750 sittings yearly—two-thirds of that would be 500—so now we have the number of sitters who would buy enlargements. You could sell at least one 8 x 10. On that your profit would be no less than 50c.; on your 11 x 14's and 14 x 17's, which are the three sizes I am pleading for, you would turn an average of a dollar.

Based on experience and thorough inquiry, it is safe to say, considering the number of patrons who will order more than one 8 x 10, and the number of larger sizes, your profit per customer will run some little better than seventy-five cents. I'm working with conservative figures, too, so that at the end of the year you will have in the neighbourhood of $400 clear profit—velvet, as it were—and certainly you could use those few hundreds. Well, get busy and get it, and more than four hundred—all depending on your volume of business and your surplus energy.

It will cost you but very little to prepare for the work—there are dozens of inexpensive yet withal practical ways of equipment; so I will not in this article discuss the working end of it. My argument is simply for the selling possibilities of enlargements and the extra profit in sequence.

Prepare some samples, and I suggest doing it in portfolio form. On one page mount a contact cabinet print, on the opposite page an 8 x 10 enlargement, a few 10 x 12 to 11 x 14, or a panel 7 x 11—some black, some sepia. Have a little variety of papers, textures, etc. Use some buff papers—artist-proof a few—wax them when desirable. Frame a few.

### Bromide Enlargements.

Now, right here is a good place to dispel a certain notion or prejudice you may hold for enlargements—bromides. You are probably right now confounding the average bromide—generally a crude, coarse, dirty, smudgy, obviously enlarged bromidery bromide—with the possibilities and beauties of a well-executed enlargement, and so I want to bear on this phase of the question for a paragraph or two.

I'm free to admit that nine out of ten bromides are a visual crime against photographic standards, and I'll tell you why. They are enlarged too much, far too much, and generally by a more or less incompetent worker so far as portraiture is concerned. If kept within a certain limit of enlargement, and quality for quality, there should be a gain, an enhancement of effect. I make this as an unqualified statement. I know of no one who is delivering a more perfect print in point of either technical or artistic excellence than Frances B. Johnston, of New York and Washington, and her chief selling argument is a comparison of a contact print and a properly enlarged print, and invariably the customer selects the enlarged process print, for it has atmosphere. I could go on and name a dozen Fifth Avenue photographers who are enlarging from choice.

### Enlarge on a Moderate Scale.

If you will hold your 5 x 7 negatives within certain limits of enlargement you need harbour no fear of the quality of your work; to the contrary, you may anticipate many a little surprise over added quality and little touches of charm to many of your pet negatives when they are run up in size.

If you can make a good Velox, Artura, or Cyco print, if your standard of results is for the best possible, you can make as good a print by the throwing-up route as any of the really good, though unfortunately few, bromide enlargers.

The cost of production, so far as material is concerned, is practically the same as Velox, Artura, or Cyco; in fact, some magnificent result can be had by using the papers mentioned, though they are rather too slow to advise for everyday use. Chemical manipulation is virtually the same in bromide work as in the developing papers for contact work. True, you cannot work quite as fast, yet you can turn out a number sufficient to make a big day's profit on your labour and skill.

Your loss is slight if you use judgment; but, by all means, when you see a chance to noticeably improve a print by making it over, do so. The better your prints are to-day, the better will be your patronage to-morrow.

I don't know why enlarging is such a bugaboo. Certainly nothing could be more simple for anyone with a photographic knowledge to understand.

No one that I know of ever tried it and failed—that is, if he had the ability to do other things well. If you have ability, you can do bromides; if you know results, quality results, you can obtain them on the enlarging screen just as readily as by printing in contact.

Again, I want to repeat the admonition: Don't enlarge too much; don't starve quality for size—it isn't necessary. A 5 x 7 will enlarge in all cases to 11 x 14, and be the better for it. Most good negatives will go to 14 x 17 if judgment is used as to paper texture; on rough papers 16 x 20 will retain all the quality of negative. Up to those sizes you're safe. Beyond those you will encounter a fast falling-off in quality. I dwell upon this point in working because it is essential to my suggestion. When I suggest enlargements for profit, I have in mind the best. I said I wouldn't write of the working part, but as I get into it I find I can't pass over that mistake in the working end without warning you of it.

Now that I've tried to prove to you that you yourself can produce good enlargements, I want to strongly advise you against the other prerogatives. Do not send your negatives outside for enlarging; if you do, you will waste your profit and lose your calm of temper before the year dies. This plan is practically useless unless you carry it out yourself.

### Purchasers of Enlargements.

Now to go back to the selling end of it. Make ready your samples, and work with the idea that this enlargement department is just as much a part of your sales end as are your efforts to talk the patron into ordering a dozen prints rather than a half-dozen.

Show these samples to every sitter—talk them—suggest enlargements. I don't care what sitter you select, there is a premise to conclude they will want and buy an enlargement—one or more. There are the babies. You will find it the easiest thing in the world to dispose of a couple of 8 x 10's. Suggest a couple to be given the grandparents. And children are easy, too. Figure out a scheme to give a little better, and an 8 x 10 for $5 instead of $4. regular price.

The young lady has her beau. Suggest a 10 x 12 or 11 x 14 for him. The young man has a sweetheart. Why not a larger one for her? The husband and wife have one another and their aged parents—a chance for two large prints—and the old folks have their grown-up children. Every sitter is a prospect; each one has some relative, someone dear to them, to whom they will, no doubt, be glad, even anxious, to give a better portrait if they can do so at a reasonable expense.

Put in a line of stock frames to fit the standard sizes; arrange with a local framer to furnish you moulding samples, and sell on per cent. You may know of some very clever colourist, rather artist, with whom you could arrange to colour many of your enlargements.

Bridal couples are always certain. Enlargements on speculation will sell at least 50 per cent.—the ones left are always good samples. Larger prints in your display-case are seen from a greater distance, and more than one person will be attracted from across the street.

It will cut down your plate bill so far as speculative sittings and showcase samples are concerned.

When you don't get a direct order, watch the speculative end thoroughly. Tell the sitter how satisfied you are that a certain negative will enlarge handsomely; that you are going to make it up on speculation. Give them something for their curiosity and desire to grow upon. Don't dismiss a customer, and always have your speculation print ready by the time the order is.

### Orders With and Without Enlargements.

I want to give a little example in regulation dollars and cents of the enlargement advantage.

First, presume you are not prepared to do enlargements. You are talking prices to, say, a bride and groom; they inquire about prices—for instance, two dozen cabinets. You answer, $10. They point to some 8 x 10's—$15 a dozen, we'll say. Half a dozen would be how much? Ten dollars, you answer. "And a large one"—pointing to a 11 x 14. You ask at least $6 for one—duplicates, $3 each. They quickly figure it all up—$26 total. Too much, they conclude, so they only sit for the cabinets. And yet you gave them the most reasonable price you could. When they ordered from their proofs, you probably secured about a $12 order.

On the other hand, had you been prepared to enlarge, you could have consistently priced the 8 x 10's at from a $1 each for the same thing you asked $10 for six up to $1.50 each for something unusually well mounted, for the 11 x 14 from $2 to $3 would be a very good price, and at these prices you can generally secure such an order from bridal groups. You are catching extra business and giving the customers what they want for what they can afford to pay.

Where is the business logic in *trying* to get a $25 order if it wouldn't turn you any more profit, perhaps not as much, as an $18 or $20 easily secured, just because of the $5 to $7 difference to the customer?

In a plain spirit of fairness, you owe your patrons something; in fact. any business endures longest that owes its patron the most.

### The Fascination of Enlarging.

You haven't so many sittings per week but what a day's time would clear up an enlargement or two from every negative made during the week. If you do it yourself, so much the better. There is no process so fascinating as enlarging. If you are a heart-and-soul photographer, you'll forget to eat. No process has the same latitude of manipulation. You can go into your bromide department with your pet negatives and do just those things you want done to them. You'll revel in it, and you'll be making money, too. Not a bad way to spend a day, is it? Or, if you have the right sort of printer, it will be a happier day for him than pay-day. Don't grow afraid you can't hold up quality to your work. Do as I suggest, and you'll improve the general quality of your output. You'll commence to appreciate photography; little subtle qualities will unfold themselves day after day, and a year later you'll notice the most marked improvement in your work that any year has ever before shown. And—mark this well—it means more profit: hundreds more.

People like and want larger pictures, not necessarily 20 x 24's—that's an insane custom; they want them and will buy them if you will put them within their reach. But you know as well as I do that your average patron cannot afford any $5 to $15 for a large print. Very few people would own their own homes if they had to buy two-acre tracts.

There is no magic about the bromide process; it does not require a genius of talent or ability to manipulate it. If you count yourself a good photographer, you can do as well enlarging. That's the working end of it.

Now to the business end—it means quite a little more profit to you. Studios conducted along good business lines are doing it. I haven't proposed anything but what any well-equipped studio has, and should have, and, having it, they should use it.

You think me impertinent about it. Well, I know most of you photographers. If I thought another strain of writing would wake you up, I'd employ it for your own good. We're a rather indolent, procrastinating bunch—a good many of us think we're artists, when we ought to get busy and be business men first, and let our art side develop along with our prosperity. And, by the way, here's a little thought for you to think over.

You're probably not the only photographer in your town—probably not the only reader of "Wilson's." He may read this article and follow it up. See, I'm just playing one against the other. Don't let him get the bulge on you; don't let it be possible for people to come in and inquire whether you make enlargements like the other fellow does. It is going to hurt the man who doesn't, and it will help you both if you do.

And so, right now, let this resolution take root in your mind: *Resolved*, That I will attend to having an enlarging equipment installed; that I'll have this extra profit I've so long neglected. You no doubt have dozens of articles on the *modus operandi* of enlarging. Dig into your magazines and get them out and read up. Then put in your equipment, use your head when you work, and you'll soon be making extra dollars.

L. G. Coover.

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## EASTMAN KODAK COMPANY OF NEW JERSEY.

The report of this company for 1910, and balance-sheet as at December 31 last, have just been issued. The results of the year again exceed the previous records of the company. The net profits, after making provision for depreciation on buildings, plant, and machinery, amount to £1,850,552, as against £1,619,087 for the previous twelve months.

Dividends of 6 per cent. upon the Preferred capital and 40 per cent. upon the Common have been distributed—leaving £164,710 to be added to the undivided surplus fund, increasing it thereby to £1,899,354. In addition to this surplus there are now special reserves amounting to £1,222,687, making with the surplus profit a total of £3,122,041.

The earning power of the company shows a steady increase, as will be seen from the following statement of annual earnings:—

| | | |
|---|---|---|
| Year ending December 31, | 1895 | £49,656 |
| ,, ,, ,, ,, | 1896 | £122,676 |
| ,, ,, ,, ,, | 1897 | £185,232 |
| ,, ,, ,, ,, | 1898 | £243,232 |
| ,, ,, ,, ,, | 1899 | £335,919 |
| ,, ,, ,, ,, | 1900 | £465,816 |
| ,, ,, ,, ,, | 1901 | £517,347 |
| ,, ,, ,, ,, | 1902 | £564,455 |
| ,, ,, ,, ,, | 1903 | £606,740 |
| ,, ,, ,, ,, | 1904 | £688,484 |
| ,, ,, ,, ,, | 1905 | £827,610 |
| ,, ,, ,, ,, | 1906 | £1,116,639 |
| ,, ,, ,, ,, | 1907 | £1,446,479 |
| ,, ,, ,, ,, | 1908 | £1,540,725 |
| ,, ,, ,, ,, | 1909 | £1,619,087 |
| ,, ,, ,, ,, | 1910 | £1,850,552 |

◆

**Chelsea and District Photographic Society.**—The fifth annual exhibition of members' work will be held in the hall of the South-Western Polytechnic, Manresa Road, S.W., on April 21 and 22, when Mr. F. C. Tilney will judge the exhibits. There will be a lantern lecture each evening, the subject on April 21 being "Canterbury Cathedral," with Autochrome illustrations of old stained glass, by Mr. H. W. Fincham, and that on April 22, "Bristol and District," by Mr. T. G. Cooling.

# Exhibitions.

## PHOTOGRAPHS BY C. O. FREYTAG AT THE GRIFFIN RENDEZVOUS.

A collection of forty prints by a German amateur worker is now on exhibition at the rendezvous of Messrs. John J. Griffin and Sons, Ltd., Kemble Street, Kingsway. Mr. Freytag is a worker whose prints have hitherto not been seen at all in the usual exhibitions, but the examples here shown prove him to have a delicate refined sense of what is beautiful in the quieter and more restful aspects of nature. All his photographs, with one or two exceptions, are pitched in a somewhat low key. They are all made on a commercial pigment paper developed by the sawdust method. In this use of what is virtually the gum process Mr. Freytag secures quite delicate tone results, which show that such a paper, when used with discretion, is capable of giving pleasing effects. A number of his prints are of the same model, a boy, of whom several photographs in the nude amid picturesque outdoor surroundings are excellent examples of delicate flesh rendering. In other prints he secures fine rich shadows characteristic of a gum print at its best. The exhibition remains open for some weeks at Messrs. Griffin's rendezvous, and may be visited free of charge daily between the hours of 9 and 6.30, or on Saturdays from 9 to 1.

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## FORTHCOMING EXHIBITIONS.

March 25 to April 20.—Worcestershire Camera Club and Photographic Survey Society. Sec., G. H. Haycox, St. Wulstan's Crescent, Worcester.

April 17 to 21.—Southend-on-Sea Photographic Society. Sec., C. A. E. Chandler, 29, St. Helen's Road, Westcliff-on-Sea.

April 21 to 22.—Chelsea and District Photographic Society. Sec., F. Webb, 13, Acfold Road, Fulham, S.W.

April 25 to 26.—Ealing Photographic Society.—Sec., T. W. Bartlett, 20, Craven Avenue, Ealing, London, W.

April 25 to 29.—Barrhead Amateur Art Club. Sec., J. M'Grouther, Glenartney, Barrhead.

April 27 to May 4.—Malvern Camera Club. Entries close April 17. Sec., J. B. Nickolls, The Exchange, Malvern.

May 3 to 4.—Chelmsford Photographic Society. Sec., C. H. Wallis, Rosebank, Moulsham, Chelmsford.

May 8 to 31.—Royal Photographic Society. Latest date, carrier, April 24; hand, April 25. Sec., J. McIntosh, 35, Russell Square, London, W.C.

May 10.—London Secession. Sec., M. Arbuthnot, Winchester House, Old Broad Street, London, E.C.

May 12 to 20.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

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Reflection of Ultra-violet Rays by Snow.—"During the past winter" (writes J. v. Kowalski to "Nature") "we have had frequent snowfalls here in Switzerland, these being followed very often by bright sunshine. I availed myself of these occasions to determine to what extent the spectra of sunlight, reflected by snowfields, reaches into the ultra-violet. To this end I took numerous photographs of the spectrum produced by this reflected light, the angle being 45 degrees. The time of exposure varied from one second to twenty seconds, with a slit opening of 0.05 mm. The results showed that this spectrum of reflected sunlight reaches up to 295 $\mu\mu$. The tests were made between ten and twelve o'clock a.m. at an altitude of 630 metres above the sea-level. Comparing the results with those of Cornu, we must conclude that the ultraviolet rays are reflected by snowfields almost in their entirety, and hence the powerful action of this light cannot be called into question. It would therefore be advisable at all times, during a period of snow and sunshine, to protect the eyes from the injurious effects of these ultra-violet rays by using glasses which will not permit these rays to pass."

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between March 27 and April 1:—

Colour Photography.—No. 8,015. Colour photography. Aron Hamburger.

Telegraphic Transmission.—No. 8,017. Process and apparatus for transmission to a distance by electricity of pictures, writing, and the like. Francesco de Bernochi.

Colour Screens.—N. 8,153. Method of manufacturing polychrome photographic screens. Société Anonyme des Plaques et Papiers Photographiques A. Lumière et ses Fils.

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## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Cinematograph Mechanism.—No. 7,816, 1910 (March 31, 1910). The invention relates to cinematograph projectors of the kind in which the film is fed or drawn through the gate by means of a roller or wheel intermittently rotated by a Maltese cross device actuated by a rotating pin and a notched disc. In apparatus of this type it is necessary to adjust the film in the gate if placed therein with the pictures out of register with the gate openings. It is found in practice, however, that the usual rotating shutter, when such adjustment is effected, and which is independent thereof, does not operate to expose and shut off a picture exactly at the required moment.

The main object of the invention is to obviate the above defect, and for this purpose the feed roller or wheel is movable, in order to adjust the film relatively with the gate, and is connected to the rotating shutter in such a manner that the latter is advanced or moved back on its axis to correspond with such movement.

The feed roller is arranged to be adjusted in a curved path determined by the contact of one of the hollow sides of the Maltese cross, with the periphery of the disc carrying the actuating pin for the cross, and for this purpose the shaft of the roller is supported in a bearing in an arm pivoted concentrically with the disc and adapted to be reciprocated by a screw through the medium of a nut coupled to the arm by a link. The rotating shutter is provided with a central spur pinion operated by a spur wheel and centred on a stud carried upon a disc concentric with the spur wheel, and designed to be rotated by the movement of the feed roller when the latter is adjusted, through suitable mechanism, for instance, a bar attached to the arm hereinbefore described and having cam slots engaging pins on the disc.

A cover is also provided to form a chamber on the frame to enclose the Maltese cross device and the main gearing, and wherein the device and gearing may be immersed in a suitable liquid lubricant. In order that the lubricant shall not escape through the opening in the frame through which the shaft of the feed roller passes, and which is elongated to allow of the movement of the shaft when adjusting the roller, a plate is provided fitting around the shaft or its bearing, and being pressed against the face of the opening by a suitable spring.

Guides are also provided on the above-described cover, designed to receive an adjustable plate or slide to carry the usual additional lens for the exhibition of lantern slides.

The spool for winding up the used film is also driven by means of a sprocket wheel and chain from the main driving shaft, the wheel being connected frictionally to the shaft, to enable it to slip relatively therewith under the tension of the film, as the spool enlarges in diameter. This is advantageously effected by arranging discs or washers of suitable material, such as vulcanised fibre, on each side of the said wheel on a sleeve secured to the said shaft, and pressing the series against a collar on the said sleeve by a spring capable of adjustment as to pressure by a screwed collar or nut. Leo Kamm, 27, Powell Street, Goswell Road, London, E.C.

The following complete specifications, etc., are open to public inspection, before acceptance, under the Patents Act, 1901:—

LENSES.—No. 4,849. Photographic objectives. Carl Zeiss.

PHOTOGRAPHIC PLATE.—No. 7,201. Collodion silver bromide instantaneous photographic plate and its method of manufacture. Enjolras.

## New Trade Names.

PHŒNIX.—No. 331,560. Photographic plates included in Class 1. The Leto Photo Materials Co. (1905), Ltd., 1, Crutched Friars, London, E.C., manufacturers. March 2, 1911.

## New Books.

"Our Insect Friends and Foes." By F. Martin Duncan. London: Methuen and Co. 6s. net.

In this volume Mr. Martin Duncan, whose fascinating lectures on insect life have endeared him to many an audience, deals in a series of ten chapters with some of the insects whose habits lend themselves to inclusion in a popular work for the general reader. Thus, the chapter on ants and bees brings together the results of the observations of Lord Avebury and others on the extraordinary communities of these insects. Chapter IV., which deals with protective resemblance and animal mimicry, is one of the most interesting in the book. Chapter V., "Insects in Commerce," deals with the silkworm, with lac insects, and with others which produce products used in the arts. The part of insects in the fertilisation of flowers is the subject of Chapter VII.; the destructive action of insects on crops, that of Chapter IX.; whilst the volume concludes with the part played by insects in the transmission of disease. Written throughout in easy and popular language, and illustrated by prints from the author's negatives, the volume is a most readable introduction to a realm of nature-study in which much knowledge has been gained—and still more, distributed—by means of photography.

White's "Selborne." With Notes by Richard Kearton. London: Cassell and Co. 3s. 6d.

In this new edition of the classic "Natural History of Selborne" the reader obtains the delightful observations of the author amid the surroundings of his quiet Hampshire home, illustrated with the camera of the industrious Mr. Cherry Kearton, and supplemented by numerous comments by his brother, who, it is interesting to note, derived some of his earliest inspiration to nature-study from the volume which he has now edited. It may perhaps be questioned whether the scattering of illustrations through a volume of this kind makes for easy reading. Our own view is that it does not, since, for one thing, it involves the publishers in the use of the glossy art paper, and makes it necessary, in many instances, to break up the type into odd shapes in order to accommodate the blocks. However, there can be no doubt that in adding photographic illustrations to Gilbert White's classical letters the interest is intensified, and many, perhaps, will be induced to study these pages of quiet observation who would not do so but for the incentive of the illustrations.

"Angewandte Photographie in Wissenschaft und Technik," Vol. I. Edited by K. W. Wolf-Czapek. Berlin: Union Deutsche Verlagsgesellschaft Zweigniederlassung. 4 Mk. 50.

German writers of photographic text-books have, it must be admitted, provided us with the real literature of photography, as witness the encyclopædic treatises of Eder, Pizzighelli, and others. The task which such authors as these have discharged in the realm of photographic processes is now being undertaken in the present work for the numerous scientific and other applications of the camera. Such a volume necessarily requires to be written by a company of scientific men who primarily are not photographers at all, and we are glad to see that this has been the course adopted by the editor, Herr K. W. Wolf Czapek, the editor also of our German contemporary "Die Photographische Industrie." The work of Herr Czapek and his colleagues is to be completed in four volumes, of which the first, now before us, deals with the application of photographic methods in physics and chemistry, in astronomy and astro-physics, in meteorology, and in geology and mineralogy. Subsequent volumes are to treat of the use of photography in biological sciences, medicine, etc., in branches of applied science, such as surveying, engineering, etc., and, lastly, in such departments of knowledge as criminology, and ethnology and folk-lore.

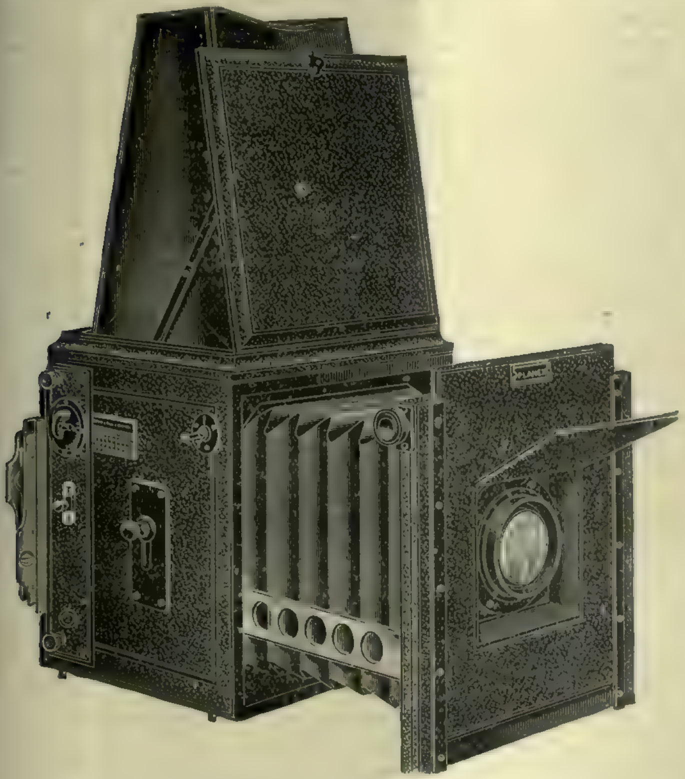
The compilation of a work on these lines is one which presents many difficulties. It is easy to allow matters relating to the subject in which photography has been used as a means of investigation to outrun the account of the investigation itself, yet if this latter be unduly curtailed the descriptions become intelligible only to students in these branches of knowledge. In the volume before us discretion has been observed in steering a mean course between these extremes, and the reader cannot complain of too great a degree of condensation, since he is liberally supplied with footnote references to original papers and memoirs, where he can further prosecute his studies if he so desires. A good example of the method followed will be found in the section dealing with the photography of falling drops, in which a reference is made to the work of Lenard and the methods of Professor Worthington, described and illustrated at greater length, in both cases with references to the original publications. The most interesting section is that dealing with astronomy and astro-physics, in which is described the modern development of photographic methods of astronomical observations. The use of the camera in meteorology is another interesting section, illustrated by photographs by a number of English workers. In the chapter dealing with geology and mineralogy the use of the camera in the field and of the photomicrographic camera in the laboratory is the subject of an interesting account of the extension of this branch of knowledge by photographic methods of investigation.

A WORLD NUMBER.—We have to congratulate the editor (Herr K. W. Wolf-Czapek) and publishers of our contemporary, "Die Photographische Industrie," on the issue of their special "World Number," dealing with the latest introductions by German makers, and especially circulated among photographic dealers and exporters in various parts of the globe. The issue, which is that of April 5, contains a number of special articles on trade topics, a comprehensive review of new introductions, and an immense number of commercial announcements. It is published at 31, Blücherstrasse, Berlin.

## New Apparatus, &c.

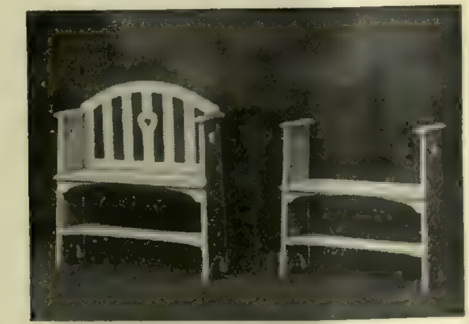
**The Planex "Professional Model" Reflex Camera. Sold by the City Sale and Exchange, 81, Aldersgate Street, London, E.C.**

In this new model of half-plate size, designed specially for professional work both in the studio and out of doors, the makers have provided a normal extension of 15 in. from lens-board to plate, allowing of the use of any 8-in. anastigmat in sunk mount. Rise and fall of front is by rack and pinion, giving practically an inch rise and $\frac{3}{4}$ in. fall. The mirror is of the type which falls by its own weight after exposure, but is mounted so that the release of the shutter is very smoothly and quickly made. Although of square build and provided with rotating back, the outside dimensions of the camera are less than $9\frac{1}{2}$ x $9\frac{1}{2}$ x 9 in. The hood is of the square self-erecting pattern, giving a clear view of the ground-glass. The shutter allows of the ready alteration of speed and of adjustment for time exposures. For portrait work in the studio, and for many of the outdoor commissions which a professional photographer has to undertake, e.g., the photography of animals, sports, etc., such a camera as this is a most valuable instrument, and when it is obtainable at the moderate price of £10 10s., inclusive of three double dark slides, but without lens, the outlay should be rapidly recovered from the proceeds of the special work which may be done with it. With a Cooke Series II. *f*/4.5 anastigmat the price is £18, or with *f*/4.5 "Tessar" £20 10s.



### The "Seymour" Duplex Accessory. Sold by Walter Terry Evesham Street, Reading.

This is a useful piece of studio furniture strongly made in painted white wood, and sold at the moderate price of 19s. 6d. The seat measures 2 ft. 7 in. in length; the back is removable, giving the accessory shown in the right-hand drawing, and thus allowing of a variety of poses being obtained.



THE ENSIGN DRY-MOUNTING OUTFIT.—In our notice of March 31 the prices were incorrectly given. These should be 17s. 6d. for the complete outfit; 14s. 6d. without straight-edge, trimmer, and zinc plate.

# New Materials, &c.

"MAUVE LABEL" GOLDONA.—Messrs. John J. Griffin and Sons send us a sample of a new brand of their Goldona self-toning paper giving by simple fixing only, without any preliminary wash or bath, a print of cold purple to black tone, closely resembling the results of separate gold toning. The paper is issued both as matt and glossy, and should appeal to the many workers who appreciate the convenience of the self-toning variety of P.O.P.

## CATALOGUES AND TRADE NOTICES.

LILYWHITE PAPERS, ETC.—A new 64-page list just issued by the Halifax Photographic Co., New Brunswick Street, Halifax, contains a very full list of particulars and prices, working formulæ, etc., of the Lilywhite plates and papers, also of packet chemicals, developers, etc., supplied by this firm, which likewise offers photographers a number of other specialties. Among these we may point to two patterns of hot-toning tank for the hypo-alum process, the matured solution for which is also supplied at 3s. 6d. per gallon. Trade work in enlarging and printing is also a department of the Halifax Company, and prices will be found in the latter portion of the new list. The list is sent post free for one penny stamp.

LANCASTER CAMERAS, ETC.—Messrs. J. Lancaster and Son, Ltd., Camera Buildings, Broad Street, Birmingham, send us their new list of lenses, shutters, cameras, enlargers, etc., in which the amateur worker will find priced and described a full range of the most advisable types of apparatus. The list is sent free.

A LIST FOR DEALERS.—Messrs. May, Roberts and Co., Ltd., 7, 9, and 11, Clerkenwell Road, London, E.C., send us their 1911 illustrated price list of photographic requisites, including plates, films, papers, etc., of all the leading makers, photographic sundries, albums and mounts, cameras, lenses and accessories, and enlargers and lanterns. The list is conveniently arranged for reference, and may be obtained post free on application by bona fide dealers.

THE CAMERA-HOUSE PRICE LIST.—In their new large list of 1,234 pages Messrs. W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London, E.C., have provided the photographic dealer with a reference volume in which, both in size and arrangement, they may certainly claim to have beaten all records. Reference to the list is rendered easy by the use of coloured paper for a number of the sections. Thus, stereoscopic apparatus (pages 231 to 262) is on green paper, lenses and shutters (pages 327 to 390) on pink, enlarging apparatus (pages 423 to 454) on yellow, plates, films, and papers and chemicals (pages 659 to 724) on red, lanterns and accessories (pages 869 to 932) on green, and lantern and cinematograph apparatus (pages 999 to 1,078) on blue. Thus, the dealer can readily turn at once to the section of the volume describing a particular line of goods. In general arrangement and liberal use of illustrations the list deserves every praise. It is truly not only an index to the numberless items of photographic equipment supplied by Messrs. Butcher, but, at the same time, a striking demonstration of the size and present-day importance of the photographic industry. No dealer can consider that he is fully informed as to the resources of the trade unless this most comprehensive and well-indexed volume is upon his shelves. The new catalogue is sent free to any bona fide dealer applying for it.

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THE AFFILIATION ANNUAL OUTING.—It has been arranged for the annual outing of the Affiliated Societies to take place on Saturday, May 13, that being the day following the "Red Book" night at the R.P.S. Exhibition. In making this arrangement, the executive hope that members of country societies will be induced to come up for the "double event." The excursion is to Bookham, at a return railway fare of 2s. Tea will be served at the Merrilands Hotel at 4 p.m., thus leaving ample time afterwards, during the best part of the day, for photography. A map of the district will appear in the May issue of the "Circular," and full particulars also will be given. The arrangements are in the hands of the Borough Polytechnic and Catford Societies.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

FRIDAY, APRIL 14.

Liverpool Amateur Photographic Association. Excursions, 13-18, Brittany; 13-18, Bettws-y-Coed.

SATURDAY, APRIL 15.

The United Stereoscopic Society. Outing, A Ramble in Surrey.

MONDAY, APRIL 17.

North Middlesex Photographic Society. Outing to Wendover.

TUESDAY, APRIL 18.

Royal Photographic Society. No meeting.

WEDNESDAY, APRIL 19.

Croydon Camera Club. "The Progress of Spectroscopy." C. W. Raffety.
South Suburban Photographic Society. "South Suburban Outings." E. W. Thew.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. "Tramps Abroad with a Kodak." W. F. Slater.
Bournemouth and District Camera Club. "Telephotography."
Balham Camera Club. "Light." A. Kirkland.
Huddersfield Naturalist and Photographic Society. Autotype Carbon Demonstration.
North Middlesex Photographic Society. "Autochromes" (Print Competition). J. F. Nisbett.

THURSDAY, APRIL 20.

Oldham Photographic Society. "A Holiday on the Yorkshire Coast." W. M. Wainwright.
Midlothian Photographic Association. "Bromide Toning." J. M'Kissack.
Sutton Photographic Club. "Criticism of Monthly Competition and other Prints." Miss Janet Allen.
London and Provincial Photographic Association. "Supplementary Lenses." W. B. Stretton.
Handsworth Photographic Society. "Holiday Experiences with a Camera." Messrs. Clarke, Grove, and others.
Tunbridge Wells Amateur Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

GLOUCESTERSHIRE PHOTOGRAPHIC SOCIETY.—The annual meeting of the Gloucestershire Photographic Society took place last week at the Municipal Schools, when the following officers were elected for the ensuing year:—President, Mr. A. H. Pitcher; vice-president, Mr. W. F. Newman; hon. treasurer, Mr. J. T. Reynolds; hon. lanternist, Mr. S. A. Pitcher; committee, Messrs. G. S. Blakeway, W. F. Chubb, R. W. Dugdale, G. Embrey, J. L. Gransmore, C. J. Scott, and Courtenay Wells; hon. secretary, Mr. E. A. Ind, 36, Northgate Street. In making Mr. Pitcher their president the Gloucestershire Society is not only recognising his long services as a member, but is also showing, we think, a wise policy in nominating to its head office a gentleman who for many years has occupied a leading position in Gloucester as a professional photographer.

# Commercial & Legal Intelligence.

SERIKON, LIMITED, Manufacturers of Photographic Plates, Films, and Accessories, 39, Fenchurch Street, E.C.—The statutory meetings of the creditors and the shareholders under the compulsory liquidation of this company were held on April 5 at the Board of Trade Offices, 33, Carey Street, W.C., Mr. H. M. Winearls, Assistant Official Receiver, presiding. The winding-up order was made upon the petition of Barclay and Co., Limited, bankers, who claimed to be creditors for £238 13s. 8d. The Chairman reported that the company was formed as a private concern in November, 1907, with a nominal capital of £7,000, divided into shares of £1 each, and it was registered for the purpose of taking over as a going concern the business which had been carried on by Mr. Birt Acres at Whetstone. That was the business of manufacturers of and dealers in photographic films, plates, and other materials and cinematograph films, and it had been carried on at the Whetstone Photographic Works. The first directors were Mr. Acres and Mr. McQuitty. The company was also to take over the liabilities of the business. By the purchase agreement, which was dated November, 1907, the works, business, etc., of Mr. Acres, together with some other property in Essex, was transferred to the company; the sale price was fixed at £6,036, of which £2,540 was to be paid in cash and the balance in fully paid shares. The whole of the capital of the company had been issued, and Mr. McQuitty subscribed and paid for 3,496 shares; in fact, he would appear to be by far the largest loser by reason of the liquidation of the company. After payment of the cash portion of the purchase consideration there remained a sum of £956 available for working capital, and the whole of that seemed to have been spent by March, 1908. It was arranged that as directors Mr. Acres should receive £600 and Mr. McQuitty £300 per annum in respect of their remuneration, but that lasted for a very short time, when it was agreed that no further remuneration should be paid until the finances of the company warranted such payments. The Chairman further reported that a receiving order in bankruptcy was in March, 1909, made against Mr. Acres, and the company lodged a proof of debt against his estate for a sum of £1,400, but that claim was rejected, Mr. Acres maintaining that the company was, on the other hand, a debtor to him to the extent of £946. As a matter of fact, he (the Chairman) understood that the Official Receiver had decided to make no claim against the company in respect of that alleged book debt. In October, 1909, the mortgagees of the Whetstone property distrained on the loose plant and other assets of the company in respect of rent then due, but the amount realised as a result of the sale was only £42, after deducting all expenses. When, however, the winding-up order was made against the company on February 7 last, the Official Receiver ascertained that there was further property plant belonging to the company at Whetstone, and he had disposed of it for £78 to the mortgagee—with the sanction of the Court—and gave up possession of the premises. The failure of the company was attributed by Mr. McQuitty to the fact that there was a stoppage of the sale of cinematograph films. A statement of affairs had been lodged in which the liabilities were returned at £414 8s. 9d., while in addition to assets of the value of £78 8s. 2d. there was a book debt of £1,482 said to be due from Mr. Acres, but it was returned as valueless. The liquidation remained in the hands of the Official Receiver.

# News and Notes.

THE EALING PHOTOGRAPHIC SOCIETY'S exhibition, which is being held at the Town Hall, Ealing, on Tuesday and Wednesday, 25th and 26th inst., will be opened for free admission on Wednesday from 10 a.m. to 10 p.m. It is to be hoped that all interested in photography will take this opportunity of looking in at the show. Lantern slides will be shown at frequent intervals.

CORRECTION.—Owing to an error in the advertisement of the Tress Company, published in our issue of March 31, some inconvenience, we are sorry to find, has been caused unwittingly, both to the Tress Company and to a number of their customers, who wrote ordering the goods in question, namely, oak enlargement frames. The prices of these latter in the various sizes and of style, either bead and bevel, spoon or gothic (stained green or brown), should read as follows:—

| | 24 × 19 | 20 × 16 | 18 × 14 | 15 × 12 | 12 × 10 | 10 × 8 | 8 × 6 |
|---|---|---|---|---|---|---|---|
| 3in. Spoon Oak ... | 2/2 | 1/8 | 1/7 | 1/6 | 1/3 | 1/2 | 1/1 |
| 2in. do. ... | 1/6 | 1/1 | 1/- | 11d. | 10d. | 8d. | 7d. |
| 1½in. do. ... | 1/3 | 1/- | 11d. | 10d. | 9d. | 8d. | 6d. |
| ¾in. Gilt Slip ... | 7d. | 6d. | 6d. | 5d. | 4d. | 4d. | 3d. |

ATOM-PHOTOGRAPHY.—At the Royal Institution last Friday Professor Sir J. J. Thomson delivered a lecture with the rather uninspiring title of "A New Method of Chemical Analysis." In the course of his lecture (writes the "Morning Post") Sir Joseph Thomson had things to say which are likely to open up a new region of research in that borderland of physics and chemistry where he is pre-eminent to-day. The "new method of chemical analysis" is applied—as we should expect—to gases. Up to the present "atomic weights," which are numbers representing the masses of atoms in terms of the atom of the standard substance hydrogen, have been determined accurately only by a long series of chemical and physical considerations. In the case of the so-called "non-atomic" gases it has been impossible to do anything more than guess at it. Now, however, Sir J. J. Thomson points out that it is possible by passing "positive radiation" through gases actually to photograph the size of the atoms of the gases. Professor Thomson long ago conjectured that the "positive ions" of gases were probably the elementary atoms themselves. He has now discovered that the positive radiation may be split up so as to give a spectrum. When the lines on the spectra given by various elements are compared, it is found that the breadth of the lines is in exact proportion to the atomic weight of the elements. This means, as Professor Thomson said, that the atoms "not only make their mark on the photographic plate, but write their signature as well." Thus helium is easily detected on the positive ray spectrum and not on the ordinary spectrum. Several mysterious lines have also been observed, and as yet it cannot be stated what gases they are due to. The photographic method of registering the size of the lines occupies only a millionth part of a second. The relative lack of stability of the atom during so short a period may explain the fact that some of the elements are found to give more than one spectral line, corresponding to more than one atomic state. Professor Thomson's view of the atom as a more or less stable system of corpuscles in motion is well known, and he now announces that in some cases—that of oxygen, for instance—he has found spectral lines corresponding to as many as nine separate and different atomic "systems" or states. The importance of such a discovery is, of course, enormous. Not only does it mean the beginning of a new branch of spectrum-analysis, but it opens up a new realm of speculation and experiment with regard to the ultimate problems of chemistry.

**The Camera in the Law Courts.**—The question of excluding cameras from Courts of Justice is amusingly commented upon in the following forecast (by Edgar Wallace) of criminal proceedings in the year 1924, which we quote from a recent issue of our contemporary, the "Evening Times":—

> The Judge took his seat at 10.30, and the examination of the witness Czkorvonoskitska was recommenced.
>
> The learned counsel had put two questions when the foreman of the jury handed up a note to the judge.
>
> The Judge: The foreman is under the impression that there is a photographer in court. Will the officers on duty search everybody except the distinguished actors and dramatists in the back row?
>
> (Search proceeds: nothing found.)
>
> Counsel (to witness): Did you on the night of the 14th see the prisoner?
>
> Witness: My answer is in the negative.
>
> The Judge (severely): That is a word you must not use. Officers, search the court for a photographer. (Search continued.)
>
> Counsel: Now attend to me. Do you say that the room had been touched?
>
> Counsel for prosecution (rising in agitation): That is a photographic term, my lord, which I cannot but feel is hampering the course of justice.
>
> Judge: Did you say touched or retouched?
>
> Counsel: Touched, my lord. I submit that the term is admissible.
>
> Judge: Go on, please.
>
> Counsel: When this inquiry was made as to the prisoner's character, were the proceedings in camera?
>
> The Judge (severely): I wish you would not use that language, Mr. Giggs. I have told you that you are doing your client's case no good. (Juryman faints.) There! Now I trust you are satisfied. (Another juryman faints.) Really, your conduct is inexcusable. The court is adjourned.
>
> Counsel (pleadingly): I merely wish to develop——
>
> (Judge swoons, and in the excitement prisoner escapes, not being securely fixed.)

**Photography at the Coronation.**—Sir Benjamin Stone has made a statement to a representative of "The Times" on his appointment as Official Photographer for the Coronation.

He said that the appointment was so recent that there had been no time to make any definite plans, but he hoped to obtain photographs incidental to the Coronation and of the ceremony itself which would form an important historical record of the event. Sir Benjamin has already visited Westminster Abbey and made a preliminary survey in order to ascertain from which places the best pictures can be taken. He hopes to be able to take a photograph of the actual Coronation, but for this the assent of the King himself must first be obtained. Asked whether it would be possible to take an "animated picture" of the ceremony, he said he thought that was out of the question, as the risk of fire would be too great. He expects, however, to obtain photographs of the Coronation at various parts of the ceremony, although there are several difficulties to be surmounted, owing to the dimness of the interior of the Abbey and the impracticability of using a flashlight. The Abbey itself will, of course, be the centre to which Sir Benjamin will devote the most of his attention, but he also intends to take a number of pictures of the Royal Progress and of scenes in connection with the Coronation.

On the occasion of the Coronation of King Edward Sir Benjamin, who then had no official appointment, took about 300 photographs, which constitute a remarkable record of that event—indeed, copies of these photographs have been already found very useful by the officials who are preparing the ceremony next June. Sir Benjamin expects to take a larger number of photographs of events at the forthcoming Coronation, and there is reason to believe that on this occasion he will be even more successful than before. He has always received the greatest consideration at the hands of members and officials of both Houses of Parliament, with whom he is deservedly popular, but his work has hitherto been that of a private person. Now, however, he particularly values the official appointment conferred on him, because it will naturally give him greater facilities in taking his pictures. Thus a room is actually being fitted up at the Abbey for his use—an advantage which he did not have at the last Coronation.

For many years Sir Benjamin has been urging the importance of founding a national collection of photographs of historic events. Lord Beauchamp having accepted the gift on behalf of the Government, Sir Benjamin has presented to the House of Commons a collection of twenty-four photographs, which will be arranged during the present week on the walls of the Harcourt Room corridor. Sir Benjamin regards this as a step towards the realisation of his ambition to establish a permanent record for the benefit of the nation.

These photographs are chiefly records of the visits of parties of distinguished foreigners to St. Stephen's. They include a picture of the lying in State of King Edward in Westminster Hall.

**A Competition for Geological Photographs.**—The Tunbridge Wells Natural History and Philosophical Society is offering prizes for artistic view-photographs illustrating the various types of scenery in the South of England. £2 is offered for the best set of photographs in each of the following five classes:—1st, scenery of the chalk districts—hills, sections, valleys, and combes; 2nd, scenery of the wealden sandstone formation—sections, etc.; 3rd, scenery of the tertiary beds; 4th, scenery connected with shingle, gravel, or sand beds; 5th, river and marsh scenery. The prints to be sent to 2, Rusthall Park, Tunbridge Wells, carriage paid, on or before March 1, 1912, accompanied by the *nom de plume* outside and the exhibitor's name inside a closed envelope. The photographs to be of places in S.E. or S. districts of England, and the negatives to be taken by the exhibitor. The entries for each class should illustrate at least six distinct places, and the negatives must not be more than three years old. The prints should be half-plate size, either platinotype or bromide prints. Enlargements from quarter-plates will be permitted. A relative scale, forming a suitable part of the pictures, will be considered necessary. This may be of some familiar object in the foreground, but should not be too prominent, nor spoil the composition. Agricultural or industrial operations or crops, if clearly shown, will add value. A descriptive account, with the locality and date of exposure, should be written on the back of each print or mount. The *nom de plume* should also be given. If mounted, the photograph should be on thin cardboard or stiff paper, not larger than 8 by 6 inches. Writing on the subject of the competition, Dr. E. J. Russell, of the Lawes Agricultural Trust, Harpenden, says:—"The most useful basis for a survey of this kind is the geological map. Along each of the formations a series of views should be taken showing the really typical, characteristic scenery. The photographs should illustrate the rule and not the exception; however uninteresting or unpicturesque the view may appear, it should be taken if it is really representative of the formation. For this purpose the unusual view is less needed, although, of course, it may be taken for other purposes. Photographs should also be taken to illustrate the agricultural implements, animals, or practices depending on local conditions, *e.g.*, on the chalk downs, the old Kent and Sussex ploughs, ploughing with bullocks, sheep folding, all of which are essentially bound up with chalk farming. Again, in districts which, owing to the state of the roads, were for long isolated, may still be found practices given up elsewhere and fast disappearing; whilst a few specimens still exist of certain ancient breeds of animals, such as the Sussex pig or the Heath sheep. Such photographs are not always easy to obtain, because they require the eye of the naturalist as well as the photographer, but they abundantly repay the time and trouble spent on them. I am pleased to learn that your society is offering prizes for the purpose, and I hope you will succeed in getting together a good representative collection that will serve as a model for other societies to follow."

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

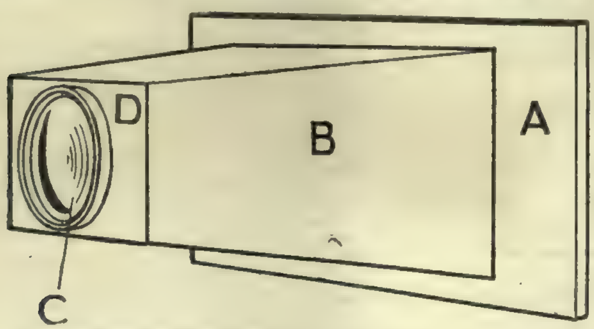
*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## COPYING WITH A REFLEX CAMERA.

To the Editors.

Gentlemen,—In the article in this week's "Journal" on "Range and Power of Reflex Cameras," by "G. E. B.," I notice he refers at the end to something over two focal lengths being of use when using such a camera for copying, and suggests a second lens of shorter focal power being included in the outfit.

As I got over the difficulty in a simpler and cheaper way, I think others, if it has not occurred to them, might find it of service. I made of very light wood an extension piece (as in the enclosed sketch) of such a length that it brings the lens one focal length in advance. The board A is of the same shape and size as the piece carrying the lens under ordinary conditions. The tapered box piece B is of the required length to bring the lens C one length forward. The front end of the box D is fitted with a flange to suit the lens screw. I do not find that the weight of the lens in its forward position is sufficient to drag down or affect the camera in any way. The whole piece can be put in place in less than a minute, and I find it very handy for copying, which one does mostly in the house, or if not, just outside.—Yours very truly,



One focal length extension piece for use when using a reflex camera for copying.

C. H. Murray.

19, Claremont Place, Newcastle-on-Tyne.
April 7, 1911.

[Our suggestion was made from the point of view of the tourist photographer, who, if on serious purposes bent, frequently has occasion to copy, and for this work an extra lens is a more expeditious and portable method than an extension piece.—Eds. "B.J."]

## SUNDAY WORK IN PHOTOGRAPHIC STUDIOS.

To the Editors.

Gentlemen,—Some weeks ago I wrote you supporting the movement for the Sunday closing of photographic studios.

I then said that my business had not suffered from Sunday closing. That remains true in the main; but I have lost business as a result of indifferent work due to poor lighting with the electric arc lamp. Therefore, three weeks ago, I started opening Sunday mornings, 10.30 to 1 o'clock p.m., so as to have less electric light work.

Further, there are a certain number of people who prefer to be photographed on their one day of freedom; working women engaged throughout the week, and doing housework after their day's work, and business people—assistants and shopkeepers—frequently working long hours. One cannot be photographed by proxy.

My operator is allowed time off for the work done on Sundays, and, in addition, a full half-day's holiday per week. Referring to the Shops Bill, I think the P.P.A. should obtain permission for photographers to have the same privileges as hairdressers, and allowed to keep open on Sundays till one or two o'clock if they wish. Otherwise, the State should help to pay the photographer's rent and rates! I have felt constrained to put myself right with "B.J." readers.—Faithfully yours, A. Simpson.

3a, New Briggate, Leeds, March 27, 1911.

## PHOTOGRAPHING SHOP WINDOWS.

To the Editors.

Gentlemen,—In reference to the recent letters, my experience is that photographing shop windows is very simple if the photographer knows his business. I once had a shop window full of mirrors, and on the opposite side of the road was a large builder's yard with bricks, red tiles, and timber, showing very badly in the window. Before I photographed it there had been nine different photographers trying to take it, but could not do it, and all they could say was "that it was impossible to take." But I took it with one whole-plate only. My way of taking shop windows so as to get rid of reflection is this:—Take it at twilight, when it is very nearly dark, and give a long exposure, say, three to four minutes, or longer. Never trouble about the traffic so long as it keeps moving. I can guarantee that you will never get reflections.

112, High Street, West Norwood, S.E. J. Bennett.

To the Editors.

Gentlemen,—I was very much interested in the letters concerning the photographing of shop windows and the difficulties owing to the strong reflections.

Noting that some had tried artificial lighting with success, I determined to test for myself. I first made an exposure of my own shop window in daylight, with a very good light on window, and, as you see by enclosed (No. 1), I get a lot of reflection which quite obliterates the back part of my window.

Late at night I made another exposure by the aid of an assistant, using two flashes, one at the side and the other immediately in front, taking care, of course, to shield lens from direct flash. As you will see by print No. 2, this gives full detail of whole window, and is therefore a great improvement.

A word as to the window itself may prove interesting to your readers. This was arranged specially in connection with the "All-British" week. The window was specially draped, and the national colours—red, white, and blue—given due prominence without being too obtrusive. All the portraits in the window were studies of children, and we used two neatly written tickets, bearing the mottoes, "All British" and "Products of the Empire." The latter motto was prominently used by a large firm of drapers almost next door, and so helped to make this phrase catch on.

We were very well satisfied with our efforts, as we have never had such crowds round our windows, besides two notices in the local press, and we were thankful for the opportunity the "All-British" week gave us for an excuse to make a special display a little out of the ordinary.

We thought that No. 3 might be useful, as showing what can be done with a backed plate, and merely using the light of the windows. This, too, was taken quite recently. The window is a very effective one, "A Child's Dream of Easter," but the photographs taken by daylight were quite a failure owing to reflections.—Yours truly,

S. A. Chandler.

132, Above Bar, Southampton.
April 4, 1911.

[The examples sent by our correspondent fully bear out the description of them.—Eds. "B.J."]

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & CO., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPHS REGISTERED:

G. J. Hughes, 8, The Mall, Waterford, Ireland. *Four photographs of the old wooden bridge and the new temporary bridge at Waterford.*

J. W. B. and others.—In our next.

**ADDRESS REQUIRED.**—In current number is mentioned Messrs. Silver as makers of metal lined cases for drying carbon tissue with calcium chloride. Please publish their address.—SILEX.

The address you require is S. W. Silver and Co., Sun Court, Cornhill.

J. W. V.—You will find a full list of the photographic press on page 629 of the "Almanac," from which you can take your choice. Opinions differ as to which journal answers to your description. We have our own view, and if you will address your inquiry to us, we will endeavour to answer it.

**CARBON.**—Will you give me a formula for coating the ordinary commercial post-cards as a final support for the carbon process, or, better still, can post-cards be purchased ready coated for the purpose, and where?—AUTOTYPE.

We should advise you to apply to the makers of carbon materials named on page 1340 of the "Almanac," any of whom would supply such final support.

**MOUNTING TISSUE.**—Can you oblige me by quoting a formula for dry-mounting adhesive? I believe there is one made of methylated spirits and shellac, or other composition.—M. AND CO.

So far as we know, shellac alone does not make a satisfactory tissue. In the "Almanac" for 1906 we gave the following formula of M. Briand:—Shellac, 300 gms.; gum elemi, 30 gms.; Canada balsam, 50 gms.; methylated spirit, 1,000 ccs.

**THROAT AFFECTION.**—My throat is very sensitive. I have had a very bad throat, etc. It affects my throat when I am developing. The developer I use is metol-quinol. Could you give me a formula of a developer without any smell; and also is there not anything to be had to wear on the nose to save a smell?—AN OLD READER.

We cannot think that the metol-hydroquinone developer accounts for your trouble. We advise you to consult a doctor.

**CEMENT FOR LEATHER ON METAL.**—The edges of the leather covering the metal parts of my camera are becoming detached. Can you recommend an efficient adhesive or give formulæ of same?—LEATHER.

Good glue, diluted with acetic acid, is generally used for sticking leather to metal, but some of the fish glue cements sold in tubes are also very suitable. "Welda" is one which is extensively used by camera makers and opticians. Great care must be taken to remove every trace of grease, or no adhesive will hold on to the metal.

**TRADE INFORMATION.**—We shall feel obliged if you could send us the following information:—1. Annuals containing statistical publications and summaries of progress relating to joint stock company engaged in portraiture work. 2. A copy of a prospectus and memorandum and articles of association of any limited company engaged in portraiture work in England. 3. The latest balance-sheets and annual statements of at least three firms engaged in portraiture work.—G. & L.

Such particulars are not publicly available. Firms engaged in portraiture and incorporated as limited companies are few in number, and do not publish their balance-sheets.

**NEGATIVES FOR CARBON PRINTING.**—I should esteem it a favour if you could assist me in the following matter. I have occasion to make a series of very large negatives for carbon printing. I understand these can be made through the lantern on transparency tissue. If so, I presume they could be made from a positive the same way as an enlargement. If this is not practical, would you kindly inform me by what process I can make very large negatives?—ANXIOUS.

The most practical method is to make a transparency by contact on carbon tissue, and enlarge this (using ground glass in the lantern) on to a "lantern" or slow landscape plate.

**ERRORS OF PLATE NEGATIVES.**—For the last few days I have found several negatives on plates show when development and fixing is complete a strip on the negative from top to bottom much more transparent than the rest of the negative. They were developed in frost, first soaked in lukewarm water, from which they were removed to a dish of also lukewarm metol hydroquinone developer, and then into hypo. I am not aware of any optical cause of the failure. Can you tell me the cause? I enclose a print, which shows the error of the negative.—W. L. B.

We can only guess as to the cause, but the light band in the plate may be due to the desensitising action of the hinge of the dark-slide.

**RETOUCHING.**—Will you kindly give your opinion of the enclosed specimens in next issue of the "B.J." (both retouching and operating are mine, and taken during the last six months)? Also state what you consider a fair wage to ask as an operator-retoucher. I have five years' experience, and the specimens give a good idea of my average work. I am managing a branch at present, and am not satisfied, and contemplate a change; have been with this firm six months now, and give every satisfaction. —J. F. A. C.

The specimens you submit are of a very ordinary character, and would not procure you anything like a good salary. The heads are fair, but the posing and lighting of the seated figures are poor. If you are getting 30s. a week or over in your present situation, we should advise you not to change until you have acquired a better style. Study the published work of good photographers in the weekly illustrated papers. You appear to be using too much top light.

**COLOUR PHOTOGRAPHY.**—(1) Is there a really good book published on latest methods of colour photography, giving reliable information suitable for study previous to practising this branch of work? (2) What are the prospects for competent workers of colour photography? (3) Is the remuneration sufficient to justify one giving whole time to this particular department? (4) Apart from above, what special line of study would you advise for branch-managing operator, with thorough workroom experience, who is desirous of improving his position?—ADVANCE.

(1) There is no book which deals both with the older processes and the newer screen-plate methods. The best advice we can give you is to study the past volumes of the "Colour Photography" Supplement, issued by the "B.J." (2) The demand for labour in colour photography, except in three-colour block-making, is practically nil. (3) It certainly is not. (4) We advise you to study the essential processes of portraiture, studio-lighting, arc-light work, printing processes, etc.

**CANADA.**—As a regular reader of "B.J." would you kindly give me your advice on the following:—I am a young man, twenty-six years old, with a sound knowledge of every branch of good middle-class trade, and for the past three years have successfully managed a coupon business, doing roughly 400 to 500 sitters weekly, also trade enlarging. I am now thinking of going to Canada. Do you think there are any prospects for me there? If so, how would you advise to set about getting a berth? Could you give me the address of a Canadian journal to advertise in, and if I land there without work to go to, what part would you advise me to make for? I may add I am a quick operator-retoucher, bromide printer (machine), enlarger, with a small knowledge of B.W. finishing. Any hints or advice would be much appreciated by—CANADA.

We should say you have a reasonably good prospect of getting on. Try the "Montreal Star" or "Toronto Globe," both of which papers have London offices. You should make a start in one or other of these towns, where you are most likely to find employment. Further west it is more a matter of being ready to turn your hand to any job and starting in on your own when an opportunity presents itself.

REPAIRING SHUTTER, ETC.—(1) Could you kindly tell me, through your columns, if a leaky roller-blind shutter, which admits pinholes of light to pass, but of which the fabric is still good, can be so treated with any solution or varnish as to repair the fault, or does it mean a new blind? I have turned up several back years of the "Almanac," but can only trace a waterproofing solution for wood. I think many photographers must have this trouble at times, more in the case of shutters that have lain by than those in constant use. (2) A photographer takes a portrait of a young woman, which portrait is subsequently used in a court of justice, and the photographer is subpœnaed to attend the trial. At the time the subpœna is served 5s. conduct money is handed the photographer with it. The photographer, who has a shop and studio, explains that he is without an assistant, and will be obliged to close his studio to attend the court. He writes to the solicitor to this effect, and the solicitor's clerk, when calling upon the photographer, states that there is a further fee, called the witness's fee, which the photographer will receive, but the amount cannot be stated until the costs are taxed, about a week to ten days after the trial. Six weeks after the trial nothing more is heard, and a letter from photographer to solicitor is ignored. Has photographer any claim?—LEGAL.

It is necessary to put on a small patch of thin blind material with rubber solution, but the best thing really is to have a new blind fitted. (2) We believe the photographer is legally entitled to a fee of from 10s. to £3 3s., with expenses.

AUSTRALIAN TOUR.—I am shortly going to Australia, and would be pleased if you can advise me on the following:—1. Do you consider a Hurter and Driffield's Actinograph a reliable guide to exposure, and should I be safe in using it in conjunction with the light-scales for different latitudes? Do the higher speeds keep well in these latitudes? 2. Can you recommend ——— plates for the journey, and what speed plate would be best to use for general views? 3. Can you recommend me a good telemeter which I could fix to my Minimum Palmos? 4. I presume "Tabloid" chemicals would be best. 5. Do you consider it best to develop plates en route or to leave them until journey's end? 6. Stand development or otherwise?—COLONIST.

1. Certainly, it is a reliable instrument, if you know the true H. and D. speed-number of the plate, not always the same as that stated by the maker. Of course, you require the light-scales corresponding with different latitudes. 2. If packed in sealed metal boxes you can depend even on the "ordinary" ultra-rapid plates, although plates are more liable to deteriorate. 3. A very good pattern has long been made by Messrs. Newman and Guardia. 3. Yes, the most convenient form of carrying chemicals, and as reliable as any. 5. We should recommend you to develop a dozen or so exposures, to show you how you are going on as regards exposure, etc., and leave the bulk until return. 6. We can only advise you to develop by the method and with the formulæ to which you are accustomed. In handling large numbers of plates, tank methods will save you time to an enormous degree.

COLOUR PHOTOGRAPHY.—(1) At the end of the article on Mr. Butler's method of colour photography, on page 16, "Colour Photography" Supplement, February 3 last, there is mention of a stripping plate, "the glass of which has been prepared before coating with emulsion." As I am in want of such plates occasionally, I should be glad if you could give me particulars of where I can buy them, and also are they made in process plates or other very slow varieties? (2) I should be glad if you could also inform me as to whether there is a paper sold from which it would be possible to transfer the film (as the film on bromide paper, for instance) to glass or other support, except carbon tissue. I am very anxious to be able to reverse the film of either plates or papers, so that I can have results similar in effect to the single transfer carbon process. I have some recollection of having read in your journal at some time or other that the Kodak Co. used to issue at one time a special bromide paper for use in this manner. (3) I should be glad to know the speed of the Autochrome plate as now issued, measured by the Watkins' "Bee" meter standard. I used to use the plates as Watkins' 2 for outdoor work. Are they any faster now?—AUGUST.

(1) Such stripping plates are sold for the use of collotype workers. Any plate-maker could supply you, but perhaps your best course would be to apply to a firm such as Messrs. Penrose and Co., 109, Farringdon Road, E.C. (2) You will find stripping collodion P.O.P. advertised on page 1219 of the "Almanac." You refer to the Transferotype paper formerly manufactured by the Kodak Co., but not now, we believe, issued by them. (3) They are now somewhat faster, but "Watkins' 2" may still be taken as a reliable speed number.

BROMIDE POSTCARDS.—I am just starting commercial bromide postcard work, and would like to know (1) what is the best size dish in which to develop, how many can be developed at a time, and the best developer (aim to turn out greatest quantity in least time). (2) For toning the above I am adopting hypo-alum bath, and have enclosed print for you to see the result I have got. I do not know what size dish to use, neither the outside one, nor one containing bath, nor do I know how many can be toned at once; whether they require constantly turning about or remain still, or whether to rock the dish. What is the best method of heating the dish containing water?—A CONSTANT READER.

(1) First of all, you should get a printing machine (not expensive), which will save you an immense amount of time. You may select from our issue of February 11, 1910, which describes practically every machine on the market. The size of dish and number to be kept developing at one time are mainly matters of preference and skill. Better use a whole-plate or 12 x 10 dish with plenty of developer, and keep as many going as you can manipulate. See the article on this very subject in the "B.J." for May 6 and 13, 1910 ("B.J. Almanac," 1911, p. 570). (2) The card is not a good specimen of hypo-alum toning; not purplish enough. Possibly your bath is too fresh; it works better with age, but you may "ripen" it by adding P.O.P. clippings (the sensitive unfixed paper). Use the bath in a deep 15 x 12 porcelain dish, or one deeper still of stoneware, and place in a larger vessel of stout tin plate, large enough to leave three or four inches all round the inner dish, and fitted with a pair of supports to keep this latter an inch or two off the bottom. The metal vessel containing the water should be kept at about 110 to 125 degrees by means of a small gas burner below. A large number can be toned at once, but they must be kept on the move constantly.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2659. Vol. LVIII. FRIDAY, APRIL 21, 1911. Price Twopence.

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## SUMMARY.

Some advice to professional photographers in the choice of a telephoto lens is given in an article on page 298.

We reprint the portions of the Copyright Bill at present before Parliament which deal with photography, pointing out the respects in which the proposed legislation differs greatly from that now in force. (P. 207.)

Opportunities for the local supply of commercial enlargements are the subject of a note on page 298.

A paper on document photography by a New York photographer, specialising in this branch of work, deals with the many cases in which photographs of this kind are of value as evidence in the law courts. (P. 302.)

A writer in the "Medical Magazine" has found that excessive exposure to the ultra-violet rays of arc and mercury-vapour lamps is the cause of severe headache. (P. 310.)

MM. Lumière and Seyewetz, in a recent paper before the Paris Academy of Sciences, have pointed out that sodium quinone-sulphonate, in conjunction with soda sulphite, forms a solution which develops the latent image of a chloride plate, but does not develop that on a bromide plate. (P. 299.)

A French writer, M. F. Achard, in the "Photo-Gazette," has dealt with the use of plain opaque or tinted screens for equalising the exposure of skies and dark foregrounds, and has concluded that such screens are efficient for the purpose and more certain in their action than graded light-filters mounted on the lens-hood. (P. 300.)

Present and proposed methods of obtaining correct colour reproduction in photo-engraving is the subject of a note on page 310.

The report of the National Physical Laboratory comments upon the erroneous views held as to the efficiency of focal-plane shutters. (P. 207.)

Anastigmat lenses, developing dishes, and a substitute for celluloid figure among "Patents of the Week." (P. 311.)

Methods of repairing shutter blinds are the subject of a note on page 312 and of a letter from a correspondent on page 314.

## EX CATHEDRA.

**The R.P.S. Exhibition.** Our readers should note that Tuesday next, April 25, is the latest day for the receipt of entries for the forthcoming exhibition of the Royal Photographic Society. This, in the case of exhibits delivered unpacked by hand, at 81, Charlotte Street, Fitzroy Square, W. In the case of entries sent by carrier, the latest day is Monday next, April 24. As in the case of last year's exhibition, an agent's fee of one shilling must accompany the entry form. The exhibition opens with a reception and private view at 8.30 p.m., on Monday, May 8, and remains open from Tuesday, May 9, until Wednesday, May 31, daily from 11 to 8 p.m., and afterwards for lectures until 10 p.m.

* * *

**Exposing Sky and Foreground.** The paper by M. F. Achard on "The action of gradating filters and screens," which we reprint on another page, considers this question from a rather novel point of view. He more or less devotes his attention to uniform filters or opaque screens, placed so as to cover only part of the lens, and we fear he has omitted to notice some of the difficulties that usually interfere with the action of such screens. In the first place, with many lenses the full aperture is not available for oblique pencils coming from the sky, and an opaque filter adjusted so as to graduate the image down to the horizon will often cut out the upper part of the sky altogether. We have made many experiments with opaque filters for use with Autochrome plates, and had to abandon them altogether for this reason. This difficulty disappears with a foreground shutter, which has always proved very successful in our hands for short exposures. A transparent uniform filter is better than an opaque filter, inasmuch as it cannot completely cut out any part of the subject, but if it is strong enough to compensate for the brightness of a very brilliant sky it is apt to graduate the image too abruptly. Further than this, in our experiments we have never found it sufficient to place the filter in the position shown by M. Achard, touching the edge of the central light pencil. It always had to be lower than this, otherwise it only corrected the exposure in the upper part of the sky, leaving the sky just above the horizon distinctly over-exposed. On these grounds we prefer a filter graduated down to clear glass. By readjusting it vertically we can then get practically any effect desired, and avoid too abrupt a graduation. Possibly M. Achard is right in stating that the only place in which a graduated filter can produce a correct result is in contact with the plate, but it is pretty certain that other conditions besides mere contact are essential to the production of a quite correctly exposed result. To settle what those conditions are would involve the consideration of some very complex matters, and we prefer in any case to look upon the graduated filter not as affording a means of correcting exposure, but as one for getting the worker out of what is sometimes a serious practical difficulty. It is a useful practical expedient only, and if we want true correction for the difference between sky and foreground it appears to us that the only practicable means is afforded by the use of an ordinary orthochromatic screen and an extra long exposure. The only excuse for the graduated screen is, of course, the fact that it does not lengthen the foreground exposure, and is therefore useful when short exposures are desired. For colour work we consider a neutral tinted screen to be the only right one to use, for obviously it is unsafe to tamper with colour correction when true colour is the object in view.

* * *

**Commercial Enlargements.** In our last issue we reprinted an interesting article from "Wilson's Magazine" in which photographers were advised to push moderate-sized enlargements as a supplement to their usual orders for portrait work. A correspondent writes to point out that there is another source of income from enlargements which is being worked successfully in a few quarters and is worthy of wider adoption. It consists in the production of large-sized bromides 20 by 16 inches and upward for advertising purposes. House and estate agents are especially likely customers, and motor-car manufacturers are also glad to have big pictures of their machines if they are to be had at a reasonable price. Such enlargements are best mounted upon canvas-covered stretchers or upon linen, so that they can be easily carried and stored. It is impossible to detail the developments this idea is capable of; every photographer must study the specialties of the traders in his neighbourhood and suggest what appears to him to be suitable subjects. A florist, for example, might be induced to go in for a full-sized picture of a specially fine wreath or bouquet, and perhaps even sell an additional copy to his customer. It must, however, be borne in mind that only commercial and not "artistic" rates can be obtained for such work. Given a good negative, little or no spotting is required, and half-a-sovereign should be good pay for, say, a 24 by 18 size. This class of work need not be put in evidence in the portrait department, as sitters might then compare prices with the finished work, but kept entirely to its proper clients.

* * *

**The Re-development of Bleached Negatives.** In an article by M. H. Prunier, which we abstracted in our issue of April 14, the author states that an image bleached in copper chloride should be re-developed in moderate daylight, never in sunshine, otherwise the light will act through the whole thickness of the film. It is curious that the idea that bleached images require exposure before re-development should persist so long, seeing that it has been pointed out time after time that they are quite readily developable without any exposure. Only one bleacher will produce a chloride image that requires exposure, and that is chlorine-water, which is a quite impracticable solution. All the others produce an image that is virtually in the state of an exposed image, and the whole of the operations of bleaching and re-developing may be conducted in the dark. If such an image is in error exposed before development it can readily be brought to a stage of over-exposure in which it is undevelopable. If not exposed until the developer is poured on this risk is avoided and development is sometimes quickened, but this procedure renders stain possible. Some few bleachers may contain free chlorine, and in this case a part of the image is in chloride of silver, and requires exposure to make it developable. Without such exposure re-development gives a weak image, and if the object of the operation is reduction of contrast this is an advantage. If, however, we are aiming at intensification exposure may become necessary during development. In this case the bleacher is improperly mixed. The ordinary chromium bleacher (bichromate and hydrochloric acid) contains no free chlorine, but if an excess of acid is added chlorine is produced. For intensification we therefore avoid an excess of acid, while for reduction we use it intentionally. If, however, we expose to light, the advantage of using an excess of acid is neutralised, and our efforts at reduction are somewhat severely handicapped.

## TELEPHOTO LENSES FOR PROFESSIONAL WORK.

Although the telephoto lens has been an article of commerce for nearly twenty years, only a very small proportion of professional photographers number such an instrument in their outfits. It is at first sight somewhat difficult to account for this attitude towards so useful a tool, but lately happening to remark upon the fact to a skilful outdoor worker, we discovered what is perhaps the greatest deterrent from its extensive use by the everyday photographer. Our friend said that he had thought of getting a "telescopic" lens, and had gone so far as to borrow a book upon the subject, but had been so bewildered by the mass of figures and multiplicity of tables that, as he jokingly said, he decided to put off his purchase until he had had time to attend a series of lessons in elementary mathematics, a subject upon which he owned to a colossal degree of ignorance. Now, while it is true that a certain amount of arithmetical skill is necessary to the owner of half a dozen positive and as many negative lenses, the manipulation of an individual instrument may be made as simple as that of an ordinary lens if the user will confine himself to a fixed degree of magnification. This is equivalent to using one of the later types of tele-objective, in which the positive and negative elements are not capable of adjustment. There is now a variety of non-adjustable telephoto lenses, most of which have too short a focal length to be of much service to the professional, who usually possesses ordinary lenses of equally great focal length and sufficient camera extension to use them. A moderate-power telephoto attachment is therefore the most judicious selection, and this should be fitted to an anastigmat or good rectilinear lens. A positive lens, with a focal length of 8in. or 9in., fitted with a 4in. attachment, is a very useful combination to start with, and will usually be found to do all the work that is likely to be required of it. If it be decided to work on the fixed magnification system, an amplification of four diameters, giving an equivalent focal length of from 32in. to 36in., will be found generally useful. This will give with a positive lens working at *f*/5.6, a maximum working aperture of *f*/22, and the exposure required for smaller apertures will be in proportion; *f*/8 now equals *f*/32, and requires double the exposure, and so on will the remainder. After a little practice the photographer will probably wish to avail himself of the power of varying the focal length, which he can easily do by means of a simple tape measure, giving the degrees of magnification, the working apertures being calculated as in the above example. The focussing of a telephoto image should be done with great deliberation, and with as small a stop as can conveniently be used there will be no lack of sharpness in the negative. A minimum exposure should be given, and development, with a full strength solution, carried on until the whole of the bromide acted upon by light has been reduced, or, in other words, the image must be developed right out.

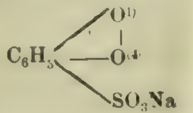
The rapid fixed-focus telephoto lenses will probably find much favour with photographers who have to take the various processions and parades which will be so much in evidence this year. The Bis-Telar is the prototype of this class, while the latest is a Dallmeyer Adon, with the large aperture of *f*/4.5. These allow of rapid shutter exposures, so that single figures may be rendered in a practically useful size from a comparatively distant standpoint. Perfect rigidity of camera and stand is, of course, essential with all, except the most rapid types, as any vibration is magnified in proportion to the size of the image.

# ON DISTINGUISHING BY MEANS OF DEVELOPMENT BETWEEN IMAGES ON CHLORIDE AND BROMIDE EMULSION.

(A paper by MM. A. and L. Lumière and A. Seyewetz read before the Paris Academy of Sciences.)

It is well known that gelatino-chloride of silver is more readily reduced by developers than is gelatino-bromide, but hitherto no developing formulæ have been known with which the latent image on a chloride plate could be developed without an action being produced, with the same solution, on a bromide plate.

We have recently discovered the possibility of distinguishing very sharply between these two classes of latent image by means of sodium quinone-sulphonate.



This substance does not itself possess reducing properties—it is, indeed, a powerful oxidizer—but it acquires these properties on addition of soda sulphite to its solution. The aqueous solution of sulphonic quinone, which has originally a reddish-yellow colour, becomes brown, then red, on addition of soda sulphite.

A solution made as follows was used:—

| | |
|---|---|
| Soda quinone sulphonate | 10 gms. |
| Soda sulphite, anhydrous | 50 gms. |
| Water | 1,000 ccs. |

This develops the latent image on a chloride plate, after normal exposure, within a few minutes, but gives no trace of an image on even a greatly over-exposed bromide plate within half an hour. Gelatino-chloro-bromide of silver gives a result intermediate between the chloride and bromide. There is reduction by the developer, but the darkening produced is much less than that with the gelatino-chloride alone.

We have found that this property allows, not only of distinguishing between the two emulsions, but of detecting the presence of a chloride emulsion even in fairly small proportion with one of bromide. The quinone developer is without action on gelatino-iodide of silver, and the presence of iodide does not affect the detection of chloride in an emulsion containing all three haloid silver salts.

The non-sulphonated quinone, dissolved in soda sulphite, does not in the least resemble the sulphonated body: it develops a bromide as rapidly as a chloride emulsion.

The reducing action which the quinone sulphonate exerts in presence of soda sulphite on chloride emulsion cannot be due, as we have seen, to the quinone iodide, but probably to a product of the alteration of quinone sulphonate under the action of soda sulphite and water.

We have not yet been able to identify the product which possesses this curious reducing power.

It might be supposed *a priori* that soda hydroquinone sulphonate is formed, since the sodium quinone sulphonate is converted into the corresponding hydroquinone body by means of sulphurous acid, but sodium hydroquinone sulphonate alone in solution of sulphite of soda solution does not develop chloride emulsions.*

We have made experiments to see if other reducing substances used under suitable conditions allow of developing the chloride emulsion without acting on the bromide.

We have first tried the polyphenols and polyamines possessed of reducing properties but without developing powers. In using these substances in various conditions of alkalinity, we did not find that any of them allowed of the development of the latent chloride image.

We have also experimented with bodies containing the developer group, destroying to a greater or less extent their developing power by addition of bisulphite of soda, or organic or mineral acids to the solutions in soda sulphite. Under these conditions we found that no developer containing one or more amido groups allows of distinguishing between the chloride and bromide latent images. When the reducing action of these developers is depressed so far as to prevent development of a bromide plate, there is likewise no development in the chloride.

On the other hand, developers in which the developer groups are solely hydroxyl, such as hydroquinine pyro, or pyrocatchin, afford results which more nearly resemble those obtained with quinone sulphonate, the greater the number of hydroxyl groups they contain. Only pyrogallic acid, in presence of sulphite or bisulphite of soda, has yielded a developer which distinguishes sharply between chloride and bromide emulsions, but the action is less marked than that of quinone sulphonate.

A. and L. Lumière.
A. Seyewetz.

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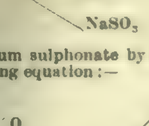
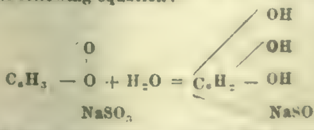
* The most probable hypothesis on which to explain the phenomenon is the



formation of hydroquinone sodium sulphonate by simple fixation of the elements of water according to the following equation:—



$$\underset{NaSO_3}{C_6H_3 \overset{O}{-O}} + H_2O = \underset{NaSO_3}{C_6H_2 \overset{OH}{\overset{OH}{-OH}}}$$

The soda sulphite would thus act simply as a feeble alkali, and would facilitate the fixation of the elements of the water. Other weak alkalies, such as acetate of soda, have not given us the same results as soda sulphite.

# THE ACTION OF GRADATING FILTERS AND SCREENS IN SECURING SKY AND FOREGROUND ON THE SAME PLATE.

[The following article in a recent issue of the "Photo-Gazette" deals with the question of shading the plate by means of a transparent or opaque screen on the lens, and, as will be seen, shows that a plain, even light-filter is capable of giving all the control which the photographer requires in dealing with subjects containing skies in conjunction with heavy foregrounds.—Eds. "B.J."]

The difficulty which is experienced in certain cases of obtaining negatives, in which both the dark foreground and the sky or distance are correctly exposed, is well known. For the purpose of remedying over-exposure in the lighter parts of the subject several constructors have suggested and placed upon the market during the past few years graded light-filters, intended to be placed on the hood of the lens and to cut down to a greater or lesser extent the rays from the sky or distance which fall upon the plate. These pieces of apparatus are formed, in the case of most of the filters, of a yellow screen, the depth of tint of which regularly shades off to a fairly deep filter, or by an opaque mask of half-circle shape, the edge of which is serrated and placed at some distance in front of the lens. These screens should naturally be placed so that their deep or opaque portion comes over the upper part of the lens.

After having been in use for some time without their efficiency being in any way challenged, these screens have recently been the subject of some discussion, and it may be of interest to examine their action somewhat more closely. In the following article it is necessary to consider the bundle of rays issuing from the point of the object and converging again as a point on the plate. This bundle of rays is evidently limited by the aperture of the diaphragm. Now the deviations which rays undergo in their passage through lenses are so slight as to be capable of being neglected in considering the present subject. We can dismiss the lens itself, and confine our attention only to the diaphragm. The error which is introduced by doing this is of about the same degree as that introduced when considering the actual diameter of the lens as the real working aperture.

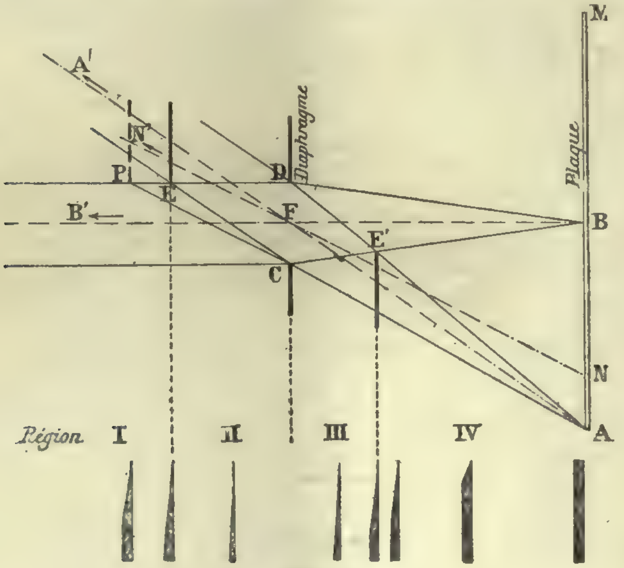


Fig. 1.

Consider an objective (Fig. 1), the lenses of which are not separately shown, but fitted with a diaphragm of diameter $d$, which diameter is represented as CD. The principal focal distance of this lens is BF = $f$, the nodal points being supposed to be together at F in the plane of the diaphragm. The lens casts an image on a plate AM, of which the length AB ( = $a$) represents the half of one of the sides.

In these conditions the bundle of rays, which form an image at A of a point A′ in the sky, forms inside the camera a cone having its summit in A and as its base the circumference of the diaphragm, and, outside the lens (since the point A′ is practically situated at infinity), a cylinder having its base the circumference of the diaphragm and the generating lines of which are parallel to the lines AFA′.

In order to take a concrete example we will consider the means of moderating, over the whole half AB of the plate which receives the image from the sky, the action of the rays of light so that the minimum illumination is in the part near to A, this region of minimum illumination being joined to the half BM of the plate (which receives the normal illumination) by a zone which is uniformly graded, and is limited by the point B, which we will take as corresponding with a point in the subject on the horizon.

We will now examine the action of a graded transparent light-filter and of an opaque screen. In the case of a transparent filter consider the luminous rays converging on B and A, BCD and ACD, and denote by E the point outside the camera starting from which the rays commence their course to the plate, and by E′, the point from which these two rays again start inside the camera. It will at once be seen that if one places at one of these points, at E for example, a uniform coloured screen so that the straight horizontal lower edge of this screen is flush with the upper part of the bundle of rays BCD without cutting off these rays, we obtain on the plate a uniformly graded illumination which fulfils the conditions required. It is clear that the whole of the rays converging at A should pass this screen whilst, by hypothesis, no rays corresponding to the point B are intercepted at all. For every intermediate bundle of rays emanating from points A′ and B′, it is seen that only a part of the rays meet the screen, this part being greater or less, according as the point is nearer to or more distant from, A.

The conditions are exactly similar if a yellow screen, instea of being placed at E outside the camera, is placed at E′ insid at the point where the two bundles of rays converge respectively towards A and B.

If now the screen be brought nearer to the diaphragm, keeping its lower edge along the line DE, the gradation still take place uniformly from A to B, but a smaller portion of th rays issuing from A traverse the screen: what really happen is thus just the same as if the screen were kept at E, but wa of lighter tint.

If, on the contrary, the screen is moved from E in the direction away from the diaphragm, again remaining with its lowe edge on the line DE, to a point P, for example, it will be see that this point is the intersection of the lower ray of th bundle converging at a point N situated between A and B and that the whole of the rays corresponding to all the point between A and N are compelled to traverse the screen. Th screen thus acts on the plate with a uniform intensity betwee A and N, while it gives between N and B a region grade according to the same method as when the screen is at E. Thi fringe of gradation is greater the further the screen from the outside of the camera, or, when the screen is placed inside the camera, the smaller its distance from the plate: obviously, if the screen is in contact with the plate, there is no gradation whatever.

There is no need to go into the case where the screen would not touch the bundle of rays B, which would occur only in moving the point B on the plate, a limit which we have already taken as that of the region to be graded.

In short, the diaphragm and the vertical planes passing through E and E′ mark out four regions, I, II, III, IV, in Fig. 1, characterised by the effect produced on the plate by the interposition of a transparent filter of uniform tint. In regions I and IV this screen gives on the plate a uniformly illuminated portion and a graded portion, the latter being narrower the more distant the screen from the lens, this graded portion passing, in the particular case before us, from the half of the plate when the screen is at E or E′ to nothing when it is at infinity, or in contact with the plate. In the regions II and III the screen produces on the plate an evenly graduated area, the maximum effect being weaker, for a given screen, the nearer this latter to the diaphragm. In order to give a diagrammatic representation of these results, there will be found below Fig. 1, on a scale of ½, the illumination obtained on the plate according as the screen is in the different positions, each diagram corresponding with the effect produced by the screen when it is in the same vertical plane. Each of the black surfaces can be considered as a section of a screen which, if it were in contact with the photographic plate, would produce the same effect as the screen in question in the particular position represented.

In Fig. 2 is shown, on a larger scale, a diagram illustrating the gradation of the illumination on the plate. Here again the hatched surface may be considered as the section of the equivalent screen applied to the surface of the plate. This latter figure, if correctly drawn, shows better than any other explanation the regulation of the gradation which the use of a uniform transparent screen masking part of the lens allows of being produced on the plate. When the screen is placed in the region II or III, the width of the graded portion becomes greater than half of the plate. It follows that the curve of gradation on the plate is only a fraction of the curve of Fig. 2, the origin remaining always at B.

It remains to see in what regions, allowing for the usual dimensions of lenses, a transparent screen mounted on the hood of the lens falls in practice. For this it is necessary to be able to calculate the position of the planes E and E′ in reference to the diaphragm, also the extent of the fringe of gradation. Let $y$ be this latter, and $l$ and $l'$ the respective distance of E and E′ from the diaphragm. Simple geometry will lead to the following relations:—

$$(1)\ l = d\frac{f}{a} \qquad (2)\ l' = \frac{d\,f}{u+d} \qquad (3)\ g = d\frac{f}{x},$$

where $x$ represents the distance of the screen in front of the diaphragm. It will be seen that for a given lens and plate ($f$ and $a$) these three quantities are proportionate to the diameters of the diaphragm. These three formulæ thus allow of calculating what happens in any particular case.

Take, for example, a lens of 15 cm. focal length, practically the dimensions of the "Tessar," and of maximum aperture $f/4.5$, that is to say, a diameter of the diaphragm of 33.5 mm. The length of the mounting in front of the diaphragm would be approximately 24 mm. and behind 17 mm. If the half length of the plate ($a$) is 6 cm., we then have at full aperture

$l = 8.3$ cm. $\qquad l' = 5.35$ cm.

The extremities of the mounting are thus respectively in the regions II. and III., and the uniform screen on the hood or the back of the lens perfectly fulfils the requirements.

If now the aperture be reduced to $f/40$, corresponding to a diaphragm of 3.75 mm., we have, with the same plate,

$l = 9.5$ mm. $\qquad l' = 5.84$ mm.

The extremities of the mounting in this case are in the regions II and IV. If the screen is placed on the hood the width of the fringe of gradation on the plate ($y$) is 23 mm. Of 6 cm. height of the lower part of the plate, 37 mm. are uniformly screened by the filter, the graded portion reaching more than one-third of the sky. In practice this is a quite satisfactory result.

The dimensions of the lens which we have here taken as an example are about those which are most frequently met with, and the conclusions here obtained can thus be considered as capable of fairly general applicability. The conditions are, moreover, still more favourable if the mounting of the lens is shorter. They are less so if the mounting is longer, but the use of a screen of uniform tint nevertheless remains practicable. In order to give an extreme example, take a lens of which the construction approximates to that of the "Heliar" of Voigtländer, and which would have the same optical constants as the lens examined above. The distance from the edge of the hood to the diaphragm would be about 42 mm. Whilst at full opening the uniform screen would give an even screening of the plate, the fringe of gradation at an aperture of $f/40$ would still be 13.5 mm. in height, or about a quarter of the sky.

Considering now the action of an opaque screen, we will imagine such a screen limited below by a straight horizontal line, just as in the case of the transparent filter already dealt with. Under these conditions the study of the opaque screen follows immediately from that of the transparent screen, saving that the law of the gradation and the extent of the graduated portion depend on geometrical constructions independent of the intensity of colour of the screen. The fact that the screen is opaque affects only the value of the minimum of illumination of the plate; but this last factor is of great importance, since it is this which limits the use of an opaque screen. It will be clear, on reference to Fig. 1, that if an opaque screen is placed at E or E′, so as to be flush with, but not to intercept, the bundle of rays meeting at B, this screen intercepts all rays meeting at A, which latter point, therefore, receives no light. If the screen is in one of the regions I and IV the dark parts on the plate extend further the further the screen is from the diaphragm; for a given position of the screen the dark portion is even spread further than the uniform portion in the case of the transparent screen. It will thus be seen that the opaque screen can be employed only in the regions II and III, any other position of the screen rendering it impossible to affect the lower part of the plate.

The graded portion then extends over the whole lower half of the plate, the curve of illumination on the plate being, in all cases, formed by a portion only of the curve of Fig. 2.

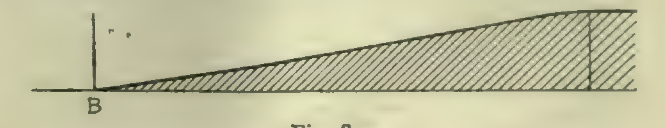


Fig. 2.

The condition which is thus established, according to which the opaque screen may be used only in regions II and III, comes to this, that its distance from the diaphragm should be, in all cases, less than $l$ or $l'$. This means that there exists for a given lens and plate a limit of the aperture of the lens below which it is not possible to use an opaque screen. This limit is attained, with the screen placed on the hood, when the distance $l$ becomes equal to the distance of the edge of the hood from the diaphragm. If this distance be called $b$, and the limiting aperture of the diaphragm D, then from formula 1 we have—

$$(4)\ D = a\frac{b}{f}$$

Taking the figures used in the example of the transparent screen, namely $f=15$ cm., $b=2.4$ cm., and $a=6$ cm. we have

$$D = 6 \times \frac{2{\cdot}4}{15} = 0{\cdot}95 \text{ cm.}$$

corresponding to a working aperture of approximately $f/16$.

With the same values of $a$ and $f$, but with $b=4.2$ cm.

$$D = 6 \times \frac{4{\cdot}2}{15} = 1{\cdot}67 \text{ cm.}$$

corresponding to an aperture of $f/11$.

It can be readily found from practice that it is almost always possible to produce gradation satisfactorily by means of an opaque screen if the full aperture of the lens be used. From the above considerations the practical conclusion may be drawn that, in order to produce a gradating effect corresponding with the aim stated in the first portion of this paper, we can use:—

(1) A transparent screen of uniform tint placed near the hood or behind the lens mount.

(2) Or an opaque screen, so long as we do not stop down the lens beyond a certain limit, otherwise a part of the plate is entirely screened.

It follows from what we have here established that:—

(3) The use of a graded transparent screen is correct in practice only if one is able to place the screen inside the camera, and in the immediate neighbourhood of the plate, the dimensions of the screen being then frequently those of the portion which it is wished to grade.

It may be further mentioned that the use of a transparent graded screen, on the hood of the lens, for example, would not present *a priori* appreciable disadvantages. The only difference would be in the law according to which the gradation on the plate would be produced, a difference from which it would be frequently risky to draw practical rules.

On the other hand, the use of an opaque serrated screen cannot be recommended. The serrations simply give rise to a gradation of the plate in a serrated form which, in consequence of the irregularity of the shape of the subject, in most cases would not be noticed, but might in others prove a drawback.

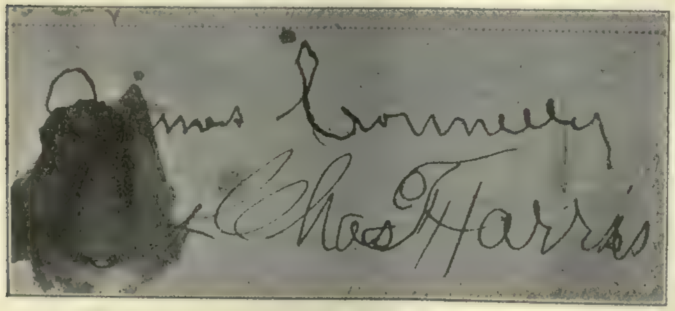
A further disadvantage, common to the various types of graded light-filter, is their necessarily high price. There is thus good reason to have recourse exclusively to the use either of transparent tinted light-filters or opaque screens. These latter offer also the advantage of being readily improvised, at practically no cost whatever, by means of paper or card.

F. ACHARD.

# DOCUMENT PHOTOGRAPHY AND ITS USE IN THE COURTS.

[The following article, by Mr. W. J. Kinsley, a New York photographer who specialises in the examination and reproduction of questioned documents, was first published in the "American Annual of Photography," but is here reproduced from a brochure published by the author, containing additional notes and illustrations. Such expert work is more freely credited in United States courts than here, but it may be hoped that more advantage will be taken of it in this country and new avenues of profitable work thus opened to photographers.—EDS., "B.J."]

THE first step in a contested questioned document case should be to photograph the entire document natural size, then to enlarge all of it, or any disputed or questioned parts, to the degree necessary and in the way deemed to best show the facts. These natural-size photographs should be made, if for no other purpose, merely as a permanent record. There have been cases that have shown the necessity of just such a record. Documents in dispute have been damaged either designedly or accidentally, or have been lost or stolen—hence the necessity of securing accurate copies of them in their original condition.



ames Connelly

Chas Harris

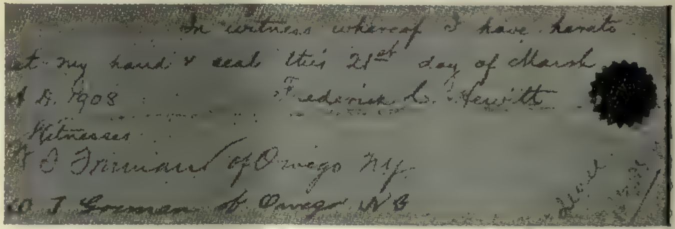
Fig. 1.

Enlargement of questioned signature showing name "James Connelly" twice. Faint writing reproduced because of yellow stains left by erasing with chemicals.

A witness to a forged will, in her anxiety to account for all of the unusual features of the document, testified with emphasis and particularity about just how all of the blots on the instrument were made at the time of signing—including several blots which were made in the Surrogate's office some months after the document had been photographed! The witness did not know that the document had been photographed.

In another case, where typewriting was in question and the disputed document was in French, it was found that the accent marks over the letters were put on by pen and pencil—thus showing that a typewriting machine other than one made to write the French language was used to do the writing.

When the document was again produced by the suspected party, at a second investigation, it was found that some of the most prominent and palpably-added accent marks had been covered by ink blots. The producer of the document had not learned that the document had been photographed!

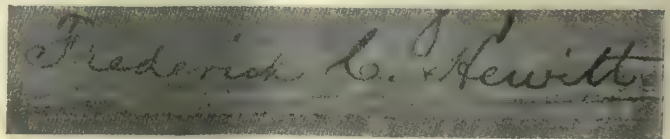


In witness whereof I have hereto
et my hand & seal this 21st day of March
A D. 1908 Frederick C. Hewitt
Witnesses
F C Trueman of Owego N.Y.
O J Gorman of Owego N Y

Fig. 9.

Signatures in Hewitt Will Case, showing differences in pens and inks; and showing writing over fold in paper.

It is a great saving of wear and tear on the original papers to have photographs of them.



Frederick C. Hewitt

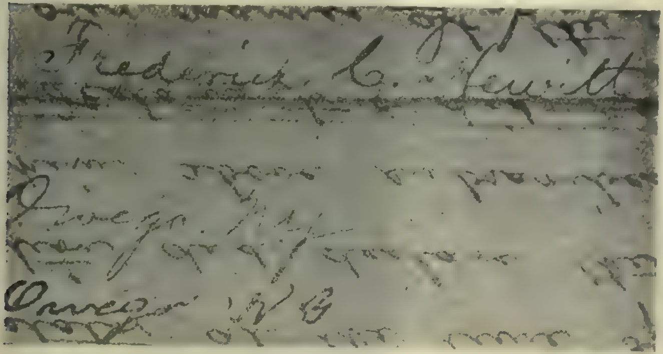
Fig. 10.

Testator's signature to will showing signature was written *after* fold was made in paper.

For court use, photographs are very helpful, as then all parties interested—court, jury, lawyers, and witness—have the same thing before them at the same time. The witness's explanation can be followed much better and the peculiarities pointed out can be observed then and there—and not forgotten, as they would be oftentimes, when the jury retired for deliberation.

It is also useful to have several sets of photographs, so that they may be placed in the hands of several examiners, bankers, attorneys, etc., at the same time during the preliminary investigations.

Photographs frequently disclose things unobserved by the naked eye. Patched and overwritten lines (Figs. 12, 13), erasures by chemicals or abrasions, differences in ink tints (Figs. 4, 11), differences in pens used (Fig. 14), breaks in continuity of writing, underlying pencil lines, writing over folds in paper (Figs. 9, 10, 11), tearing paper before or after writing, etc. (Fig. 14). Differences in printing, engraving, size and ruling of paper, etc., can be readily shown by photographs (Fig. 20).


Frederick C. Hewitt

Owego N.Y.

Fig. 11.

Transmitted light photograph showing *three* different pens and *three* different inks were used by testator and witnesses to a will. Also shows testator wrote signature over a fold in the paper.

Chemical erasing stains being in most cases yellow, and the ordinary photographic plate being very sensitive to yellow, the faintest of stains, scarcely discernible to the naked eye, are reproduced much stronger on the negative—in some cases plain enough to read what appears only as a faint yellow smudge in the original.

The "James Connelly" illustration (Fig. 1) shows a case of this kind. The defendant was indicted for giving as security for a bond a house and lot he did not own. The Bail Bond Book was a public record. After he was indicted the defendant said that the name signed to the book was not his signature. And when the prosecutor looked again he found that the original signature had been erased by chemicals, the same name written over it—but in another handwriting—and a big blot put over part of the signature. Photographs were made, and the faint yellow stain read "James Connelly." The expert for the prosecution testified at the trial that the faint writing was in the handwriting of the defendant. An expert for the defendant, who was in court, prepared to testify that the second or overwriting was not in the hand of the defendant, immediately after examining the photographs took his hat and left the courtroom.

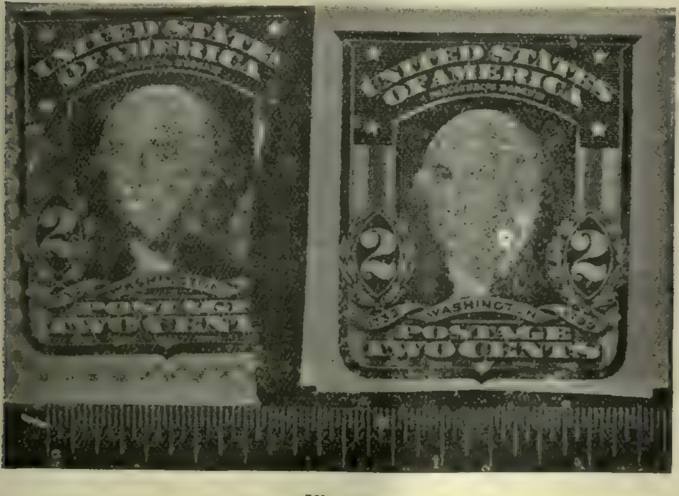


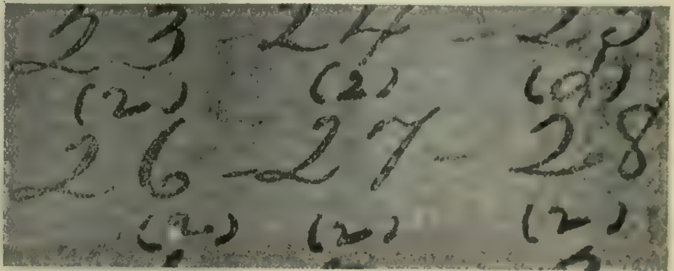
Fig. 3.

Enlargement of marked and perfect stamps used in a "Blackhand" trial. Perfect stamp on the right, and marked stamp on the left. Vertical white spaces in cancelled stamp were marked with red writing ink.

Writing faded toward yellow will photograph quite black, and thus makes it plainer in the photograph than in the original.

Colour screens or ray filters are useful in many cases in catching any bit of colour; and of course orthochromatic plates are often a necessity.

The two-cent stamp illustration (Fig. 3) shown herewith was made from a marked stamp used in a so-called "Blackhand" case. The white vertical spaces on either side of Washington's head were marked with red writing ink. From much handling this stamp was badly rubbed and the red ink faded. A green contrast filter and orthochromatic plate were used in making this negative. The original photograph was three diameters or nine times enlarged.


23 - 24 - 25

(2) (2) (2)

26 - 27 - 28

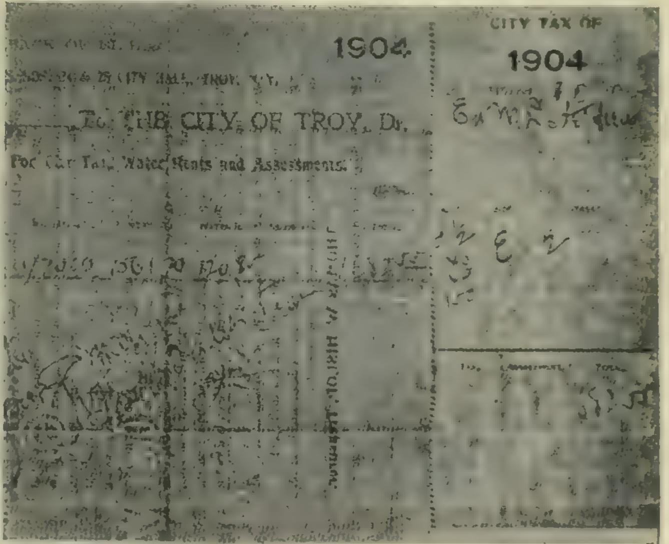
(2) (2) (2)

Fig. 4.

Transmitted light photograph of altered book account showing use of different inks and pens, and an erasure by abrasion.

For enlargements over three diameters it is better to place the filter over the object, as it gives sharper definition.

By the use of contrast ray filters any colour in the writing or document may be emphasised. Sometimes it is necessary to use a filter to correct the background in the paper—manila, for example—or to exclude some extraneous thing—for example, a red blot on black writing, etc.


1904

TO THE CITY OF TROY, Dr.

For City Tax, Water Rents and Assessments.

CITY TAX OF

1904

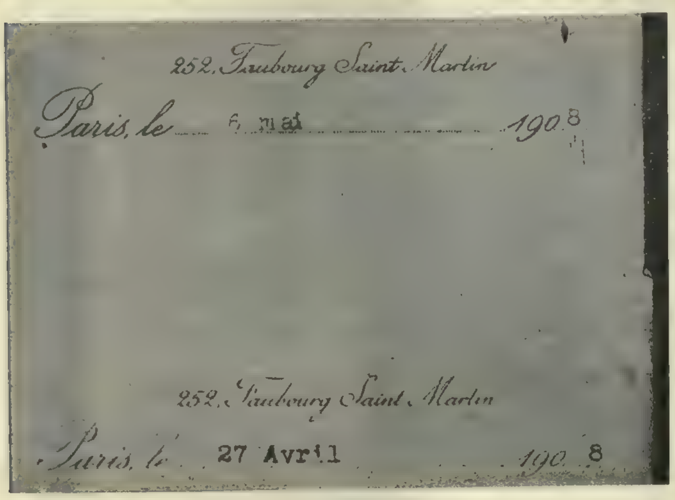
Fig. 6.

Transmitted light photograph showing water mark in paper and these differences between tax bill and stub: 1. Perforations; 2. Size of stub; 3. "Laid" marks. The original stub was destroyed and this one, which is for $1,000 less than the bill, substituted.

A transmitted light photograph will nearly always show differences in inks, thickness of strokes, quality of line, writing over fold in paper, retouching, patching, and overwriting—if these things are actually present. Two ink strokes that look practically alike to the unaided eye, when photographed by transmitted light will show that two different inks were used (Figs. 4, 11).

Transmitted light photographs are also useful in showing water-marks and wire-mesh marks in paper, also the fibre of the paper (Fig. 6). Sometimes erasures are shown up best by transmitted light (Fig. 4).

Photographs are essential in many cases, because it is necessary to make a juxtaposition comparison. After photographing and printing the disputed and standard documents natural size, the parts necessary for comparison can be clipped from the prints and be arranged and pasted on thin cardboard or heavy paper. These clippings thus arranged can then be further enlarged up to any desired diameter. This makes a fair and effectual way of making the comparison and of showing the facts. If the writings are actually unlike, it will be easier to see their unlikeness when enlarged in this way. On the other hand, if the writings are alike, this fact will be demonstrated by such an enlarged comparison.



252, Faubourg Saint Martin

Paris, le 6 mai 1908

252, Faubourg Saint Martin

Paris, le 27 Avril 1908

Fig. 20.

**Genuine and disputed letterheads. Upper one was probably printed from a *photo-engraved* plate made from lower one which was *lithographed*. Differences in *width of paper*, *quadrille ruling*, and in the *typewriting* are a'so shown.**

Comparisons cannot be properly made unless the writings to be compared are brought side by side; and for persons unaccustomed to making such comparisons (jurymen, for example) it is absolutely necessary to have the things to be compared arranged in this way.*

Occasionally an enlarged photograph or photo-micrograph will bring out a point that may be the determining one in a case.

In a recent criminal court case an enlarged photograph was being criticised for the defence by an "expert" photographer, who admitted that he had never made such an enlargement. He found fault with a break in the line in the photograph of the disputed signature (which was a forgery by tracing), claiming that the enlarged photograph showed a condition which did not exist in the original. The trial judge looked at the original through a simple microscope and then handed the glass and original to the fault-finding witness, asked the witness to examine the original with the glass and see if the line was not broken just as shown in the enlargement. The witness admitted that it was, and retired from the witness stand in considerable confusion. This witness afterwards admitted that he did not know that writings could be enlarged to such a degree, that he did not know of any lenses as small as two-inch focus, or that the United States Bureau of Standards certified lenses.

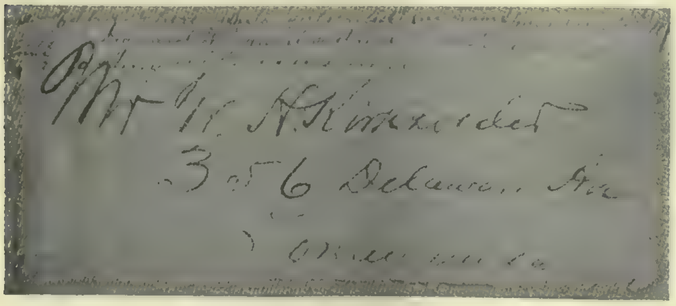


Fig. 12.

**A Will Case. Shows close spacing between lines, words and letters. This spacing, together with curve of lines and space between "Belle" and "Howard" and the crossing of the "M" in "Mr." by the word "attestting" is conclusive that this part of will was written *after* the signature.**

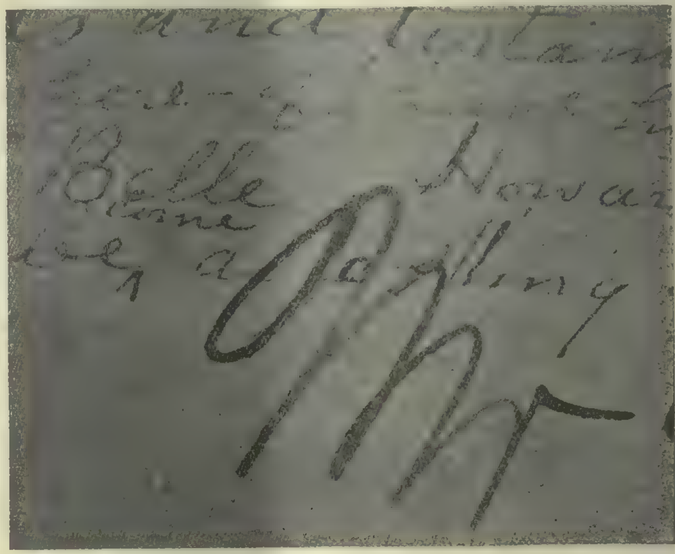
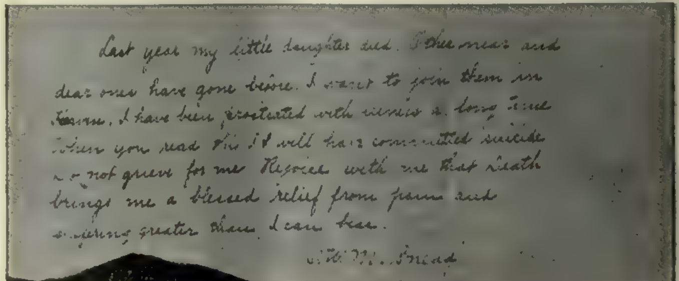


Fig. 13.

**A Will Case. An enlargement of part of Figure 12, showing body of will was written *after and over* the signature.**

There can be no reasonable objection to the use of photo-micrographs. It would be as reasonable to object to the use of a microscope, or, for that matter, to the use of eyeglasses by the jury or witnesses. Some few judges have ruled that only photographs of entire documents may be used. When a twelve diameter (144 times) photograph of parts of a document is offered, arranged on prints 11 x 14 inches, it will be readily seen that if an entire document 8½ x 11 inches in size was enlarged to the same degree, a document eleven feet long would result; and the point aimed at—close comparison of significant characteristics—would be eleven feet further away than in the natural size.



Last year my little daughter died. Other near and dear ones have gone before. I want to join them in heaven. I have been prostrated with illness a long time. When you read this I will have committed suicide. Do not grieve for me. Rejoice with me that death brings me a blessed relief from pain and suffering greater than I can bear.

O. W. M. Snead

Fig. 14.

**Ocey Wardlaw Martin Snead "Bath Tub Mystery" case, East Orange, N. J. The so-called "suicide" note, showing tear was made in paper after the word "suffering" was written; also that different pens were used to write body of note and signature.**

While bromide enlargements may occasionally be useful, in the great majority of cases direct enlargements are better, since they give sharper definition. If an enlargement greater than the dimensions produced by the camera is wanted, the document may be photographed in parts and the parts cut and fitted accurately and then joined by binding tape.

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* When the original is produced, but it is desired also conveniently to collate specimens by photographic groupings (as by placing many specimens in juxtaposition on a single sheet), the original is not literally unavailable, in the sense of being tangibly beyond procurement. Nevertheless there are still lacking and unproduced to instantaneous perception the minute resemblances and differences which appear upon close juxtaposition and fade from memory in the operation of passing from one document to the others. Hence the photographic juxtaposition does, in strict sense "produce" these otherwise unavailable minutiae, and such grouping is therefore allowable without even any deviation from technical principle.—Wigmore on Evidence, Vol. I., Sec. 797 (1904).

Enlargements of typewriting are very useful to show not only design and defects, but also slant, spacing, and alignment. Even differences in sizes of types in the different makes of machines can be seen best in photographic enlargements. Three to five diameters (Fig. 21) are sufficient for most purposes, but occasionally a ten or twelve diameter (Fig. 22) enlargement will be found useful. Most people, and many judges and attorneys, do not know that typewriting can be identified: (1) Particular make of machine; (2) the individual machine that did the work; (3) the earliest date at which it was possible to have done this work; (4) and about what period the writing was done—all provided suitable standards can be had for comparison purposes.

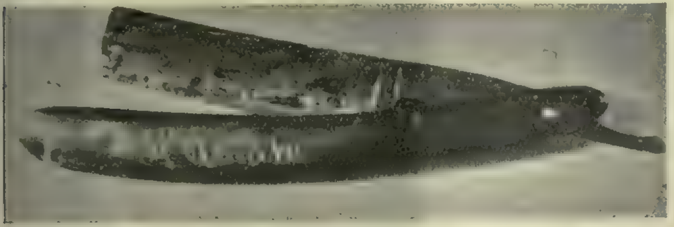

Fig. 23.

"Handwriting" scratched on handle of razor found at scene of a murder. As tending to prove ownership of razor, the question as to whether or not the defendant scratched his name on the instrument was put to the document examiner to solve.

### The Camera.*

A suitable document camera should have five or six feet bellows extension. It should have an object-board that can be readily removed, and have a rack and pinion permitting forward or backward motions by the operator from the back of the camera by means of long pulls. The board should also have oscillating, horizontal and vertical movements.

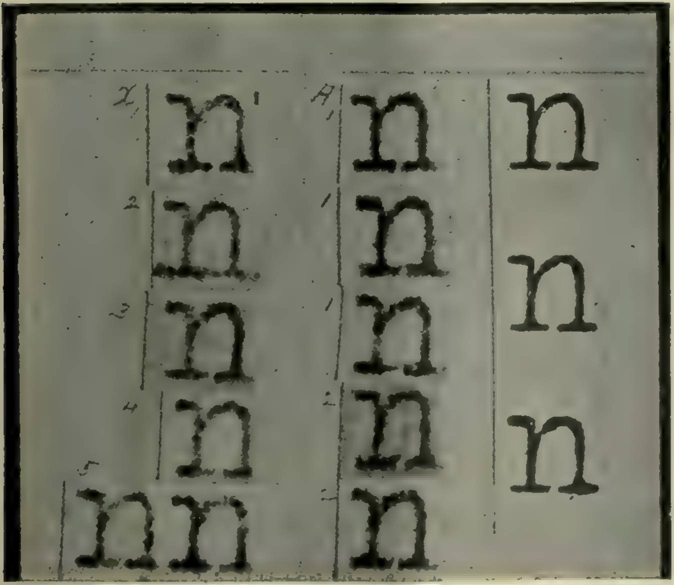

Fig. 21.

Typewriting comparison. First column on left the disputed; second column the admitted; and third column, perfect letters from a new machine of same make and design of letters. In columns one and two, it will be noticed that the lower right-hand serif does not print.

The camera proper travels on a bed, actuated by rack and pinion.

Levels should be placed on the object-board standard and back of the camera, so that object and plate may be kept perfectly parallel. (Fig. 18.)

It aids in sharp focussing if a few cover glasses are fastened by means of Canada balsam, heated, on the ground glass side of the ground glass.

Cut-outs made of light wood (stained black), heavy paper or light cardboard, allowing two or more exposures to be made on one plate, are useful. They are placed in front of the ground glass at back of camera.

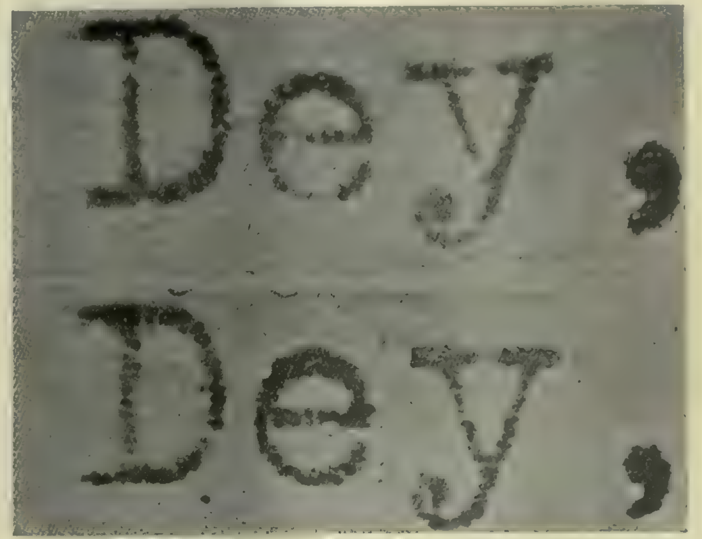

Fig. 22.

Typewriting comparison. The original photograph was enlarged to 12 diameters (144 times) showing writing was done on the same Underwood No. 4 machine.

A transmitted light holder, consisting of a base working on rack and pinion and moved by long arm from back of camera, by the operator the same as the object-board, and two upright posts with clamps to hold the document, is necessary if transmitted light photographs are to be made.

If much travelling is to be done with the apparatus, the stand and camera should be of the "take-apart" kind for convenience and safety.

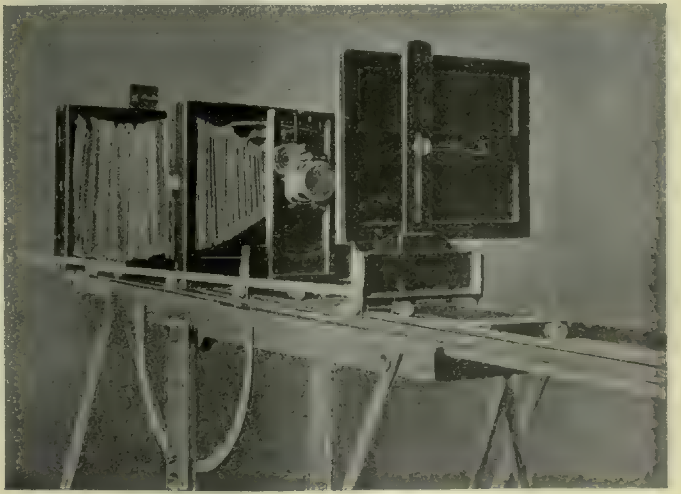

Fig. 18.

Document camera showing adjustable and detachable object board, tilting and adjusting stand, etc.

The camera bed should be marked with indicators, locating positions of object, lens, and back of camera for different enlargements made by each lens used. (Fig. 18.)

At least four lenses are needed for all kinds of document work: one or two inches, four or five inches, eight to ten inches, eighteen to twenty inches focus. Most lens makers have lenses especially adapted to document work, for enlarging, colour corrected, etc. A greater number of lenses than four would be found to be useful, but are not absolutely necessary. The Bureau of Standards Department of Commerce and Labour tests and certifies to correctness of lenses.

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* This instrument and the stand were designed by Mr. Albert S. Osborn, New York, Examiner and Photographer of Documents.

### The Camera Stand.

It is advisable to have a camera stand that will permit the camera being used at any angle between the usual horizontal and vertical; and for transmitted light it may be necessary to incline the stand to an angle of forty-five degrees.

### Lighting.

For daylight it is useful to have a white reflector to place on the side of the object away from the source of light. (Fig. 19.)

To show erasures by abrasion, indentation, roughness of paper, or to light seal impressions, a side light admitted through a narrow opening (⅛ in. to ¼ in.) in a paper shade is a successful method.

Artificial lighting permits of making photographs at night and the darkest of days and getting uniform exposures.

Enclosed arc lamps on stand, Tungsten incandescent lamps, Cooper Hewitt mercury lamps, and other kinds work well. It has been found by some operators that owing to low actinic value in light produced, exposures made with Tungsten lamps require much longer (several times) time than the volume of light would indicate.

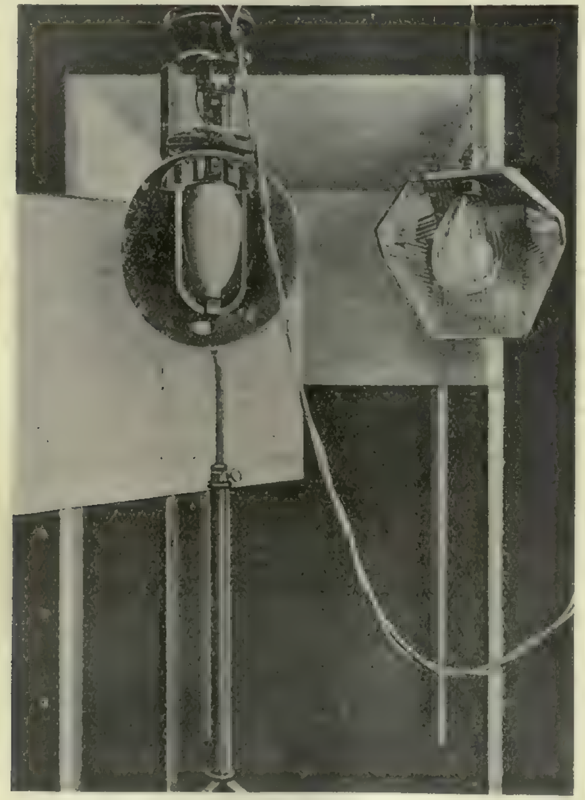

Fig. 19.

Lighting apparatus, showing arc lamp with adjustable stand; adjustable hanging 250 Watt Tungsten lamp with Frink reflector; hood placed around object in using artificial light; white reflector when using daylight.

Arc light stands should be adjustable.

The Tungsten light shown in the illustration is 250 watt, and is in a special hanging Frink hood-reflector concentrating the light on the object. (Fig. 19.)

The large hood on four legs shown in group is made of pressboard lined on the inside with white cardboard. (Fig. 19.)

Mirrors are sometimes necessary to catch direct sunlight rays and throw them on the object for enlargement.

A beam divider for ground glass measuring, accurate rule (steel preferred) for enlarging to scale, a strong focussing glass (eight to twelve diameters), and accurate paper scale graduated to sixty-fourths of an inch and two inches long to place beside object so as to have a permanent record of enlargement, a focussing scale of tints, lines, dots, etc., to enable the operator to secure the greatest definition are all really necessary accessories.

Slow plates are best for use for document work. But it is necessary to keep in mind that photo-engraver's or process plates giving strong contrasts are not the right kind. What is wanted is the greatest detail and gradation in line construction.

For objects in which there is colour, of course, an orthochromatic plate (and a ray filter) should be used.

Glossy paper, "hard" or "soft," as necessary to best reproduce the object, is what will show greatest detail. A "hard" paper will be found proper in most cases. All prints show up best for document work when Ferrotyped. Developing paper gives satisfactory results, but P.O.P. may be used if desired.

The best way to mount prints is to back them with backing paper of the same make. This keeps them smooth and flat, agreeable to the touch, not heavy, and permits of easy and convenient binding.

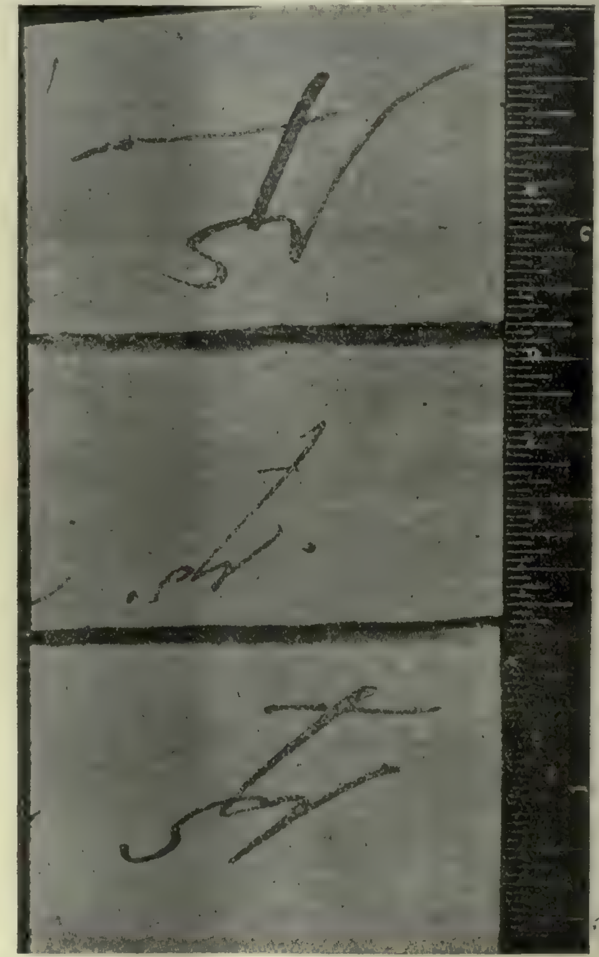

Fig. 15.

A Blackhand "firebug" case illustration. Abbreviation "Str" for street. Upper one threatening letter; two and three are standards. After a four days' trial defendant pleaded guilty. For court use the original was enlarged to seven diameters—49 times.

If all prints are made a uniform size, irrespective of the size of negatives, with tabbed ends, hinged with cloth, perforated, they can be bound in loose-leaf binders of uniform size, and the prints fastened in place with paper fasteners and washers.

Very great enlargements covering much space may be made in sections, hinged with binding tape and folded at hinges.

It will be found helpful to card index all cases, giving numbers and dates of negatives, etc. Envelopes should be used for all negatives, and the envelope should bear a serial number, date, etc.—just as much of the exposure record as may be thought necessary. The negatives should be filed according to size, and then in numerical order. By this system negatives will be carefully preserved and always accessible.

The original papers should be kept unfolded if possible, and, of course, should be handled as little as possible, and then carefully.

If the questioned document is put between plates of celluloid, it can be readily examined and will be protected.

Cheques, notes, or small papers may be covered with glass, which can be fastened to object-board by means of push pins; or the papers may be held in place by metal strips fastened with push pins or by finger-pins—if the glass is found objectionable because of reflections.

Light pencil figures giving dates or exhibit numbers are often useful in photographs. They may be written on the documents themselves or on narrow slips of paper to be placed alongside the writings when making the exposures.

If a record is kept of each exposure the lens certified by the United States Bureau of Standards, and the negative produced in court if desired and the process described, there can be no reasonable objection made to the use of such photographs.

Photographs can be made improperly; but with modern certified lenses in a scientifically constructed camera and the original document in court for comparison, there need be no fear that any injustice will be worked by photographs properly checked up.

Photographs are now rarely excluded. While their admission is discretionary with the court, yet it is seldom that they are not admitted in evidence, or, at least, as illustrations.

When courts, lawyers, and laymen understand that document photography as practised by skilled and honest photographers aids in disclosing the facts, there will be even a greater demand for product of the camera as an aid to justice.

William J. Kinsley.

## TESTS OF LENSES AND SHUTTERS AT THE NATIONAL PHYSICAL LABORATORY.

In the annual report of the National Physical Laboratory for 1910, just issued, the figures quoted of the number of tests made of photographic lenses and shutters show that even less advantage is taken by makers and the photographic public than formerly of the scientific examination of these classes of instrument offered by the laboratory. The figures for the number of tests made are as follows:—

| | 1908. | 1909. | 1910. |
|---|---|---|---|
| Photographic lenses .................. | 17 | 13 | 4 |
| Photographic shutters .............. | — | 21 | 13 |

Commenting on the tests of shutters the Director of the Laboratory, Mr. R. T. Glazebrook, writes:—

"A number of shutters have been tested for speeds and efficiencies at all speeds after the manner outlined in last year's report. The results show that many of even the most expensive shutters are not very reliable. Numerous cases have been found in which at the same setting the exposure might at one time be even ten times as long as at others; the variation from the marked speed, of course, might be greater than this. By applying the efficiency test it has been possible to find the cause of this unreliability, and there is little doubt that a test of this kind can afford valuable information to the designer of shutters. Some of these results, which show the effect of brakes applied in different ways, have been discussed in a short paper presented to the Optical Society; some of the efficiency diagrams are included.

"Quite a number of the shutters tested have been of the focal-plane type. There appears to be a considerable misapprehension by photographers generally as to the efficiency of shutters of this type. At comparatively slow speeds their efficiency may be very high, but the same also applies to a good between-lens shutter. At high speeds the efficiency may fall very rapidly, and in many cases may be below 0.5. This can only be improved by bringing the blind nearer to the plate or by increasing the size of the smallest slit and making a corresponding increase in the speed of the blind. In many cases there is considerable room for improvement in the former direction; it is desirable that the dark slides and the whole of the back part of cameras to be used with focal-plane shutters should be designed so as to make the space between the blind and the photographic plate as small as possible. An increase in the speed of the blind may not be very easy to effect, but there appears to be more opportunity of improving the efficiency at high speeds by moving in this direction than in altering the position of the blind. The velocities of the blinds have not been great in any of the shutters tested—about three metres per second is the highest so far observed.

"In some focal-plane shutters an attempt is made to obtain slow as well as very fast speeds. This adds to the difficulty of attaining high efficiency at the fastest speed unless the blind is brought to a complete stop during part of the exposure, or unless the tension of the spring can be made much less than at the highest speeds; when a tension adjustment is provided, its range is usually too small—it will, as a rule, only give a variation of from 15 to 30 per cent. in the speeds with the same slit on changing from the highest to the least tension."

## THE COPYRIGHT BILL.

The Bill amending and consolidating the present law of copyright, recently introduced by Mr. Sydney Buxton, and now before Parliament, is a very drastic revision of the existing law as regards copyright in photographs, and if, as appears probable, it is passed by the present Government, photographers will need to make themselves fully acquainted with its terms. Even so, they cannot expect to become thoroughly acquainted with the effects of the Bill until the precise meaning of it in actual practice has been rendered clear by decisions in the Law Courts. In the case of the present Act of 1862, which governs artistic copyright in this country, many of the provisions have been the subject of judgments in the High Courts, and its terms are, in practically every case, thoroughly understood. All this will doubtless have to be gone through in the case of the new Bill, but, nevertheless, it is important that photographers should have before them the proposed modifications in the existing law. We, therefore, print below the portions of the Bill which deal particularly with artistic works, in which class photographs are included. The full text of the Bill may be obtained, price 3d., from Messrs. Wyman and Sons, Fetter Lane, E.C., or through any stationer.

It will be seen that one important change relates to the duration of copyright, which, under the new Bill, will be for the life of the author and fifty years after his death, instead of for his life and seven years after his death, as at present.

Under the new Bill the obligation to register before proceedings can be taken for infringement is removed, but there is a clause according to which persons accused of infringement may be allowed to show that they acted innocently, the present Act making no distinction between innocent and wilful infringement. With this brief introduction to the terms of the Bill we will leave the latter before photographers for their study. When the Bill finally becomes law it will doubtless be one of our first duties to prepare an explanation of it in popular language, such as we have done on several occasions in the past in reference to the present Act of 1862.

### PART I.

### Imperial Copyright.—Rights.

1.—(1) Subject to the provisions of this Act, copyright shall subsist throughout the parts of His Majesty's dominions to which this Act extends for the term hereinafter mentioned in every original literary, dramatic, musical, and artistic work, if—

(a) in the case of a published work, the work was first published within such parts of His Majesty's dominions as aforesaid; and

(b) in the case of an unpublished work, the author was, at the date of the making of the work, a British subject or resident within such parts of His Majesty's dominions, as aforesaid;

but in no other works, except so far as the protection conferred by this Act is extended by Orders in Council thereunder relating to self-governing dominions to which this Act does not extend and to foreign countries.

(2) For the purposes of this Act "copyright" means the sole right to produce or reproduce the work or any substantial part thereof in any material form whatsoever and in any language; if the work is unpublished, to publish the work; and shall include the sole right,—

(c) in the case of a literary, dramatic, or musical work, to make any record, perforated roll, cinematograph film, or other contrivance by means of which the work may be mechanically performed or delivered,

and to authorise any such acts as aforesaid.

(3) For the purposes of this Act publication, in relation to any work, means the issue of copies of the work to the public, and does not include the performance in public of a dramatic or musical work, the delivery in public of a lecture, the exhibition in public of an artistic work, or the construction of an architectural work of art, but for the purposes of this provision photographs and engravings of paintings, drawings, works of sculpture, and architectural works of art shall not be deemed to be copies of such works.

2.—(1) Copyright in a work shall be deemed to be infringed by any person who, without the consent of the owner of the copyright, does anything the sole right to do which is by this Act conferred on the owner of the copyright: Provided that the following acts shall not constitute an infringement of copyright:—

(i) Any fair dealing with any work for the purposes of private study, research, criticism, or review:

(ii) Where the author of an artistic work is not the owner of the copyright therein, the use by the author of any mould, cast, sketch, plan, model, or study made by him for the purpose of the work, provided that he does not thereby repeat or imitate the main design of that work:

(iii) The making of paintings, drawings, engravings, or photographs of a work of sculpture or artistic craftsmanship, if situate in a public place or building, or the making of paintings, drawings, engravings, or photographs (which are not in the nature of architectural drawings or plans) of any architectural work of art.

(2) Copyright in a work shall also be deemed to be infringed by any person who sells or lets for hire, or exposes, offers, or has in his possession for sale or hire, or distributes or exhibits in public, or imports for sale or hire into any part of His Majesty's dominions to which this Act extends, any work which to his knowledge infringes copyright or would infringe copyright if it had been made within the part of His Majesty's dominions in or into which the sale or hiring, exposure, offering, or having in possession for sale or hire or importation took place.

3.—The term for which copyright shall subsist shall, except as otherwise expressly provided by this Act, be the life of the author and a period of fifty years after his death, unless previously determined by first publication elsewhere than in the parts of His Majesty's dominions to which this Act extends.

4.—(1) If at any time after the death of the author of a work which has been published or performed in public a petition is presented by any person interested to the Comptroller-General of Patents, Designs, and Trade Marks alleging that, by reason of the withholding of the work from the public, the reasonable requirements of the public with respect to the work are not satisfied, and praying for the grant of a licence to reproduce the work or perform the work in public, the Comptroller shall consider the petition, and if, after enquiry, he is satisfied that the allegations contained therein are correct, then, unless satisfactory reasons have been given for the withholding of the work, he may, if he thinks it just and equitable to do so, order the owner of the copyright to grant to the petitioner a licence to reproduce or perform the work in public on such terms and subject to such conditions as the Comptroller may think fit.

5.—(1) Subject to the provisions of this Act, the author of a work shall be the first owner of the copyright therein:

Provided that—

(a) where in the case of an engraving, photograph, or portrait the work was ordered by some other person and was made for valuable consideration in pursuance of that order, then, in the absence of any agreement to the contrary, the person by whom the work was ordered shall be the first owner of the copyright; and

(b) where the author was in the employment of some other person and the work was made in the course of his employment by that person, the person by whom the author was employed shall, in the absence of any agreement to the contrary, be the first owner of the copyright.

(2) The owner of the copyright in any work may assign the right, either wholly or partially, and either generally or subject to limitations to any particular country or place, and either for the whole term of the copyright or for any part thereof, and may grant any interest in the right by licence, but no such assignment shall be valid unless it is in writing signed by the owner of the right in respect of which the assignment is made, or by his duly authorised agent.

(3) Where under any partial assignment of copyright the assignee becomes entitled to any right comprised in copyright, the assignee as respects the right so assigned, and the assignor as respects the rights not assigned, shall be treated for the purposes of this Act as the owner of the copyright, and the provisions of this Act shall have effect accordingly.

### Civil Remedies.

6.—(1) Where copyright in any work has been infringed, the owner of the copyright shall, except as otherwise provided by this Act, be entitled to all such remedies by way of injunction or interdict, damages, accounts, and otherwise, as may be conferred by law.

(2) The costs in any proceedings in respect of the infringement of copyright shall be in the absolute discretion of the Court.

(3) In any action for infringement of copyright in any work, the work shall be presumed to be a work in which copyright subsists, and the plaintiff shall be presumed to be the owner of the copyright, unless the defendant, in his pleadings in defence, states that he disputes the existence of the copyright, or, as the case may be, the title of the plaintiff, with the addition of a statement of the ground of such objection, and the name of the person (if any) whom the defendant alleges to be the owner of the copyright.

7.—All pirated copies of any work in which copyright subsists, and all plates used or intended to be used for the production of pirated copies of such work, shall be deemed to be the property of the owner of the copyright, who accordingly may take proceedings for recovery of the possession thereof or in respect of the conversion thereof.

8.—Where proceedings are taken in respect of the infringement of the copyright in any work, and the defendant in his defence alleges that he was not aware of the existence of the copyright in the work, the plaintiff shall not be entitled to any remedy other than an injunction or interdict in respect of the infringement if the defendant proves that at the date of the infringement he was not aware, and had not reasonable means of making himself aware, that copyright subsisted in the work:

Provided that if sufficient particulars were before the date of the infringement entered in a register established under this Act, or, in the case of a work first published in, or the author whereof was a resident in, a British possession under the laws of which a register has been established within that possession, if sufficient particulars have been entered in that register, the defendant shall be deemed to have had reasonable means of making himself aware that copyright subsisted in the work; but nothing in this proviso shall be construed as relieving a defendant from such onus of proof as aforesaid in any case where no such particulars have been entered in a register.

10.—An action in respect of infringement of copyright shall not be commenced after the expiration of three years next after the infringement.

### Summary Remedies.

11.—(1) If any person—

(a) makes for sale or hire any pirated copy of a work in which copyright subsists; or

(b) sells or lets for hire, or exposes, offers, or has in his possession for sale or hire any pirated copy of any such work; or

(c) distributes or exhibits in public any pirated copy of any such work; or

(d) imports for sale or hire into the United Kingdom any pirated copy of any such work:

he shall, unless he proves that he acted innocently, be guilty of an offence under this Act and be liable on summary conviction to a fine not exceeding forty shillings for every copy dealt with in contravention of this section, but not exceeding fifty pounds in respect of the same transaction; or in the case of a second or subsequent offence, either to such fine or to imprisonment with or without hard labour for a term not exceeding two months:

Provided that a person convicted of an offence under paragraph (b) of this subsection who has not been previously convicted of any such offence, and who proves that the copies of the work in respect of which the offence was committed had printed or marked thereon in some conspicuous place a name and address purporting to be that of the printer or publisher, shall not be liable to any penalty under this section unless it is proved that the copies were to his knowledge pirated copies.

(2) If any person makes or has in his possession any plate for the purpose of making pirated copies of any work in which copyright subsists, or for private profit causes any such work to be performed in public without the consent of the owner of the copyright, he shall, unless he proves that he acted innocently, be guilty of an offence under this Act, and be liable on summary conviction to a fine not exceeding fifty pounds, or, in the case of a second or subsequent offence, either to such fine or to imprisonment with or without hard labour for a term not exceeding two months.

(3) The court before which any such proceedings are taken may in addition order that all copies of the work or all plates in the possession of the offender, which appear to it to be pirated copies or plates for the purpose of making pirated copies, be destroyed or delivered up to the owner of the copyright or otherwise dealt with as the court may think fit.

12.—(1) Where a court of summary jurisdiction is satisfied by information on oath that there is reasonable ground for believing that pirated copies of any work are being or about to be hawked or carried about, sold, or offered for sale, it may issue an order authorising any constable—

(a) to seize without further warrant any copies of the work which may be found being hawked or carried about, sold, or offered for sale;

(b) to arrest without further warrant any person who in any street or public place sells, or exposes, or has in his possession for sale any pirated copies of the work, or who offers for sale any pirated copies of the work by personal canvass or by personally delivering advertisements or circulars.

(2) Where such an order has been made the person on whose application it was made may send a copy thereof (certified to be a true copy by the clerk of the court which made the order) to the chief officer of police for any district within which the court has jurisdiction, and thereupon any constable may seize any such copies and arrest any such person in accordance with the terms of the order.

(3) Where the constable seizes any copies of a work in pursuance of such an order, he shall bring them before a court of summary jurisdiction, and that court, on proof that the copies are pirated, may order that they be destroyed or delivered up to the owner of the copyright or otherwise dealt with as the court may think fit.

(4) All copies of orders sent to a chief of police under this section shall be open to inspection at all reasonable hours by any person without payment of any fee, and any person may take copies of or make extracts from any such order.

(6) A single order under this section may be made extending to several works.

(7) An order under this section shall not authorise—

(a) the arrest of any person selling or offering for sale; or

(b) the seizure of copies of,

any newspaper or other periodical publication merely because it contains a pirated copy of a work, if such pirated copy is only an incidental feature and does not form a substantial part of the newspaper or periodical.

13.—A court of summary jurisdiction may, if satisfied by information on oath that there is reasonable ground for believing that an offence punishable summarily under this Act is being committed on any premises, grant a search warrant authorising the constable named therein to enter the premises between the hours of six of the clock in the morning and nine of the clock in the evening (and, if necessary, to use force in making such entry, whether by breaking open doors or otherwise) and to seize any copies of any work or any plates in respect of which he has reasonable ground for suspecting that an offence under this Act is being committed, and may, on proof that the copies or plates brought before the court in pursuance of the warrant are pirated copies or plates intended to be used for the purpose of making pirated copies, order that they be destroyed or delivered up to the owner of the copyright or otherwise dealt with as the court may think fit.

14.—Any person aggrieved by a summary conviction in England or Ireland of an offence under the foregoing provisions of this Act may appeal to a court of quarter sessions.

15.—The provisions of this Act with respect to summary remedies shall extend only to the United Kingdom.

18.—(1) There shall be kept in the Hall of the Stationers' Company by an officer (hereinafter called the registrar) to be appointed by the Stationers' Company subject to the approval of the Board of Trade, such one or more registers as may be prescribed, in which shall be entered the names or titles of works and the names of authors, and such other particulars as may be prescribed.

(2) The author or publisher of, or the owner of or other person interested in the copyright in, any work may at any time cause the particulars respecting the work to be entered in the register, but it shall not be obligatory on him to do so.

(4) There shall also be kept in the Hall of the Stationers' Company by the registrar such indexes of the registers established under this section as may be prescribed.

(5) The registers and indexes established under this section shall be in the prescribed form, and shall at all reasonable times be open to inspection, and any person shall be entitled to take copies of or make extracts from any such register, and the registrar shall, if so required, give a copy of any entry in any such register certified by him to be a true copy.

(6) An entry in a register kept under this Act shall be primâ facie evidence of the facts thereby recorded, and an entry in a register may be proved by the production of a copy thereof certified to be a true copy by the registrar.

(7) There shall be charged in respect of entries in registers, the inspection of registers, taking copies of or making extracts from registers, and certificates by the registrar under this section, such fees as may be prescribed.

(10) If any person for the purpose of the registration of a work under this section makes or causes to be made any statement which is to his knowledge false in any particular, he shall be guilty of a misdemeanour, and shall be liable on conviction to imprisonment with or without hard labour for a term not exceeding two years.

22.—The term for which copyright shall subsist in photographs, and in records, perforated rolls, and other contrivances by means of which a work may be mechanically performed or delivered, shall be fifty years from the making of the negative or plate, and the person who was owner of the original negative or plate from which the photograph or other contrivance was directly or indirectly derived at the time when such negative or plate was made shall be deemed to be the author of the work, and where such owner is a body corporate the body corporate shall be deemed for the purposes of this Act to reside within the parts of His Majesty's dominions to which this Act extends if it has established a place of business within such parts.

24.—If it appears to His Majesty that a foreign country does not give, or has not undertaken to give, adequate protection to the works of British authors, it shall be lawful for His Majesty by Order in Council to direct that such of the provisions of this Act as confer copyright on works first published within the parts of His Majesty's dominions to which this Act extends, shall not apply to works published after the date specified in the Order, the authors whereof are subjects or citizens of such foreign country, and are not resident in His Majesty's dominions, and thereupon those provisions shall not apply to such works.

## Application to British Possessions.

26.—(1) This Act, except such of the provisions thereof as are expressly restricted to the United Kingdom, shall extend throughout His Majesty's dominions: Provided that it shall not extend to a self-governing dominion, unless declared by the Legislature of that dominion to be in force therein either without any modifications or additions, or with such modifications and additions relating exclusively to procedure and remedies or necessary to adapt this Act to the circumstances of the dominion as may be enacted by such Legislature.

36.—(1) In this Act, unless the context otherwise requires,—

"Artistic work" includes works of painting, drawing, sculpture, and artistic craftsmanship, and architectural works of art, and engravings and photographs;

"Works of sculpture" includes casts and models;

"Architectural work of art" means any building or structure having an artistic character or design, in respect of such character or design, but not in respect of the processes or methods of its construction;

"Engravings" include etchings, lithographs, wood-cuts, prints, and other similar works, not being photographs;

"Photograph" includes photo-lithograph and any work produced by any process analogous to photography;

"Cinematograph" includes any work produced by any process analogous to cinematography;

"Pirated," when applied to a copy of a work in which copyright subsists, means any copy made without the consent or acquiescence of the owner of the copyright, or imported in contravention of the provisions of this Act;

"Performance" means any acoustic representation of a work and any visual representation of any dramatic action in a work, including such a representation made by means of any mechanical instrument;

"Plate" includes any stereotype or other negative, stone, block, mould, matrix, transfer, or negative used or intended to be used for printing or reproducing copies of any work, and any matrix or other appliance by which records, perforated rolls, or other contrivances for the acoustic representation of the work are or are intended to be made.

# Photo-Mechanical Notes.

## The Problem of Three-Colour Without Handwork.

In making three-colour process blocks, if the right material and methods are used with due skill, the results may be astonishingly good; but there is always need for some fine-etching, however little. This is frequently the excuse for passing errors at every stage of the process: the etcher is always depended upon to put it right. The fact that there is no possibility of fine-etching in collotype or in lithography is the reason why three-colour has not been applied so extensively to these processes. It should be clearly understood that there is no defect in the theory or practice of the process as at present carried out so far as the negative-making is concerned. for quite remarkable reproductions are obtained by the additive processes, such as the chromoscope or the Autochrome, and other screen-plate processes: which results make it obvious that the defects encountered in the subtractive process are entirely due to the nature of the pigments used. It has often been suggested that filters should be adjusted to compensate for the errors of the pigment, but in nearly all—in fact, in every case where there is an extended colour-range—careful investigation has shown that any such adjustment will introduce as many new errors as it avoids old ones. It has therefore been found that where the retouching cannot be done on the plate it must be carried out on the negative. But screen negatives such as are required for photo-lithography do not permit of retouching, and operators having learned the ease of making such screen negatives direct, that is, at the same operation as the colour record, are loath to go back to the old indirect method, which requires nine operations instead of three. But this is probably inevitable until suitable pigments for printing are discovered, which are more truly complementary than any we have now at command.

If we admit the indirect method, then various means of compensation have been suggested other than hand-retouching. Thus Albert has proposed that positives should be made from each negative, and then the first and second positives superposed on the third negative, doing likewise for all three negatives with the remaining respective positives. From these, new positives would be made, which would thus have all the black eliminated, and a separate orthochromatic negative is made for that. Seeing, too, that the green colours are the worst to reproduce, he has suggested that a photograph should be made of the colour original with a fourth filter, a rhodamine, in order to absorb the green. From this negative a positive is made, and superposed over the ordinary green-filter negative. This certainly corrects the greens, preventing so much red printing on them, at the same time assisting the pinks and keeping them darker. On the other hand, it would seem probable that all greys would be incorrect, having too little red upon them. The same effect can be arrived at by making a negative through the blue and red filters, and from this a transparency can be made and superposed on the green-filter negative. It is probable that an ingenious experimenter will be able to ring other changes on positive and negative superposition in order to compensate for defective printing inks, but it is doubtful if, on the whole, it is not better to work quite straightforwardly, and retouch by hand the negatives where necessary, as is now done for colour collotype. At least, no other errors are introduced by this plan.

## PHOTO-MECHANICAL PATENTS.

The following patents have been applied for:—

Process Blocks.—No. 7,830. Process relating to the manufacture of blocks for engraving purposes. Leon Herbert.

Process Printing Plates.—No. 8,579. Method of etching and means for the production of half-tone, line, and other process printing plates. James Maclachlan Dick, John Hamilton Hart, and Albert Charles Clark.

Printing Plates.—No. 8,673. Method of manifolding printing plates or clichés and attaching the copies to their base blocks. Hügo Hjalmar Carlsen.

## FORTHCOMING EXHIBITIONS.

April 17 to 21.—Southend-on-Sea Photographic Society. Sec., C. A. E. Chandler, 29, St. Helen's Road, Westcliff-on-Sea.

April 21 to 22.—Chelsea and District Photographic Society. Sec., F. Webb, 13, Acfold Road, Fulham, S.W.

April 25 to 26.—Ealing Photographic Society.—Sec., T. W. Bartlett, 20, Craven Avenue, Ealing, London, W.

April 25 to 29.—Barrhead Amateur Art Club. Sec., J. M'Grouther, Glenartney, Barrhead.

April 27 to May 4.—Malvern Camera Club. Sec., J. B. Nickolls, The Exchange, Malvern.

May 3 to 4.—Chelmsford Photographic Society. Sec., C. H. Wallis, Rosebank, Moulsham, Chelmsford.

May 8 to 31.—Royal Photographic Society. Latest date, carrier, April 24; hand, April 25. Sec., J. McIntosh, 35, Russell Square, London, W.C.

May 10.—London Secession. Sec., M. Arbuthnot, Winchester House, Old Broad Street, London, E.C.

May 12 to 20.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

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Headache in Relation to Artificial Light.—The "Pharmaceutical Journal" gives the following abstract of a paper by M. Stephen Mayou in the "Medical Magazine" for March:—Among the conditions which account for the headaches with which ophthalmic surgeons have to deal is the excessive exposure to light or undue sensibility to its effect. The effect of exposing the eyes to a bright light is to cause anything from a mere bleaching of the visual purple to acute retinitis. It is not the heat rays which produce this change; the rays most harmful to the retina are those at the violet and ultra-violet end of the spectrum. Therefore lights such as arc lamps and mercury-vapour lamps, which are rich in these rays, are not good lamps to work by. For headaches caused by bright lights amber glasses should be worn to give relief, because they cut off the rays at the violet end of the spectrum. These are also preferred to the old smoked or blue glasses, as they do not alter the colour or brightness of the objects viewed through them. Migraine is frequently brought on by exposure to bright lights, and also occasionally by an error of refraction. The ocular manifestations are followed by severe headache, and frequently vomiting. The disease is best treated with small doses of bromide, given at bedtime, and complete rest. Antipyrine, phenacetin, or aspirin when given in the early stages will frequently cut short the attack.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between April 3 and 8:—

COLOUR PHOTOGRAPHY.—No. 8,388. Means for displaying photographic pictures in natural colours. Cuthbert Harrison.

CINEMATOGRAPHY.—No. 8,576. Methods of displaying and viewing animated pictures. Edward Albert Reed.

REFLEX CAMERAS.—No. 8,580. Folding reflex cameras. Wilhelm Brandsma.

PROJECTION.—No. 8,752. Devices allowing luminous projection in normal light. Frédéric de Mare.

CAMERA STANDS.—No. 8,759. Photographic camera stands. Thomas James Fairfield.

CINEMATOGRAPHY.—No. 8,791. Means for taking or projecting moving pictures. Rotary Photographic Co., Ltd., and Ferdinand van Madaler.

APPARATUS.—No. 8,813. Means or apparatus for use in the production of photographs. Guy Strachan Barker.

CAMERAS.—No. 8,822. Magazine cameras. Mandel Mandel and Louis Mandel.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

SUBSTITUTE FOR CELLULOID.—No. 8,646, 1910 (April 13, 1909). The applicants proposed a short time ago as a substitute for celluloid the non-inflammable combination of cellulose-acetate and the esters or thioesters of phenols, cresols, or naphthols, this being a plastic material of extraordinary properties. The manufacture of this material is rather difficult, as the solubility of acetyl celluloses in common solvents is such that it does not yield very concentrated solutions, and, moreover, the solvents in question, as chloroform, etc., create great difficulties in the manufacture.

The applicants have now found that by combined or double cellulose-esters—that is, esters in which a part of the radical acetate of the pure cellulose acetate is replaced by the radical of another acid: for instance, sulphuric acid or phosphoric acid—plastic materials of extraordinary properties can be obtained, which, at the same time, are absolutely non-inflammable when combined with the esters of phenols, cresols, or naphthols, or their derivatives. The solubility of the cellulose-ester is very great. With solvents like acetone a solution of 50 to 75 per cent. is obtained with ease, so that the manufacture of the plastic material is very easy and not expensive. The plastic material obtained is highly elastic, and the hardness varies according to the percentage of the esters of phenols, etc.

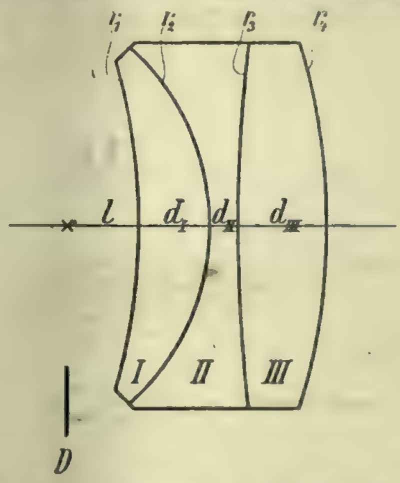
These double esters of cellulose, acetic acid-sulphuric acid esters, and acetic acid-phosphoric acid esters may be conveniently called cellulose sulphacetate and cellulose phosphacetate respectively.

The phosphacetate may be prepared in the following manner:—One kilo. of cellulose is mixed with 2 litres of pure anhydrous acetic acid, to which 50 c.cs. of sulphuric acid monohydrate and the same quantity of phosphorus oxychloride are added. As soon as a thin paste is produced, about 3 kilos. of acetic acid anhydride are slowly added while the paste is being cooled. As soon as all the cellulose has dissolved, one-fifth litre of 10 per cent. phosphoric acid (900 parts water and 100 parts syrupy phosphoric acid) is added. This is allowed to stand for ten to twelve hours, and is then precipitated with water.

This material is suitable for the manufacture of everything that heretofore has been made out of common celluloid: for example, for the manufacture of combs, moulds, dies, forms, etc. The plastic material is absolutely transparent, while its durability is assured owing to the fact that the components, as the sulphacetates, phosphacetates, etc., and the esters of phenols, cresols, or naphthols, etc., are quite stable substances. Dr. Waldemar Merckens, 59, Austrasse, Basle, and Haigasun Barsam Manissadjian, 3, Palmenstrasse, Basle.

ANASTIGMAT LENSES.—No. 26,317, 1910 (November 26, 1909). The invention consists in an improvement of the anastigmatic objective, comprising three lenses with two cemented surfaces, of which the one is concave towards the diaphragm and dispersive and the other convex towards the diaphragm and collective. Of this anastigmatic objective, which is in use both as a single objective and as a component of a double objective, two types are known. In the one, which alone is here improved, the front lens (facing the diaphragm) is collective, with concave front surface and convex hinder surface, the rear lens is bi-convex, and the middle lens is therefore bi-concave. It is inferior to the other type in so far as its chromatic difference of magnification is half as great again, the definition therefore correspondingly diminishing more rapidly towards the margin.

This lack of definition is counteracted by the present invention. For this purpose the bi-concave middle lens consists of so-called telescope flint. By this means not only is the secondary colour spectrum perceptibly diminished, but the astigmatic and the spherical correction are improved for the same reason as in the objective of the Patent 29,447, 1906. As the index $n_D$ of the telescope flint does not exceed the limits 1.53 and 1.52, the difference of the indices at the front, dispersive, cemented surface amounts to about 0.025, when for the front lens the exceedingly durable crown glass of about 1.495 is chosen. The hinder, collective, cemented surface can be given a difference of about 0.100. As a result is then obtained the proportion between the two differences of 1:4.



In the constructional example of the invention, as represented in the drawing and explained in the following tables, the sine condition is only approximately realised. The relative aperture amounts to 1: 13.6.

In the tables the numerical values of the radii of curvature, the lens thicknesses, and the distance from the diaphragm D apply to the focal length 100. The kinds of glass used are characterised by the refractive indices $n_D$ and $n_{G'}$ (for the H$\gamma$—line of the hydrogen spectrum).

Radii, distance and thicknesses.

$r_1 = -12.55$ $l = 1.52$
$r_2 = -5.06$ $d_I = 1.53$
$r_3 = +33.22$ $d_{II} = 0.60$
$r_4 = -13.35$ $d_{III} = 1.89$

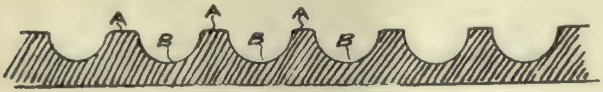
Kinds of glass.

| | $n_D$ | $n_{G'}$ |
|---|---|---|
| I | : 1.4984 | 1.5080 |
| II | : 1.5231 | 1.5356 |
| III | : 1.6227 | 1.6377 |

Carl Zeiss, Carl Zeiss Strasse, Jena, Germany.

CINEMATOGRAPHIC MECHANISM.—No. 15,550, 1910 (June 28, 1910). This invention relates to improvements in and connected with cameras and projecting apparatus for taking or displaying pictures of objects in motion, and has particular reference to that type of apparatus in which film-feeding mechanism is employed and which is of such a nature that the use of perforated films is obviated. In apparatus of the above kind it is usually the practice to transmit motion to the films by means of gripping members adapted to engage both sides of the film and feed it forward. In accordance with the present invention the film passes between endless travelling members provided with gripping devices which co-act with one another to hold the film and feed it to the machine. Maximilian Klaiber, 451, Fifteenth Street, Brooklyn, New York, U.S.A.

Developing Dishes.—No. 7,475, 1910 (March 26, 1910). The invention consists of a photographic dish made of the usual materials used for such purposes, with a grooved or corrugated bottom, the grooves or corrugations running either one or both ways, covering the whole of the bottom of the dish.



Section of bottom of dish.

The drawing shows a section of the dish, the surface of which is broken up into a series of raised squares, A, A, A, by a number of semi-cylindrical shaped grooves, B, B, B, which cross at right angles at intervals of about half an inch. Alfred Walter Bowen, 193, High Street, Watford, and Charles Alfred Solomons, 167b, High Street, Watford.

## New Trade Names.

Phogardio.—No. 331,461. A portable folding photographic studio. Ernest Albert Sanderson, 38, Fordel Road, Catford, London, S.E., general merchant. February 28, 1911.

Erytranol.—No. 330,519. Chemical substances used in manufactures, photography, or philosophical research and anti-corrosives. Adolf Heinemann, trading as Chemische Fabrik Dr. Adolf Heinemann, 164, Mainzer Landstrasse, Worms, Germany, manufacturer. January 28, 1911.

Denovo.—No. 331,384. Titanous chloride and titanous sulphate, being chemical substances used in manufactures, photography, or philosophical research. Peter Spence and Sons, Ltd., Manchester Alum Works, Holland Street, Manchester, chemical manufacturers. February 25, 1911.

Sulzinite.—No. 331,496. Chemical substances used in manufactures, photography, or philosophical research and anti-corrosives. John Evans Booth, "Donovan," 72, Hurst Grove, Bedford, accountant. March 1, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Repairing Shutter Blinds.

I tried the following method (writes Mr. Charles Cox in "Photography and Focus" for April 18) of stopping up the pinholes in the blind of a roller-blind shutter, and after six months' use I find it still very good. The blind was given a thin coat of rubber solution on both sides, rubbing it well in. This was allowed to dry for half an hour or so, and the coating repeated several times. When I was satisfied that I had coated it sufficiently I rubbed the dry coating with powdered lamp black, which prevents the blind from sticking together and at the same time gives it a perfect finish.

### CATALOGUES AND TRADE NOTICES.

Goerz Lenses.—A beautiful list of 32 pages, containing many admirable examples of the work of the Goerz anastigmats and telephoto lenses, has just been issued by the C. P. Goerz Optical Works, Ltd., 1 to 6, Holborn Circus, London, E.C. The catalogue affords a forcible demonstration of the critical results achieved in all classes of photography with the Goerz lenses, and contains a series of notes on the most advisable choice of lens for particular classes of work. It is sent free on application.

## New Materials, &c.

A New Platinum Paper.—Messrs. Gevaert, Ltd., 26-27, Farringdon Street, London, E.C., have just placed on the market a series of platinum papers of their manufacture, particulars and prices of which they send to us in the form of two booklets. The new printing media include papers of notable characters from the professional photographer's point of view, and we advise our readers to make application for the price list and booklet of instruction. We hope to deal adequately with these new introductions in an early issue.

## Meetings of Societies.

### MEETINGS OF SOCIETIES FOR NEXT WEEK.

Saturday, April 22.

Liverpool Amateur Photographic Association. Excursion, A Liv ool Dock.

Monday, April 24.

Catford and Forest Hill Photographic Society. Affiliation Prize Slides, 1910.
Southampton Camera Club. "Colour Photography," the Autochrome Plate. C. M. Cooper.
Stafford Photographic Society. Annual General Meeting.

Tuesday, April 25.

Hackney Photographic Society. "Lower Animal Life with the Microscope." J. I. Pigg.
Sheffield Photographic Society. "The Autochrome Process." Dr. Hy. G. Drake Brockman.
Rotherham Photographic Society. "Photography and Focus," 1910 Prize Slides.
Manchester Amateur Photographic Society. Discussion on and Exhibition of Hand Cameras.
Chichester Photographic Society. "Tramps Abroad with a Kodak." W. F. Slater.

Wednesday, April 26.

Croydon Camera Club. "Time Development." Dr. C. E. K. Mees.
South Suburban Photographic Society. Annual Meeting.
South Essex Camera Club. "The Thames Colour Plate." Oliver Dawson.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. "Home Portraiture." H. W. Bennett.
Sale Photographic Society. "A Holiday in Jersey." H. Holloway.
West Surrey Photographic Society. "Leto Boardoid and Titling Pictures." V. T. Serin.
Balham Camera Club. Criticism of Prints and Negatives.
North Middlesex Photographic Society. "Modern Photographic Apparatus." A. J. Woolway.
Portsmouth Camera Club. "Tramps Abroad with a Kodak." W. F. Slater.

Thursday, April 27.

Oldham Photographic Society. Monthly Meeting and Members' Slides.
Maidstone and Institute Camera Club. "Maidstone to Land's End and Back." F. Argles.
London and Provincial Photographic Association. "Wild Flowers" (Autochrome slides). H. Essenhigh Corke.
Handsworth Photographic Society. "Gloucester and its History." Harold Baker.
Watford Camera Club. Autotype Carbon Demonstration.

### ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held April 11, Mr. Chapman Jones in the chair. A paper by Dr. C. E. K. Mees and C. Welborne Piper, on "The Fogging Power of Developers," was read by Dr. Mees. The paper was described as an introductory one, and was confined to general theory and experimental work, conducted with the hydroquinone developer. It was explained that the difference between a developer and a fogging agent is simply a matter of reduction potential, an analogy being afforded by the potential or voltage required to work carbon and iron arcs. Thus with two such arcs in parallel a potential of 40 volts will light the carbon arc alone, while one of 65 is required to make the iron-arc light as well as the other. If the reduction potential of a developer is too high, underexposed and exposed parts of an emulsion film will develop together, and to avoid this the potential must be low enough to leave the unexposed silver bromide unreduced, but high enough to reduce the exposed bromide.

In their experiments the authors measured the rate at which the developer reduced exposed silver bromide, and also the rate at which it fogged unexposed bromide. Dividing the fogging rate by the developing rate, they obtained a value which served to express the fogging power of the particular developer under consideration. The plates used were developed in a Dewar's vacuum tube, fitted with a cork and air vent, so that the temperature might be kept constant, while all air was excluded. It was found that air rapidly oxidised developers containing an excess of alkali and no sulphite, and the oxidation product caused heavily stained and very irregular fog patches, therefore an ordinary thermostat could not be used. The authors, as the result of experiment, considered this peculiar variety of fog to be due to a combination of the oxidation product (quinhydrone), with an excess of alkali. Such a combination they found to be an exceedingly powerful fogging agent, whereas quinhydrone alone had no fogging action, and, when added to a developer, acted as a restrainer.

It was found that, contrary to general belief, alkali had no effect on fogging power, the fogging rate and the developing rate increasing together in the same proportion as the amount of alkali was increased. If, however, the hydroquinone was varied in amount while the alkali remained constant, the amount of fog produced rapidily diminished. With 4.4 per cent. hydroquinone and .4 per cent. alkali, three minutes' development gave neither fog nor stain, and 68 minutes gave only very slight fog, though the stain was then considerable. From the curves shown it appeared that this formula greatly increased the speed of the plate, though the maximum contrast obtained was rather low.

On adding sulphite to the ingredients of the developer, the authors found it to be a powerful fogging agent, which added quickly to the fogging power, even when in the very low concentration of .02 per cent. At about .63 per cent. the fog was found to reach a maximum density, and in the experiments it appeared that this maximum density remained fairly constant up to a concentration of 10 per cent. It was pointed out that in most published formulæ the amount used varies from .7 to 5 per cent. On further adding bromide the first appearance of the sulphite fog was materially hindered, but it reached the same maximum as before in about 20 minutes' development. It appeared that sulphite fog was independent of the emulsion, and the action of the sulphite was considered to be comparable with that of thiocarbamide. In proof of this, two exactly similar examples of reversal were shown, one produced with thiocarbamide and the other with sulphite. The paper concluded with a résumé of the results of an investigation into dichroic fog conducted by Dr. S. E. Sheppard, in which an interesting tabulated description of various types of dichroic fog was included.

In the subsequent discussion Dr. Scheffer stated that he had been studying the physical details of fog for some time, and his results agreed very well with Dr. Sheppard's work on dichroic fog. He found the dichroic fog grain to be only about one-ten-thousandth the size of the normal silver grain. Mr. Renwick drew attention to the fact that thiocarbamide has precisely the opposite effect in physical development to that which it has in alkaline development, and also asked why two different plates fogged at the same rate with sulphite in the developer, but at different rates if bromide was added as well. In reply to this, Dr. Mees pointed out that the bromide would differently affect the reduction potential. Messrs. Beeson, Lambert, Dawson, and others joined in the discussion, and the chairman asked whether the time of appearance test for variations in velocity of development had proved reliable, and also whether the removal of the developer stain had been attempted, to which Mr. Piper replied that the time of appearance tests had presented no difficulties excepting when, owing to the use of an exceptionally slow developer, the time was prolonged for several minutes. In regard to the stain many attempts had been made to remove it, but without success. Alkalis generally darkened it, changing the colour from a yellowish red to a brown. The staining matter hardened the gelatine to such an extent that the gelatine, as well as the stain, would resist ten minutes' boiling.

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London and Provincial Photographic Association.—At the meeting on Thursday, the 6th, Messrs. A. J. Bull and W. J. Smith lectured upon "An Orthochromatic Filter, Where Orthochromatism Fails, and the Limits of Colour-Selection."

The first part of the lecture consisted of a description of a set of experiments for obtaining a correct orthochromatic rendering of objects photographed under open-type arc illumination. The problem had been suggested by observing that it sometimes happened that the reds were rendered too light in tone when using a yellow filter. A colour sensitometer was constructed, but in dulling down the lighter colours to equality, the comparisons had been made by a photometer and the adjustment of the dissimilar colours controlled by ascertaining if the white lights matched when the colours were removed.

To secure a suitable panchromatic plate a series of bathings were made in pinachrome and pinacyanol, mixed in various proportions, and the plates so prepared tested by exposure on the sensitometer illuminated by arc-light. The formula of the bathing solution of the selected plate was:—

| | |
|---|---|
| Pinachrome (stock alcoholic solution, 1 in 1,000) .... | 4 cc. |
| Pinacyanol (stock alcoholic solution, 1 in 1,000) .... | 1 cc. |
| Distilled water .................................................. | 250 cc. |

The filter was then altered until the patches of the colour sensitometer were rendered with practical equality of density. The filter which gave the best result was a liquid one, containing filter yellow K and fast green, blue shade, contained in a cell 1 cm. thick.

The remainder of the lecture was a discussion of absorptions of common colours and some photographic consequences. It was pointed out that the reflection of red light by reds, oranges, and yellows generally was often very high, exceeding 90 per cent. of that reflected by white paper. In consequence of this, it is often possible to photograph them practically as whites by the use of a red filter, and, of course, a red-sensitive plate. Then as their maximum absorptions occurring in the blue in case of yellows, and in the green for most reds, are often very complete, they can also be photographed as blacks. On the other hand, blue and green colours rarely reflect a large proportion of their own light unless they are merely light tints, when they possess a large proportion of white. This is the reason why they cannot be photographically rendered as either black or white with the same ease as can the warmer colours. Effects of these properties of colours are witnessed in the defects from which three-colour printing inks and filters suffer. They consist essentially in the imperfect reflection or transmission of green and blue light, and in the absence of abrupt absorptions terminating these colours; while imperfect absorption of red light by blue is another important point.

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Leeds Photographic Society.—Annual meeting held on Tuesday evening, the 11th inst., at the Leeds Institute, Cookridge Street, Mr. Thos. A. Thornton, the president, in the chair.

In proposing the adoption of the report and balance-sheet, the president congratulated the members upon a very successful year of good work. The syllabus of lectures has been quite above the average; the attendance at the meetings has increased very considerably, and the membership roll is steadily going up.

Amateur photographers in Leeds and district are indebted to the action of the Committee of the Leeds Photographic Society, and in particular to Mr. Herbert Denison, for approaching the Leeds Corporation in connection with the special water rate proposed to be levied on amateur photographers. As a result, the proposed rate has been withdrawn.

The Society has been well represented at the exhibitions, Mr. Jasper Atkinson and Mr. H. A. Crawford were both exhibitors at the Royal, and out of 15 exhibits from Leeds at the "Northern," no fewer than 11 are by members of the Society. Several valuable additions have been made to the permanent collection of prints and lantern slides during the year, and the number of volumes in the library have also been considerably increased. The Committee of the Leeds Institute have been compelled to terminate the arrangement under which the Society have occupied rooms during the last three sessions, in consequence of the requirements of the Education Committee. Other accommodation has, however, been offered, and this has been accepted subject to the settlement of certain details. During the year the Committee have exercised a careful economy in dealing with the funds of the Society, with the result that the Society is in a sound financial position, and the year has closed with a substantial balance in the hands of the treasurer. A high average of attendances has been maintained at the Committee meetings, and much of the Society's success is due to the ungrudging service which has been given by the officers and Committee. The proposition was carried unanimously.

The following gentlemen were unanimously elected honorary members of the Society:—Mr. Alexander Keighley, Mr. G. H. Rodwell, and Mr. R. Mackay.

Mr. Thos. W. Thornton was unanimously re-elected president, Mr. G. H. Rodwell treasurer, and Mr. R. Mackay hon. secretary, with a strong committee.

At the conclusion of the business there was an informal social evening, and the prints from the Yorkshire Photographic Union portfolio were on exhibition.

## Commercial & Legal Intelligence.

**The Graphotone Company, Enfield.**—We much regret that a notice in our issue of April 7 instant has been taken to imply that the Graphotone Company was in financial difficulties. Our notice referred only to the bankruptcy of a gentleman who was some years ago connected with the company in question, but is not now, and has not been for some years, in any way interested in it. The business of the Graphotone Company is still being carried on by Mr. Lawrence Kirby, as it has been for some years past, and the bankruptcy proceedings mentioned by us have no connection whatever with that company.

**The first meeting of creditors** of Reginald E. M. Bleasdale, photographer, etc., Victoria Buildings, Church Street, Nuneaton, and lately residing and carrying on business at 11, King Edward Road, Nuneaton, was held at Coventry on April 12. The statement of affairs showed gross liabilities £82, of which £73 was expected to rank, while the deficiency was put at £66. The causes of failure were ascribed to bad trade and paying interest on borrowed money. The matter was left in the hands of the Official Receiver.

### NEW COMPANIES.

**Bournemouth View Co., Ltd.**—This company was registered with a capital of £500 in £1 shares. Objects, to carry on the business of photographic publishers, etc. First directors, F. Etches and D. S. King. Both may retain office while holding 75 shares. Qualification of ordinary directors, £50. Remuneration of permanent directors, £117 each per annum. Registered by Tarry, Sherlock, and King, 17, Serjeants' Inn, E.C. Private company.

## News and Notes.

**Liesegang Lanterns, etc.**—Mr. F. C. Hart, 57, Hatton Garden, E.C., advises us that he has secured the agency for the goods manufactured by the firm of Liesegang, of Düsseldorf, in the way of cinematographs, optical lanterns, arc-lamps, etc.

**Balham Camera Club.**—The Postal Portfolio section of the Balham Camera Club starts a new session on May 1. Non-members of the club (ladies or gentlemen) who desire to subscribe to the portfolio are invited to communicate with the hon. secretary, 183, Boundaries Road, Balham, London, S.W.

**Art v. Ashes.**—According to the "New York Herald," the United States Court of Appeal has held that if a photographer covers his head to take a picture in the street and is bumped by an ash cart he is guilty of contributory negligence, and cannot collect damages. Art may be advancing all right, but in this utilitarian age the ash cart seems to have the right of way.

**Royal Institution.**—On Thursday, April 27, Professor R. W. Wood, of the Johns Hopkins University, will begin a course of three lectures on "The Optical Properties of Metallic Vapours," these being the Tyndall Lectures. The Friday evening discourse on April 28 will be delivered by Professor W. M. Flinders Petrie on "The Revolutions of Civilisation," on May 5 by Professor M. O. Forster on "New Organic Compounds of Nitrogen," and on May 12 by Professor William Stirling on "Biology and the Cinematograph."

**A Bon Voyage Dinner.**—A short time since the staff of Messrs. Fradelle and Young, whose head, Mr. Albert Young, is such a popular figure at banquets and other public functions, themselves played the part of hosts at a dinner at the Holborn Restaurant, the guest of the evening being Mr. Alec Hackney, one of their fellow-workers. Mr. Hackney was on the eve of leaving England, on the firm's behalf, for a protracted tour in Norway, Palestine, Egypt, and India, in which latter country he will attend the Coronation Durbar; and, though his tour will doubtless include many exciting incidents, it is to be hoped that a previous experience of shipwreck will be absent from the number. Although a few members were unavoidably absent, about forty-five sat down to the dinner, of which it is necessary to say nothing more than that it was under the personal supervision of Mr. Renders, so well known to frequenters of the Holborn Restaurant. On the conclusion of the dinner Mr. Young gave the usual loyal toasts, followed by that of the guest of the evening, whose name was greeted with enthusiastic cheers, as also were the appreciative remarks made by Mr. Young to Mr. Hackney's long and valued connection with the firm. Mr. Young then addressed the staff as a whole on the subject of Christmas presents, and said the firm had decided that in future these would not be given, as formerly, to all in their employ, but that those to whom it was desired to show some token of appreciation of their services would receive such at an unexpected time, and to this end a beginning would be made that very evening. Mr. Young then produced from a large bag, first, a souvenir for acceptance by Mr. Hackney, which took the form of a gold-mounted banknote case and sovereign purse, and then gifts for a number of other members of the staff whose services were felt to merit special recognition, the manner of both the giving and receiving of which bore testimony to the cordial and friendly relations which existed between employer and employees. The health of Mr. Hackney was then drunk with musical honours, to which he responded in a well-chosen and appreciative speech. Mr. Hobbs then proposed the toast of Mr. and Mrs. Young, to which Mr. Young responded. The next item on the programme was the arrival of about a dozen taxi-cabs, which conveyed the party to inspect the firm's new premises in Princes Street, which have been specially fitted up to enable a number of operators to work simultaneously at proofing banquet photographs, after which an adjournment was made to the Regent Street house, and the proceedings terminated with music and dancing, one of the most enjoyable features of which was the singing of Miss Florence Maude.

## Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

### REPAIRING SHUTTER BLINDS.

To the Editors.

Gentlemen,—Will you kindly inform your correspondent, who inquires through the "B.J.," April 14, as to repairing shutter blind, that I have found "Blox," sold by Kentmere, Ltd., 9d. per bottle, the finest thing for blocking out pinholes. Simply paint with camelhair brush all over blind, let dry, give second coat, and blind will be equal to new.—Yours faithfully,

Peterborough. W. H. Major.

April 15, 1911.

# Answers to Correspondents.

*⁂ All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

*⁂ Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*⁂ Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

**Photographs Registered:**

A. Ledingham, 46, High Street, Grantown-on-Spey. *Photograph of Grantown-on Spey Athletic Football Club.*

T. A. McLean, Irish Street, Downpatrick. *Photograph of Presentation Plate to M. J. Nolan, Esq., R.M.S., Down Dis. Asylum, Downpatrick.*

W. Meikle, 16, Johnston Terrace, Edinburgh. *Photograph of the Robert Louis Stevenson Memorial in St. Giles' Cathedral, Edinburgh.*

**Sterry Process for Bromides.**—I shall be glad if you will again refer me to the issue of your journal containing Mr. Sterry's method of treating bromides. I have mislaid the copy of the journal containing it.—A. M. Ducret.

"B.J.," September 16, 1910, p. 711.

**Portrait Gas Lamps.**—Please favour me with the address (which I have forgotten) of the gentleman who has perfected an incandescent light for the studio, and was willing for a consideration to describe it to any requiring such.—Enquirer.

W. Taylor, 12a, Cheapside, Lancaster.

**Colour Specimens.**—Will you please tell me, through your column, from whom I can purchase two or three good examples of Lumière, Thames, or other colour photography, and for how much money apiece, packed and delivered by mail?—H. W. Gould.

Apply to Messrs. Newton and Co., 3, Fleet Street, E.C., or insert a small advertisement in our Miscellaneous columns.

**Cut Films.**—Will you kindly inform me where I can obtain reliable cut flat films, "Isochromatic" and "Process," in all sizes up to 24 in. by 20 in.? I am informed that the —— Co. no longer supply them.—Photophane.

A number of makers still supply them, but we should doubt if you can get so large a size as 24 x 20 except by special ordering. If you will turn to the entry "Films, roll and cut," page 1342 of the "Almanac," you will see a list of the makers. Apply to these.

**Removing Stopper.**—I have a stoppered bottle with iodine in which the stopper has become fixed. Can you advise the best means of removing it? I have tried hot water on the bottle portion in vain.—Omicron.

Try winding half a dozen turns of stout string round the neck of the bottle and with help of an assistant draw the string rapidly to and fro so as to heat the neck of the bottle. A few smart taps with a wooden tool, such as the handle of a hammer, should then dislodge the stopper.

**Retouching.**—I have worked for my present employer for the last six years. He has recently got an apprentice who is expecting to learn retouching. Is it usual for assistants (who have had to pay for their knowledge elsewhere) to teach apprentices without any previous arrangement having been made? Any information on this subject would be gratefully accepted.—Ten Years' Reader.

Certainly it is customary for an assistant to render such service, though we are doubtful if legally he can be compelled to do so.

**Portraits of the King and Queen.**—I have in my possession negatives of the King and Queen, taken by me some time back, and people tell me they are quite the best photographs they have seen of their Majesties. Will you be good enough to tell me the name and address of the most suitable publisher with whom I can get into correspondence with reference to these negatives?—Vectis.

It is not easy to say. Portraits of the King and Queen will be in demand among all kinds of publishers this year, but it is a little late in the day. We advise you to offer them to one or two leading postcard publishers, such as Raphael Tuck, Davidsons, Ltd.

**Copyright, etc.**—Will you kindly give the following information in your valuable columns:—1. The address of the Copyright office? 2. The names and addresses of the most reliable and trustworthy press agencies who cater for the newspapers and magazine pictorial departments. 4. The above company offered me the local agency on terms: All photographs that are published in the press we will pay you at the rate of 50 per cent. on net sales.—Icon.

1. Stationers' Hall, Ludgate Hill, E.C. 2. Try Illustrations Bureau, Whitefriars Street, London, E.C. 3. We do not know anything of the firm. 4. A 50 per cent. commission is excessive; the usual figure is 25 per cent.

**Sketch Portraits.**—Would you kindly inform me what material is used for sketch work, such as panel, window, or drapery effects, drawn in background? Brush working is not fine enough. If pencil is used, what sort for fine line drawing, resulting in soft results, able to take on all classes of bromides?—J. W. B.

The sketch portraits you mention are usually finished with ordinary lead pencils. These must be of good quality and varying degrees of hardness, so as to get delicacy or strength without undue pressure. Steaming the surface after working will to a great extent remove the shiny effect on the deep shadows. If the surface of the gelatine does not take the pencil kindly it may be rubbed over with some very fine pumice powder.

**Trade Name.**—Would you be good enough to inform me whether one can register the name of a firm, in a similar way to a trademark? A friend has told me that it requires no registration, and that no other firm could use the same name after mine was once established. My opinion was that that only applied to the name of a person. The name I want to register is the —— but please keep it quiet for a while. We are opening shortly. Any information on the subject will be much appreciated.—C. K.

You can register such a name in application to a particular class of photograph, but you cannot register the name of a firm except as limited liability company.

**Various.**—(1) I should feel greatly obliged if you could give me a formula for sensitising silk or any other fabrics for exposure about the same as for gaslight papers. I have looked through this year's "British Journal Almanac," but cannot find anything of the sort in it. Failing to give me the formula, could you give me the name of a firm who would supply the same? (2) Could you give me the name and address in New York of the firm who supply Zapon or Japon enamel? Failing that, could you tell me of a substitute for it?—F. Russell (Glace Bay, N.S.).

(1) There is no means of coating fabric with a sensitiser of gaslight rapidity, nor is there such a fabric on the market. (2) Apply to a leading dealer in photographic requisites, such as George Murphy Inc, 57, East Ninth Street, New York, U.S.A.

**Lantern Slides.**—I shall be glad if you would recommend me the most convenient method of making lantern slides by reduction at night time. I read in the slide books that it is best to use daylight for reduction work, but I find I waste a good many plates in this way by wrong exposure, so that besides it being more convenient to me to work at night I should also get better results. I have an ordinary enlarger, and have been told that I can use that for the reduction work, but should like to ask you if this is correct—an enlarger used for reducing?—Villiers.

If the enlarger has a sufficient extension (of the front lensboard) you can reduce quite well with it, and this is as good a method as any. Try it with your instrument, racking the lensboard to the full, attaching a lantern-plate to the enlarging easel, or some other support, and then bringing this up to the lens and seeing how small a picture of the negative you secure on the lantern plate. If it is too large it may be necessary for you to fit an extending box, with the lens screwed to the front, on to the front board of the enlarger.

**A Photograph.**—1. I recently framed a photograph, and was struck with the general appearance of it, but cannot understand how it was produced. Perhaps you can explain. Size of board, 12 x 9, plate-mask, and the photograph in the centre, 8 x 6. It was not mounted in the ordinary way, and looked very artistic. Everything was flat, as though it was a sensitised mount. It was matt or similar process, and sepia tint. Mount was chocolate, with dark plate-mask, and of good thickness. Kindly explain process. 2. When does the year start for joining the P.P.A.?—A. J. WEBSTER.

1. From your description, we should say the print was on a matt collodion paper printed from a masked negative, and afterwards exposed again with an opaque mask over the printed part, the whole finally mounted on a board. It is possible that some resist was applied to secure the different colours by local toning. 2. Any time.

SPOTS ON BROMIDES.—1. What is the cause of spots (white) coming out all over bromide paper when kept a short time? 2. We have not been getting good blacks on bromide paper. Is it the fault of amidol being stale or not? The exposures are quite correct. Or would it be poor sulphite? Would the blacks be better with metol-hydroquinone on the average?—PYRO.

1. We presume you mean that the white spots appear in the prints. It is unlikely that this is the result of the paper having gone wrong, for bromide paper will keep for a very long time. Exposure to excessive damp might lead to its giving white spots, but it is very improbable that this is the cause. The only likely cause is the use of tap water highly charged with air in making up the developer at the time of use. 2. As a rule amidol gives better blacks than metol-hydroquinone, but the amidol must be freshly dissolved, and the sulphite solution too should not be kept for more than a day or two if the best results are to be obtained with the amidol.

POSTCARD PRINTER.—In the article on printing bromides wholesale on page 569 of the "Almanac," it mentions 4 Bray burners 2 feet below the negatives. Is there not a danger of the heat cracking or injuring the negatives? I do not quite understand the position of the said burners. Could you oblige by explaining?—ALMANAC.

Mr. G. T. Harris, the author of the article, writes:—"In reply to your correspondent 'Almanac,' I have never experienced any ill effects from heat in the exposing cabinet described in my article on bromide postcard printing, but, of course, the gas burners are not of large size. If your correspondent fears such a contingency, it is easy to increase the distance between the burners and printing bed, but if the cabinet is well ventilated, injury to the negatives is practically impossible. With regard to the position of the burners, mine are simply screwed into a circle of brass tubing of suitable diameter, and the burners so arranged that the flame jets are in the same plane as the printing bed, i.e., project horizontally, not vertically."

ENLARGED NEGATIVES.—Thanks very much for answer to my previous letter. I am afraid I did not explain myself sufficiently. I want to make a series of negatives at least 3 ft. by 2 ft., and I really do not think this is practical in the way you suggest—viz., to enlarge through a lantern on to a slow plate. (1) Can a plate be bought to this size? (2) Would it not get fogged in exposing? I think I have read it somewhere in a past issue of the "B.J." that enlarged negatives can be made on tissue. If it is not possible to make them through a lantern on transparency tissue, would you be kind enough to let me know, through your query column, by what method I can make these enlarged negatives? Also if there is any standard work dealing with this subject?—ANXIOUS.

(1) Yes; several makers list plates as large as this: e.g., the Warwick Co.; and any would supply you. (2) By using an enlarging lantern properly screened and fixing the plate to the easel, there will be no difficulty. The only other method we can suggest is to use negative paper or ordinary glossy bromide for the enlarged negative, developing for a longer time than for a bromide print. There is no better book than that by Mr. Child Bayley, "Photographic Enlarging," price 1s. 6d. (Iliffe and Sons).

KEEPING PRINTS FLAT.—(1) Is there any means whereby prints on "Wellington" or other gaslight papers used generally plate size, for half-plate prints, can be dried and kept flat without mounting? Is it possible to dry them with an iron, for instance, or other means? We ourselves take a number of photographs for business purposes, sending these by post, and bulk is a consideration; hence our desire not to mount them. Would a mounter press for drying be of any service without actually using it for mounting purposes? (2) Is there any vest-pocket camera on the lines of the —— but which you might advise in preference, the pictures of which would be quite suitable for enlargement, and also for photographic slides thrown on screen by powerful electric lantern? We have a preference for roll films instead of plates, as being more convenient in many ways; and we suppose that everything is to be gained by using a better lens than is listed, say, with the —— quality ——?—W. S. BROWN AND SONS.

(1) Hot dry pressure will flatten prints, but it will not do anything towards keeping them flat. You could try giving prints a soak in a bath of glycerine of strength about 1 oz., water 100 oz., before drying, but this, of course, has the disadvantage of keeping the prints moist, which is not a good thing on the score of permanency. (2) You can get the camera you name fitted with one of several high-class anastigmats, and we should certainly advise you to do so. Our own preference in such small cameras is for one with plates if the greatest sharpness is to be secured on enlargement or projection.

COPYRIGHT.—Although I have, I believe, read all your recent answers to queries upon the question of copyright, I have not noticed one which is exactly applicable to my own case. In this school much use is made of the optical lantern in the teaching of geography, and I have undertaken the making of such slides as are required. Many of them are, of course, made from my own negatives, but I am frequently asked to make slides from book illustrations, illustrations to magazine articles, and picture postcards. If I do so, what is my position? The slides are to be used for instructional purposes only, and only in or in connection with this school, and no question of charge for admission or of profit can in any way arise. In short, the slides are to be regarded merely as a more convenient way of exhibiting pictures too small for class demonstration. Further, in the event of my severing my connection with this school, should any successor of mine use all or any of these slides for other purposes than those above, against whom would proceedings likely to be instituted: against me as the maker, against him as the user, or against the institution (*i.e.*, the governors of the school), who provide the materials in the first instance, and whose property the slides are? To obtain permission from publishers, some of whom are not English, in every case would so involve the matter as to render the whole process scarcely worth while.—ERNEST F. E. KIRK.

The fact that you use the slides for educational purposes in a semi-private and small way does not render your action other than an infringement of the copyright in the drawings, etc. The law forbids you to copy for any purpose whatever. Any proceedings may be directed against you as the copyist, or against any persons—*e.g.*, the governors of the school—causing the copies to be made. Frankly, we should say that such action is extremely unlikely, and in our view will never be taken if you adopt the fair and honest course of causing acknowledgment to the book and publisher to appear on each slide. This you can easily do by writing out a slip and photographing it at the same time as the drawing.

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THE BRITISH

# JOURNAL OF PHOTOGRAPHY.

No. 2660. Vol. LVIII. FRIDAY, APRIL 28, 1911. Price Twopence.

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## SUMMARY.

Some notes on making ready for possible hot days in the studio and on reforming exhibits of specimens are the subject of some advice in two leading articles. (P. 319.)

A photographer in Scotland obtained damages against a firm of contractors in respect to a camera which was knocked over by a van driven by the defendants. (P. 333.)

Some simple accessories for the studio, printing-room, and enlarging lantern are illustrated on page 325.

Professor Namias recommends barium sulphide in preference to sodium sulphide as the darkening bath in sepia toning. (P. 324.)

A detailed description of the manipulation in making enlarged negatives on glass or paper is given by Mr. James Thompson in a recent issue of "American Photography." (P. 321.)

Dangers of making flashlight powders, the use of spirit sensitisers in carbon work, and the repair of shutter bulbs are dealt with under "Correspondence." (P. 333.)

Under "Analecta" will be found notes on washing roll-film, a cause of foggy negatives, stripping films from negatives, and the effect of the light-filter on the definition of a lens. (P. 329.)

The use of a slide rule in "converting" formulæ is the subject of a note on page 318.

The properties of the Mees-Piper hydroquinone developer are referred to on page 318.

An inexpensive method of making supports for photographs is illustrated on page 324.

Advice on improving the expression by retouching is given in a paragraph on page 325.

How to lubricate dry-mounters, etc. (P. 324.)

Illustrations to serve as a guide in retouching the lighting of the nose are given on page 325.

A further patent of Mr. Saalburg in intaglio printing is described on page 326 under "Photo-Mechanical Notes."

A printing cabinet for rapid work and minor improvements in cinematograph apparatus figure among "Patents of the Week." (P. 327.)

## EX CATHEDRA.

**The R.P.S. Exhibition Lectures.** The programme of the lectures to be given at the forthcoming R.P.S. Exhibition, which opens on May 9 at Prince's Skating Rink, Knightsbridge, has now been published, and includes a variety of travel and popular science subjects, which should attract interested audiences. Among the lecturers are the Rev. T. T. Norgate, whose subject is Joan of Arc; Mr. Henry Speyer lectures on the High Alps; Mr. Martin-Duncan on "Summer, the Pageant of Nature"; Miss Gertrude Bacon on "Aerial Photography," and Mr. James Shaw on the "Rothenburg Festival Play." The lectures will be given on each evening during the period of the exhibition, commencing at 8.30. A few seats in the lecture-hall will be reserved at the price of sixpence each.

* * *

**Chromium and Gelatine.** The paper by Mr. T. Manly on the theory of ozobrome and other chromium processes which appears in this issue is interesting as an attempt at an explanation of the somewhat mysterious action of various tanning agents upon gelatine. We doubt, however, if his theory permits of quite such a general application, while we fear he is a little too positive with regard to details. For example, in respect to the Piper-Carnegie process, Mr. Manly states that the result is the production of silver chloride and chromium hydroxide, *plus* a certain amount of adsorbed chlorochromic acid. But the original investigators went to considerable pains to emphasise the facts that the silver salt was *not* silver chloride, and that the chromium compound was *not* $Cr_2O_3$, and they said nothing about adsorbed chlorochromic acid. Then, again, basic chromate of chromium is stated by Mr. Manly to be the compound produced in the carbon process, but we are not aware that this has ever been proved. Further, we should not like to say that he is correct in asserting that chromic oxide (or whatever chromium compound may exist) can be removed from tanned gelatine without affecting the tanned condition. However, in spite of these criticisms, we consider Mr. Manly's paper a valuable one, as it may stimulate further research in the same direction.

* * *

**Chromous Oxides in Chromium Processes.** The clue Mr. Manly suggests may be of considerable service, and it may be of use to remind those interested of one fact that may have a bearing on the subject. Piper and Carnegie in their research devoted a great deal of time to the study of the chromium compound produced by the action of bichromate and hydrochloric acid upon silver, and found eventually that the only compound it resembled was the so-called tetroxide, or $Cr_3O_4$, which may be looked upon as partially oxidised chromous oxide. This compound is readily prepared by adding potash to a solution of chromous chloride. The red chromous oxide first formed rapidly changes to the green or olive coloured tetroxide compound, the formula for which may be written $Cr_2O_3,CrO$, and this compound is the only one that bears any close resemblance to the compound formed in chromium intensification. The production of a chromous compound being quite unexpected, the matter was very closely studied until no doubt was felt as to the result. The possibilities of chromous compounds should, therefore, be considered, as well as those of the higher oxides to which everyone seems to devote their attention.

* * *

**Transposing Formulæ.** While it is not a difficult matter to transpose English into metric formulæ, or *vice versâ*, it is a lengthy process by ordinary methods, and few possibly realise how very rapidly the required results can be arrived at with the aid of an ordinary slide rule. A cheap cardboard one is quite good enough for the purpose. To transpose English measures into their exact equivalents we merely set unity on the slide against 15.43 on the rule, or, which is the same thing, 3 on the slide against 46.3 on the rule, and then grains can be read off on the rule against their equivalents on the slide without any further adjustment. We do not, however, often want to transpose in exact equivalent quantities, and a more useful setting is to put unity on the slide against 43.75 on the rule. Against any number of grains per ounce read on the rule we shall then find the corresponding number of grammes per litre on the slide, and so this most useful method of conversion can be effected at once, and without the slightest difficulty.

* * *

**Seeing and Photographing.** We see it is stated that someone has recently expressed a doubt whether the camera draws correctly, seeing that it does so on a flat surface, while the eye sees on a spherically shaped one. This is an old query, and one that is likely to puzzle people for many more generations, since the answer to it is singularly complex. The complexity is due to the fact that we have two modes of seeing objects, and we employ both with equal facility, with equal frequency, and practically simultaneously. All this depends on the movement of the eyes. When they rove freely over the object without any pause, the impression produced, or the drawing of the subject, is precisely the same as that of a photograph on a plane plate, but the moment the eyes pause in their movements, which they do very frequently, the view obtained is not only different in form, but actually larger in scale. This is due to the fact that while the eye is moving we see everything from a point situated at the centre of the eyeball, and the drawing of the image is in true spherical perspective, which is precisely the same thing as plane perspective on a flat surface, provided only that we view the result from the right point. When, on the other hand, the eye is fixed, the subject is viewed from the mode of the eye which is nearer to the object than the centre of the eyeball, and is not the centre of the spherical retina. The result then is a larger scale image in excentric spherical perspective, which differs very considerably from the result that would be produced on a plane plate. The ordinary person who uses his eyes automatically and without ever inquiring into the way in which they act will never notice these varied effects, but if anyone likes to study the subject of vision closely, and to analyse his sensations, he will find it quite easy to identify all the different effects.

**The Reduction Potential.** This term, used in the paper by Messrs. Mees and Piper given at the R.P.S., was probably new to many of the audience, and perhaps a source of bewilderment to not a few, but the paper by Messrs. Lumière and Seyewetz on distinguishing by means of development between images on chloride and bromide emulsion, which we reprinted last week, afforded a useful illustration of what is meant by "reduction potential." A developer that will reduce chloride, but not bromide, plates does so because it has a low reduction potential, too low to affect the bromide salt or even the unexposed chloride, but just high enough to attack the exposed chloride of silver. Ferrous citrate was quoted as an example of such a developer by Dr. Mees, while the one more especially referred to by Messrs. Lumière and Seyewetz was sodium quinone-sulphonate, with soda sulphite added. The authors state that quinone and soda sulphite is a developer for bromide as well as chloride, which might well be expected to be the case, seeing that such a combination must form what is virtually a hydroquinone and soda developer. The fact that the similar sulphonate compound is a developer for chloride only, and not for bromide, shows that the potential is lowered by the sulphonate addition, which in some way plays the part of a restrainer.

* * *

**The Hydroquinone Developer.** In referring a short time ago to the hydroquinone developer described by Messrs. Mees and Piper in their paper read before the R.P.S., we suggested that its peculiar properties of giving high speed, low contrast, and no fog might render it useful for snapshot work where faced development is necessary. The formula given in the paper was five per cent. hydroquinone and ½ per cent. caustic soda, and this in three minutes' development gave an image free from both fog and stain, but with very slight contrast. Longer development gave stain, but very little fog, and only very slightly increased the contrast. It is obvious that stain may very well make up for lack of contrast, and we have recently experimented with the Mees and Piper formula, using twice the amount of alkali. The result was very fairly successful, the image produced by seven to eight minutes' development being strongly coloured but full of detail. The negative, in fact, looks very much as if it had been intensified with uranium, and reminds us of the coloured images obtained in olden days by the use of pyro and soda with no sulphite. Those who have used that developer will remember the type of negative, and also the magnificent printing quality that it possessed. Apparently, hydroquinone is capable of yielding similar results if properly adjusted to its work, but, of course, it is an expensive developer if made up in the strength given above, which involves the use of one ounce of hydroquinone in every pint of developer. It must also be remembered that strongly coloured negatives are very unsuited to some modern printing processes.

* * *

**Arc Lamps and P.O.P.** We have seen from time to time P.O.P. prints, the backs of which have been more or less stained, the stains being patchy and of a faint brownish colour. In almost every case these stains were traceable to the use of damp proof pads in the printing frame, such pads being the usual grey rubber cloth. In practically all these rubber cloths sulphur is found, and the heat of the arc lamp promotes a chemical combination between the sulphur and some of the silver salts in the paper, the visible stain being silver sulphide. When the stain is faint there is probably little harm done if the prints are to be mounted, for the paper and its baryta coating are sufficiently opaque to prevent such a stain from showing through. With unmounted prints the stains, even if faint, give the prints a dirty appearance, and apart from the fact that they do not look workmanlike give rise to suspicions in the minds of customers. There is no way of removing them once they occur, but, of course, a rubber pad is quite unnecessary when printing indoors by arc light, and if the ordinary thick felt pads are carefully dried, or are stored in a well ventilated and dry cupboard, the P.O.P. is not likely to absorb any appreciable quantity of moisture. The heat from the arc lamp and moisture in the pad are matters which need careful attention when printing large sizes. If the paper is slightly damp when loaded into the frame it may dry when warmed by the lamp, the moisture being absorbed by the pad. The paper will then contract and parts of the print show a doubled image. On the other hand we have seen paper which has been too dry—i.e., practically desiccated—absorb moisture from a pad and stretch during printing, a doubled image again resulting. No pressure with a felt pad and an ordinary box-form spring printing frame will stop this expansion or contraction, though sometimes the paper buckles up out of contact instead of sliding along the surface of the negative evenly.

* * *

**Lantern Demonstrations.** We see from a Society report that one lecturer scored a distinct success by reversing an Autochrome in the lantern. It is obvious that this should form a very effective lantern experiment, for as the silver image vanishes the neutral colours of the object will appear. No details of the method are given, but it is not likely that the ordinary permanganate reverser was used. A persulphate solution, being colourless, should serve the purpose well, and possibly this was the solution employed. It is a pity that the lantern tank is not made more use of in modern lectures. There seems to be an idea that the few tank experiments described in the books exhaust all the possibilities, but many photographic operations might be illustrated in similar fashion and without any great difficulty. The old-time lanternist who took a delight in devising all kinds of experiments with the lantern seems to have more or less disappeared now, and people seem to have forgotten that the optical lantern can be adapted to many purposes besides the display of lantern slides.

## THE TEMPERATURE OF THE STUDIO.

The few hours of warm sunshine which we have lately enjoyed have raised the temperature of many studios to such a degree that it has made their owners give thought as to what steps should be taken to keep them moderately cool during the coming year. Studios differ so widely in construction that it is impossible to give any advice which is capable of general application, but in the majority of cases the overheating is due to the fact that the solid side of the studio faces south and that the walls and roof are not thick enough to prevent the absorbed heat from radiating into the interior. The worst case of all is that of a glass roof which has been painted over with a dark colour, and a thin corrugated iron side wall. Here we have all the conditions for making a satisfactory oven, and in a form difficult to deal with. A partial cure may be effected by giving the whole of the dark side of the roof and side wall a *thick* coat of limewash, which will reflect a large proportion of the heat falling upon it. In addition to this, if possible, a white canvas blind should be stretched upon battens over the roof so that an air-space of about six inches is left between it and the roof; the battens may project, say, three feet beyond the ridge with advantage, as the blind can be drawn up upon them so as to prevent the sun, when at its greatest elevation, from striking upon the glass side and causing trouble with the lighting. Where such an outside screen is undesirable, an inner lining to wall and roof will answer almost as well if provision is made for the circulation of air between. As photographers have usually to pay handsomely for their water supply, they should not forget to avail themselves of it as a cooling agency. Many studios are fitted with a perforated pipe running along the ridge which discharges a sheet of water over one, or, better, both sides of the roof. This is an excellent device and very quickly makes an overheated studio bearable. No matter what device is adopted, its efficacy is greatly increased by thorough ventilation: adequate openings should be provided near the studio roof so that the heated air can readily escape instead of remaining stagnant in the upper part of the studio. In hot weather it is advisable to remove all unnecessary furniture and accessories from the studio, both to increase the air-space and to avoid the collection of dust, while clean blinds and curtains and a few fresh-looking foliage-plants will give an impression of coolness which will have its effect upon the sitter.

## CLEARING OUT.

At this season of the year it is usual for nearly all journals, whether they be technical or domestic in their character, to give one or more dissertations on the subject of spring cleaning. This is all very well in its way, and doubtless many folks do start on the annual furbishing, just as they would have done if they had not been reminded, while others cordially approve of the sentiments expressed by the writers, but decide that it is a little too early to start just yet, and the matter is postponed *sine die.* Others, whose methods are more businesslike, keep their premises in such condition that no spasmodic effort is called for until the services of the professional house decorator is required. We do not, however, propose to dissert upon the necessity of house-cleaning, either annually or daily, but to give a word of friendly advice to those of our friends who can boast of long standing in the profession, and have enjoyed the patronage of celebrities, possibly even Royalty itself. Our advice is to have a periodical clearance of specimens, say, once in fifteen or twenty years; we do not like to make the shock too great, or we would say every ten, or even seven years. It is possibly sometimes advantageous to be able to point to a specimen and to tell the prospective customer that it has been hanging in its present position for thirty years and is still unfaded, that its dingy appearance is only due to the atmosphere, but in the majority of cases the client would rather see one in its pristine freshness and not know what it will be like three decades hence.

Some of the most celebrated photographic houses are showing pictures, particularly oil paintings, which are positively archaic side by side with carbons, posed and finished in the style of a bygone age, while the real working specimens which are expected to bring to-day's orders are shut up in a portfolio and only shown under conditions which preclude their proper appreciation. What should we think if we saw in the well-known windows at Piccadilly Circus a collection of mid-Victorian gowns, displayed in the hope that they would induce the ladies of 1911 to buy something totally different? It may be like tearing out your very heart to part with those cherished old pictures, encrusted as they are with the reminiscences of past years, but unfortunately sentiment has no place in modern busi ness. It is not what you did a quarter of a century ago that will pay the landlord: it is what you can do now that must be shown. You may be doing the latest and best styles, but they are swamped if shown among a lot of dingy old work. It is not to be wondered at if one of your old customers, on visiting one of the newer studios with a friend, sees exactly the picture he likes displayed as he would see it at home, and gives an order which would have been very welcome to you. You could have done it as well—perhaps with your long experience better—but the customer does not know that.

Recently a well-known American writer urged photographers to show the class of work which they usually did, and not to put "art" photographs in the window to attract people who want what they call "clear pictures," and which are the staple output of the studio. In the same way we urge you to show what you can do, and what you are doing now, and nothing else. Naturally, in the case of such a clearance, some sort of re-decoration will be necessary, but, fortunately, this need not be costly. The expensive Japanese and embossed flock papers have had their day, and a simple arras cloth or even distemper makes a far better setting for the modern portrait. Some definite colour scheme should be adopted, and this should be suggested by the photographer himself, and not left to the decorator. With regard to furniture, the practice of relegating the discarded posing chairs and settees to the reception room is naturally a bad one, but it is found to exist too often. It is better to sell such obsolete articles to the man who is starting in Poplar and buy some of the more modern patterns, which can on occasion be used in the studio.

# OZOBROME AND OTHER CHROMIUM PROCESSES VIEWED IN A NEW LIGHT.

It is no use being dogmatic and calling anything *the* theory nowadays, as theories, especially those relating to photography, are not renowned for their longevity, and very few have been fully established. I hope, however, that the few explanations I have put forward will provide some fresh ideas as to the chemical reactions involved in the tanning of gelatine by the bichromates and salts of chromium.

In one of Dr. S. E. Sheppard's valuable contributions on "Colloid Chemistry" to the English photographic journals, I was particularly struck with the theory he quoted of the tanning of gelatine by formalin, quinone, oxidised pyro, etc.* This, he says, "depends upon a pectisation of the gelatine by the alternation of oxidation-reduction of the quinone-phenol or ketone aldehyde." The phrase oxidation-reduction appeared to me to be also a satisfactory explanation of the reaction taking place when a bichromate or a salt of chromium is being reduced.

In describing the chromium processes now in common use, I shall endeavour to show:—

1. That the deposition of chromic oxide does not, *per se*, insolubilise gelatine.
2. That in those processes where tanning is produced by light, the reduction of the bichromate is accompanied by the liberation of oxygen, which plays an essential part in the result.
3. That in the processes where the tanning is brought about by chemical means, both a reducing action and an oxidising action must be supplied.
4. That, even in the tanning of gelatine by chrome alum, the same process of oxidation-reduction is at work.
5. That chromic hydroxide can be dissolved out from insoluble gelatine without affecting the tanned condition, showing that the chromium base is not an indispensable factor.

### Ozobrome.

In this process a metallic silver image is used as a basis. A special pigment plaster, or gelatine film impregnated with the Ozobrome solution, is laid down on the silver image, and time allowed for it to act. The following products are the result:—

Silver Bromide.
Chromic Hydroxide.
Potassium Ferrocyanide,

together with a certain quantity of adsorbed ferrocyanide.

The silver bromide forms an insoluble colloid complex with the chromic hydroxide; but the ferrocyanide of potassium, being soluble, is evolved from the image, yet no useful insolubilisation takes place until the gelatine is dry, or nearly so. If, however, we add a small quantity of acid to the solution, thereby liberating oxygen from the bichromate, the ferrocyanide issuing from the image is immediately oxidised to ferricyanide, and tanning occurs at once.

This power of adding oxygen is taken advantage of in Ozobrome in controlling the degree of tanning: the greater the oxidising power (within limits) the stronger the tanning effect.

The point to be noted is: that the solution is provided with a potential reducing agent, but contains no free oxygen. The moment the oxygen is added, oxidisation takes place at the same time as reduction, producing insolubility of the gelatine covering the image.

### The Piper and Carnegie Chromium Intensifier.

A silver image imbedded in gelatine is bleached by a solution containing a bichromate and hydrochloric acid, the result of the decomposition being

Silver Chloride and
Chromium Hydroxide,

*plus* a certain amount of adsorbed chlorochromic acid.

This is practically the same as the insoluble product in Ozobrome, but the "emilieu," or surrounding solution, is a very strong oxidiser, and yet there is no tanning action. Here we have strong oxidation and no independent reduction. If, however, we provide the image with a reducing action by adding ferricyanide or a cupric salt the gelatine is tanned.

The point to be noted is that, even when the solution is a strong oxidising agent, no tanning takes place unless an independent reducing action is present.

### The Carbon Process.

The generally accepted theory is that light reduces the bichromate, resulting in a colloid complex of basic chromate of chromium and gelatine, which protects the gelatine from the action of hot water, etc. Oxygen is liberated in the process of reduction, but cannot be satisfactorily accounted for in analysis. After what we have learnt in the two previously described processes, we cannot disregard the presence of oxygen in this case. The action appears to be simple. Light is the reducing power, and at the same time as the bichromate is being reduced to chromic oxide, oxygen is being evolved, causing an alternation of oxidation-reduction, which tans the gelatine.

---

* "Phot. Journal," August, 1909, page 327.

Point to be noted :—The oxygen does not "fly off," but plays an essential part in the tanning process.

### The Tanning of Gelatine by Chrome Alum.

Even the tanning of gelatine by chrome alum seems to be a case of oxidation-reduction.

The insolubilisation appears to be due to the increasing basicity of the salt caused by the reducing action of the gelatine on the acid radicle. Now the transition of a normal salt to a basic salt may be considered as the substitution of oxygen for an equivalent quantity of the acid radicle, thus :—

$$\frac{\text{Basic chromium sulphate}}{4Cr_2O_3.\ 3SO_3} = Cr_8(SO_4)_3 + O_9$$

Here again we have reduction producing oxygen, as in the carbon process.

### No Combination of the Gelatine with Chromic Oxide.

That the chromic hydroxide and the tanned gelatine exist as separate bodies may be shown by the action of a solvent of the oxide, such as sulphuric acid or ammonia, which removes the chromic hydroxide without affecting the tanned condition of the gelatine.

It is a matter of considerable interest that the isomorphous salts of the highly stable sesquioxides of chromium, aluminium, and iron, which act as weak bases, should, on parting with their acid radicles, give rise to such strong chemical or physical energy as to entirely change the nature of gelatine. It does not appear, at any rate in the case of chromium, that the gelatine enters into combination with the oxide.

Thomas Manly, F.R.P.S.

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# ENLARGED NEGATIVES ON GLASS OR PAPER.

[The following article from a recent issue of "American Photography" supplies directions for the preparation of enlarged negatives which may be commended to the study of several beginners who have addressed queries to us on the subject within the past week or two.—Eds. "B.J."]

The small print to be viewed at short range undoubtedly has its legitimate appeal, being most likely to find favour with the multitude rather than with the few. Nor is there much wonder that it thus admirably serves the purpose of the generality of photographic workers, the concentration of interest in a small space appealing most forcibly to admirers of detail, and the number is not inconsiderable. To others, however, there duly comes the time when the desire for something large enough to have place upon wall or easel, and to be viewed at a distance, prompts resort to the enlarged print on bromide or gaslight paper—the latter medium now coming into use for the purpose, having, as it does, many points in its favour over the other, not the least of them the abolition of the dark-room in essential operation. By either process excellent results are obtainable, and when properly worked effects of platinum quality are possible. This is now attainable through the enterprise of the manufacturers furnishing, as they of late have, every conceivable variety of surface effect, as well as grades of contrast to suit all classes of negative.

### Printing Papers.

Resort to such developing papers, however, limits one's choice to a single process, and that one based upon the silver salts. Such emulsionised papers are coated over a substratum of baryta, which, filling up the pores of the web, makes for uneven drawing power. The result of which is, in mounting one has great difficulty in keeping the cardboard base flat.

This, and the limitation imposed upon the worker, is apt to render some of artistic impulse and sensibility restive under such restriction. Carbon, platinum, kallitype, and kindred processes have each their special appeal for such workers, the results more nearly approximating in effect the skilled creations of the hand worker. Made on thin, unemulsionised paper, the print is easy to mount artistically, even on cover paper, a pat of paste at the corners being all that is required to hold it in place—a great advantage over bromide or gaslight print medium.

In view of these propositions, therefore, there arises the question, "Which shall it be, enlarged print or enlarged negative?" Where but a single print is required, recourse may be had to bromide or gaslight paper. When there are a number of copies wanted, or where one desires unlimited scope as regards printing process, then undoubtedly must the enlarged negative have choice. Having the latter, we may run the gamut of photographic pictorial expression: without, we are limited to a single process, and that one based upon the salts of silver and impermanent when compared with carbon or platinum.

### The Positive Transparency.

As a preliminary in the production of the enlarged negative there is required a positive transparency, either on glass or carbon tissue. The usual mode is to have this positive the same size as the negative, and made by contact with the latter in the printing frame precisely as is the case where a velox print is involved; only essential operations are conducted in the dark-room when the sensitive plate is employed.

An alternative plan is to make the positive the full dimensions of the negative by enlargement. The small negative is placed in the holder of the enlarging apparatus precisely as is the case where bromide paper is involved, and exposure made. On development there results a beautiful positive image on glass.

I propose to here describe my own method of working in the making of enlarged negatives, and, presuming negatives are of about the same density as mine, other workers in following instructions should have equally satisfactory results.

### Making the Positive by Contact.

I make the positive by contact upon a Seed 26 plate. In the dark-room the negative is placed in the printing-frame in the customary manner, and film down over it the sensitive plate, above all a sheet of black needle paper, then the whole is held secure by springing the frame back into place, and we are ready for exposure. Exposure is made with a lighted match (parlour matches that light upon the box are used)—matches of Swedish manufacture, in length two inches. When about to expose, the match is ignited and held while it burns in front of the printing frame. The exposure is governed by the duration of the burning of the match while being held between finger and thumb, the exposure continuing just as long as the match can be comfortably held without burning the fingers.

Distance from the source of light is governed by the density of the negative, a rather thin one requiring a distance of 24 to 30 inches, a medium one 18 inches, and a dense one 12 inches.

These figures are based upon my own negatives, which are of the pictorial order, thin, but with a full range of gradation from absolute black to white. In practice I have found this method to be simple, certain, and effective. One very quickly learns from the appearance of a negative how far from the light to hold the frame. So sceptical was I in regard to so small a light doing the work in so short a time that I over-exposed the first two plates by holding the frame too near the light.

If under-exposed, get 6 inches nearer. If over-exposed, hold back 6 inches. Furthermore, it is a good plan in exposing to slightly move the frame about, giving it a circular motion, so that all parts of the image may be favoured equally. This is the more necessary where negatives larger than 4 x 5 are involved.

### The Kind of Positive.

For success much depends upon the quality and suitability of the positive. It should have full exposure, be thin, though with a full range of gradation, and no part of the shadows must be represented by clear glass. The deepest shadow must have a slight veiling, a *just visible* deposit of metallic particles. The positive, in fact, should resemble in density a negative that has been over-exposed, where not even the highest lights show much opacity. A contrasty positive is useless. Should the positive prove to be too thin, it may be strengthened by changing the colour to a brown through toning by the sulphide process. Any of the redevelopment preparations upon the market will answer. Intensification by any mercurial process is not to be favoured, as the tendency to cause a crop of pinholes is ever present.

### Developers.

Any developer may be used, providing it be adequately diluted, the M. Q. solutions, for example, by the aid of which Cyko, Argo, and similar development papers are treated. Dilute with from one to three parts of water. I am now developing positives with the following pyro-metol formula, which gives a clear, clean image when fixed in an acid bath. Those who object to pyro may substitute ortol.

PYRO-METOL DEVELOPER.

| | |
|---|---|
| A.—Water | 16 ounces. |
| Metol | 25 grains |
| Sulphite of soda (dry) | 240 grains |
| Pyro | 60 grains |
| Bromide of potash | 10 grains |
| B.—Water | 16 ounces |
| Carbonate of soda (dry) | 360 grains |

Normal development use 1 part A, 1 part B, and 1 part water. for soft effects use 2 parts water.

For an M. Q. developer that works clean and keeps well the following is excellent:—

| | |
|---|---|
| Water | 16 ounces |
| Metol | 25 grains |
| Sulphite of soda (dry) | 240 grains |
| Hydroquinone (or preferably edinol) | 50 grains |
| Carbonate of soda (dry) | 240 grains |
| Bromide of potash | 8 grains |

For normal development use 1 part solution and 2 parts water. For soft effects double or triple the volume of water. Personally, I prefer the colour of the pyro-metol image.

### Apparatus and Plates for the Enlarged Negative.

The making of enlargements, whether on glass or paper, implies the possession or command of the necessary apparatus, for description of which—a simple daylight enlarger—see "American Photography," April, 1908. For fuller information regarding all manner of enlarging apparatus consult the "Photo Miniature," numbers 87 and 100, "Bromide Enlarging Made Easy" and "Enlargements from Small Negatives," respectively.

I personally use apparatus as described in the April, 1908, "American Photography," it being necessary in working to have full view of the image thrown upon the screen, to the end that modification may be resorted to when deemed necessary. Because of this, the portable enlarger is not so suitable, there being with that no available certain means of suppression.

Slow plates are advisable, those of about the same sensitiveness as bromide paper, which is advantageous for the reason that we may employ strips of the paper for light-testing purposes, thus saving plates.

In practice I place the positive in the negative holder and cover the easel with a smooth sheet of "black needle," or yellow "post-office" paper. This is to prevent spreading of the light. A piece of thick card cut to dimensions of the plate is then pinned to the board, then with largest opening, and a large reading glass in hand, as sharp an image as possible is focussed upon the card, moving it one way or another, as is necessary to get image the precise size of same.

This done, the $f/22$ stop is substituted, the shutter closed and with light from the ruby-glass window, the plate is carefully dusted (I use a soft worn linen handkerchief), the white card removed, and the plate placed in the identical position. It may rest on a couple of push pins at the bottom, then when appropriately placed one pin at the top will suffice to keep it secure. Needless to remark, the plate must be placed film side towards the source of light.

The exposure necessary having been accurately determined previously through the use of bromide paper, the shutter is next opened, and at the termination of allotted period closed again.

In reference to exposure, it is impossible to be definite as to length. I can, however, give an example culled from personal experience, and this may furnish a basis upon which others may build:—Using Cramer "Contrast" plates and a positive rather thin (no whites) upon a bright sunshiny May or June day, with $f/22$ an exposure of twenty-five seconds was correct. A more contrasty subject (a figure in it with a white bodice) required an exposure of thirty seconds. Trial exposures were made with Wellington bromide paper and twenty per cent. less exposure accorded the plate. Enlargement distance, 8 x 10.

It should be understood that exposure here depends upon the density or contrast of the positive. If balance be true all will work out harmoniously, and a well-gradated negative will result. If position proves too thin, expose with $f/64$ and develop with normal solution restrained with bromide. In such a contingency it is well to experiment first with small plates. Get a box of 4 x 5 Cramer "Contrast" or slow Isochromatic plates. What is left may be used in the camera in regular work. I use the pyro-metol herein recorded for personal purposes, in the following proportion:—

Solution A, 4 ounces; B, 2 ounces; water, 4 ounces. Fix in plain hypo freshly prepared. Full exposure must be given Cramer's "Contrast plates," otherwise there may be too much clear glass in the shadows.

### Papers for Paper Negatives.

We are so accustomed to the negative on glass it is difficult to realise that for some purposes those made on paper are just as satisfactory. The glass negative appeals, of course, to the lover of detail, and it must be resorted to where that quality is a desideratum. Pictures to be viewed from some little distance can well bear suppression of detail, and the paper negative furnishes a ready and certain means for its attainment. For dimensions under 8 x 10, however, the paper negative is not advisable.

For the purpose I have found Studio Cyko admirable.

Artura carbon black is also suitable, but it is soft working paper, and, as great opacity is required in the paper negative, the Studio (yellow label, No. 6) Cyko is favoured. In lieu of the latter we may have recourse to Eastman's Standard A bromide, which will require about the same exposure as a slow plate. Nor need we confine ourselves to the one brand. Any of the thin, structureless bromide papers made by other manufacturers will serve equally well.

There is some complaint in regard to inability to obtain sufficient density in the high-lights where paper is used for negative-making. Such a negative requires about twice as much opacity in the blackened portions as does a positive print made on the same paper. My advice is to give a full exposure and develop with a hydro-metol solution well restrained with bromide. Stop development before the shadows (white portions) are veiled over or employ Cramer's contrast developer.

There is a peculiarity about Cyko paper that in this connection should be noted. In order to get any amount of contrast it is only necessary to prolong the exposure and employ a diluted developer well restrained with bromide.

### Rendering Paper Negatives Quicker Printers.

The paper negative of necessity is a slow printer, and is not rendered any the less so by the baryta coating which characterises present-day emulsionised papers. Were it possible to obtain the paper made especially for the government in the map duplicating process, it would be a great advantage. The results would be as sharp and grainless as where glass or film is employed. We can, however, help matters somewhat by making the paper translucent, in so far as that is possible under conditions stated. Spread a sheet of white blotting paper on a board, and face down over it the negative. Over the back of the latter sprinkle fine scrapings of paraffin or white wax, and with another sheet of paper over all pass a hot flat iron back and forth until the wax is thoroughly melted and absorbed. That is one way, but a better plan is to melt the wax in a flat dish and float or immerse the negative on or in it. By this latter plan the melted (and it must be hot) wax is made to penetrate the paper fabric in manner much more certain than is the case where a flat iron is used.

Another plan is to use Canada balsam thinned down with turpentine. Another, castor oil and turpentine. None of them are new, all have at one time or another been recommended, and doubtless all are good. Some day I propose to go into the matter thoroughly, meanwhile the floating upon melted wax will answer my purpose sufficiently well.

### Avoid Over-Development.

In this connection it may be remarked that over-development is responsible, in great measure, for slow printing. I refer here to the average negative to be met with in the hands of amateurs. When all detail is out and the deeper shadows *begin* to darken over, I can conceive of no advantage in longer continuing development. Thousands there are who habitually develop beyond requirements, as may be easily discoverable by a glance at their pictures, for indications of over-development of a negative "crop out" in the positive print—to its great detriment, be it said. By prolonged or over-development we but add to density in general, coax out never a bit more detail in the shadows, pile up a deposit of metallic particles where least needed, thus slowing printing capacity and adding not one iota of contrast, should such happen to be the sought-for quality, and many times it is.

In the enlarger the dense negative or positive prints more or less slowly, depending in great measure upon whether developed with a reducer of the benzine group, or our old oxidisable friend pyro.

I have thus touched upon the question of development of the original negative, because the qualities pertaining thereto have an important bearing upon the question of exposure for the positive. And, if the resultant positive have transferred to it all the undesirable qualities of the negative from which it was made, there are still further accentuated the features that in good work should have avoidance.

Reverting to the subject of the positive, we may use a lighted candle as an illuminant, if desired, when making the exposure.

At a distance of 24 inches we may try exposures as follows:—

Seed No. 26 plate, one and a half seconds; Seed No. 23 plate, three seconds, and we may test the light with Eastman or Defender bromide paper, according to either, eight seconds.

Comparative speed list is as follows:—Stanley, Cramer Crown, and Seed No. 27 plates require one second, Seed No. 26 or Cramer Banner will require one and a half seconds, Cramer Anchor, and Seed No. 23 three seconds, Cramer Contrast six seconds, Seed Process twelve seconds, Eastman and Defender bromide papers eight seconds.

With this knowledge in regard to relative exposures we can use bromide paper in the enlarger to test the illuminant, and regardless of speed of plate employed govern ourselves accordingly.

When I first had intentions to attempt the making of enlarged negatives, notwithstanding I had on hand the necessary plates, I kept putting off the supposedly evil day because of fancied difficulties. Five minutes' experience in positive making was sufficient to disabuse my mind in that regard, and I now consider the making of the positive no more difficult than where Velox prints are involved.

The illuminant being constant, it simply devolves upon the worker to alter the distance to conform with the opacity of the negative. Once one can thus intelligently size up negatives, the process is shorn of difficulties.

The paper negatives should be fixed for fifteen minutes in an acid hypo bath, and afterwards washed for an hour. When washing is completed—to prevent curling—the following bath should be used:—

| | |
|---|---|
| Water ............................................... | 16 ounces |
| Glycerine ............................................ | 2 ounces |

Immerse negative in this bath and at the expiration of, say, ten minutes take out, drain, and hang up to dry.

Once drying is effected, pinholes and other defects may be blocked out with India ink or opaque. Also have we here an excellent opportunity to modify by the use of water-colour, ink, crayon, or lead pencil, either on the back of the negative or the front, and perhaps in some cases both. As modification proceeds an occasional proof should be made lest results be crude. High-lights can also be reduced or altogether eliminated either by a wad of absorbent cotton moistened with alcohol rubbed over the spot, using a piece of soft wood as a pointer, or by a touch of weak Farmer reducer, hypo and red prussiate in solution. A deft touch is, however, required to handle the latter successfully, hence practice would better be on a waste negative.

James Thompson.

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Ensign Film Competition.—Captain W. Tarr, I.M.S., Khandwa, India, is the winner of the "Ensign" Roll Film Competition for April. Houghtons Ltd. offer a three-guinea camera every month for the best negative on "Ensign" film. The entries close on the 3rd of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

# SULPHIDE TONING WITH BARIUM SULPHIDE.

[In the following article, by Professor R. Namias, which appears in the current issue of "Photographische Mitteilungen," it is recommended to use barium in place of sodium sulphide as the darkening or toning bath for the sepia process.—Eds. "B.J."]

Although the two-solution method of bleaching and darkening for the production of brown or sepia tones on bromide prints is greatly preferable to the single-solution hot or hypo-alum process, yet difficulties are frequently met with, particularly in the matter of the colour of the toned print which, in many cases, turns out to be of disagreeable yellowish hue. The cause of this latter defect lies in part in the printing paper itself, in the solution used for development, and lastly in the soda sulphide bath. As the result of a series of recent experiments, I have worked out a method which, with papers of various manufacturers, and using all kinds of baths, has proved most satisfactory.

I started from the fact that a good deal of the failure experienced in the process arises from the poor keeping qualities of the sulphide solution. It may be noted in passing that crystallised soda sulphide is a much less suitable form of this substance than the anhydrous or fused sulphide. If a fresh solution of well fused sulphide be prepared, it will be found that the unacceptable yellowish brown tone is very rarely produced. Yet its occurrence is more infrequent still if a solution of barium sulphide be used as the darkening bath. Barium sulphide is but sparingly soluble in water, but the degree of solubility is nevertheless sufficient for the purpose. It is found that when using this solution the irregularities which are experienced in the case of the sodium sulphide no longer occur. Moreover, the barium sulphide solution is extremely economical in use, and possesses the further advantage of being less odorous than the sodium compound.

In order to prepare the working toning bath a saturated solution of the barium sulphide is made. This will require about 20 gms. of barium sulphide for 1 litre of water. The solution may be kept in frequent use for a long time. The bleaching bath to be used in conjunction with it is that made in accordance with the usual formula, namely, with potass ferricyanide and potass bromide. The following is a suitable formula:—

| | |
|---|---|
| Potass ferricyanide ... ... ... | 20 gms. |
| Potass bromide ... ... ... ... | 20 ,, |
| Water ... ... ... ... | 1,000 ccs. |

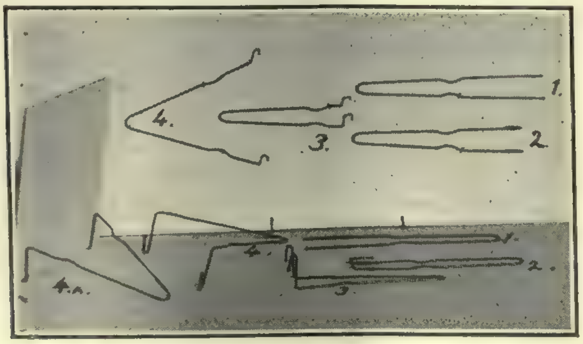
The prints are bleached in this bath, then rinsed in water and transferred to the barium sulphide solution. In a few moments the print assumes a fine brown colour, and is then washed. The only necessary precaution which requires to be taken is that the print while in the final wash water should be gone over with a soft piece of cambric or a tuft of cotton wool in order to remove any slight white deposit which may be formed from the carbonate or sulphate in the water. If this is not done a slight veil may be noticed over the prints when dry. Even so, a dip in water followed by gentle rubbing will remove the deposit. The above-described process has been found to give excellent results with gaslight papers as well as with those on bromide emulsions.

R. Namias.

# SOME PRACTICAL POINTERS.

## A Simple Photograph Stand for Window Dressing.

Most photographers are familiar with the use of hair-pins as implements for pipe-cleaning, but perhaps the fact that they can be used with advantage as neat supports for all sizes of mounts will be news to many. When confronted with the problem of dressing a window with a very large number of mounted photographs, the writer recalled the following plan which had been shown him when a very small boy, for the purpose of standing upright the pictures of pretty ladies and fine soldiers which he was fond of cutting out of magazines and pasting on to cards. With a pair of pliers, ordinary hair-pins can be turned into these little stands at a remarkably quick rate, and being so inconspicuous no one would suspect their origin. The plain hair-pin (1) is first doubled back on itself as in 2, in two motions, the space being sufficient to accommodate an average mount. The next bend is shown at 3; this is almost a right angle. It only remains to pull the two sides apart as at 4 and the stand is finished. Mounts from midget up to 15 by 12 will be securely held, as shown at 4a, and all that will be seen in front are the tiny ends, as at the bottom of the large mount used as a background in the illustration. The angle of the bend in 3 should be such that the mount will stand almost upright, sloping backwards only just enough to prevent it falling forwards. As hair-pins can be obtained in two shades of brown, as well as black, and can be easily painted, they can be made to harmonise with the groundwork of the window, and thus be almost invisible.



D. Berlin.

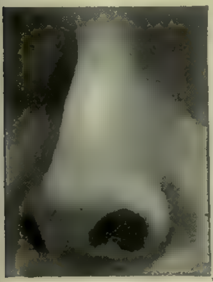
## Lubricant for Dry-Mounters, Etc.

Graphite, on account of its many virtues, has superseded oil as a lubricant in many directions, and is certainly far more suitable in such things as dry-mounting machines and the gearing of studio camera stands. Graphite can be obtained in powder form from most engineering shops at about two shillings per pound, and it is also sold as a lubricant for the coaster brakes of bicycles, in which case it is put up in tubes containing a mixture of graphite with vaseline, at about sixpence per tube. This form is very suitable for the rack-work of a studio stand, but for dry-mounters it is advisable to obtain the powder and apply it to the screw and sliding bed after having smeared the parts with the slightest trace of grease. This is in order to prevent the powder flying about, but the minimum quantity only should be used so that the grease will not run when the machine is heated.

D. Berlin.

### The Pencil of Light on the Nose.

To those retouchers and B. and W. artists who like to put a pencil of light on the nose, the chart herewith may prove useful. Fig. 1 represents a fleshy nose, equally broad at the end and base, commonly possessed by many smart business people. The pencil must be of a very broad character, and largest in the upper part of the nose, the lower portion of the light being almost (but not quite) disjointed from the upper. Fig. 2 is of "Grecian" type. Here a long, thin, straight line is needed—rather near to the edge. Fig. 3 represents the "Roman" form. The "light" commences just below the root and extends a little obliquely to the summit of the "hump," broadening out as it descends. A "comma" of light is then brought out near the tip, lying horizontally, and the tail running over the top of the nostril. Fig. 4 shows the "cogitative" form common to thinkers and workers. The light in this and the next (Fig. 5) loses its pencil-like form; in this, being rounded and existing only over the lower third, with a lesser light over the upper part of the nostril. Fig. 5 is of "celestial" type, common amongst clowns and comedians, or other people who are apt at imitating and mimicry. The light is almost quadrangular, the lowest comes travelling a little downwards between the nostrils. In the last illustration (Fig. 6), the "retroussé," the light is a thin *tapering* pencil at the upper part; separated from a lesser *curved* light at the lower. If this lower light is made stronger than the upper it will produce a protruding, inquisitive character.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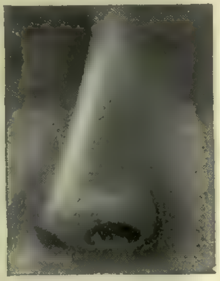
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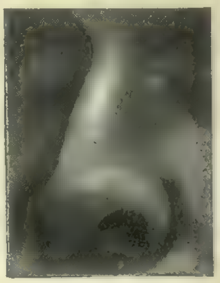
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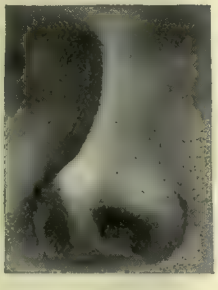
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6

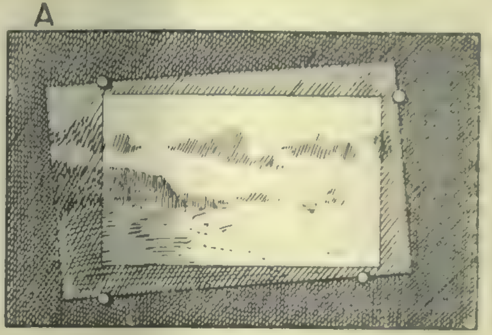
The rules for placing "pencils" of light are, viz.:—

Thin, long lines give length.
Broad lines give breadth.
Strong lights give prominence.
Disjointed lines show a slight depression between the two.
Lines curved show features curved at the part.
Lines placed near the edge of nose produce thinness.
Lines placed far from the edge of nose produce fleshiness or breadth.
Lights travelling low down on tip of nose produce an upturned nose.
Lights high up on tip of nose equal downturned nose.
Broad lights on tip of nose show fleshiness.
Quadrangular lights on tip of nose give prominence.

Arthur Whiting.

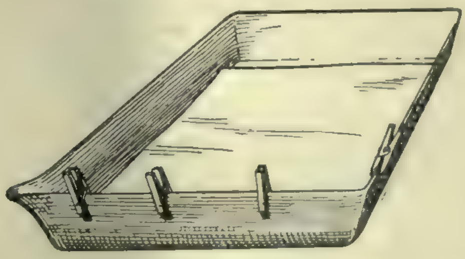
### A Negative Holder for Enlarging.

This may be used in conjunction with either an enlarging lantern, daylight enlarger, or lantern-slide camera. It consists of a wooden frame (A) covered on one side with smooth cloth, the opening being any desired size. The negative is placed with the film against the cloth and fixed in position with four *large* drawing pins. Two similar frames may be hinged together, and the negative sandwiched between. This arrangement is very useful for hand-camera negatives, which are taken a little "on the twist."



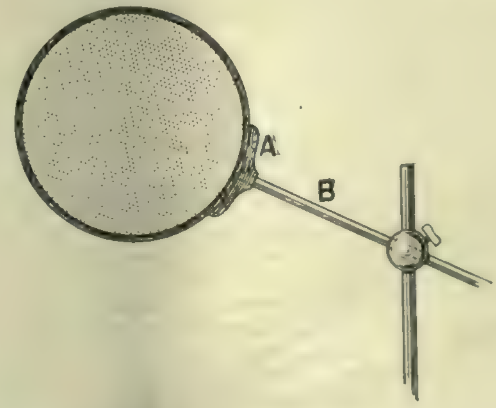
### A Print-washing Device.

Now that the wooden spring clips can be obtained at 1½d. to 2d. a dozen, it is worth while buying them to fix round the edge of an ordinary porcelain dish when washing prints. They are just clipped on and effectually prevent the prints being carried over into the sink.



### A Head Screen.

A disused head-rest may easily be converted into an excellent head-screen by using a child's wooden hoop fitted as shown in the sketch. A is a wooden block screwed to the hoop with a hole to receive a dowel-stick (B), which fits into the clamp at top of head-rest. The hoop is covered with lawn or muslin.

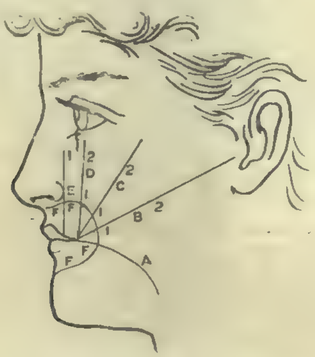


### Improving the Expression by Retouching.

Probably no part of the face presents more difficulty to the average retoucher than the mouth. An organ so very mobile, so constantly portraying numberless expressions, often fails to give the best at the moment of the photographic exposure, with the result that features usually pleasing look unusually serious and set. Again, many people who, when the features are at repose have a sad expression, fill up with life and animation of countenance when conversing. We usually see such people when they are speaking, because they are of chatty, enthusiastic natures; but when they are photographed the visage assumes the expression borne when not talking—hence a disappointing photograph, unless we have obtained one with a smile and animated eyes, for there is a close analogy between the muscular movements exercised in the talking and smiling of these individuals. Now, if with a sad expression, we can somewhat brighten the countenance without losing the likeness, we shall materially assist in making an acceptable photograph.

To accomplish this, some will shorten the mouth and obliterate the shadows below the angles, whilst others endeavour to retouch so as to raise the angles. Either method, without compensatory work, helps to lose the likeness. As we all know, the expressions are controlled by the action of various muscles. When a muscle acts it does so by *contraction—i.e.*, it shortens, and as it does so it *increases in fulness*. So that if, for instance, we raise the angles of the mouth, we shall lose the likeness proportionately unless we increase the lights along the line of the muscles brought into play. But if we do this latter to the right degree, we improve the countenance and keep the likeness.

The accompanying diagram shows the direction the various muscles acting in smiling and laughing run. A, B, C, and D pull from the angles of the mouth. E from the edge of the lip, halfway between the angles and the middle. C and D act alone in producing a slight smile; so that in working this effect in it will be necessary to raise the ends of the mouth and increase the fulness over the course of C and D. The ratio of proportion is greatest at C 1, then D 1, less still at C 2, and least of all at D 2. C is attached near the outer corner of the eye, and in action causes the lower lid to be raised at its external end, thus narrowing the eye. Accomplish this in working.



In a broader smile B and E are brought into play. The mouth is lengthened and corners more raised. B will need to be strengthened as for I, not as C; whilst, as E raises the nostrils and lip (between the centre and end), it will be necessary to do this with knife and pencil, and also giving a slight amount of fulness at E 1. A usually is only brought into play in laughing, so that care must be taken not to add fulness in that direction.

Around the mouth is the sphincter muscle F. This, in smiling naturally, lies passive and relaxed. The muscles A, B, C, D, E, and this sphincter F overlap one another. It is this condition that produces the furrow on the cheek down to and below the mouth when smiling. In retouching in a smile, bring your lights to where the edge of F would come, but no further. This is absolutely important always, keeping to the natural curve of the circular muscle. In smiling, the eyes also "light up," hence put in the sparkle by slightly increasing and extending the lights already existing in the whites and iris.

Arthur Whiting.

* * *

A Lost "N. and G." Reflex.—Messrs. Newman and Guardia ask us to notify the loss, on the part of one of their customers, of an "N. and G." Reflex camera. It was missed on the journey from Sheffield to Bristol, and was either stolen or mislaid. The description of the camera is a 3½ by 2½ S.R. "Reflex," No. 2,137, and the lens fitted Zeiss Double Protar, No. 129,352—129,351. The camera was in a pigskin case, which was locked.

# Photo-Mechanical Notes.

## Multi-colour Photogravures.

The following process of Chas. W. Saalburg has been granted protection by the British Patent Office (Specification No. 11,527, 1910):—

First, as many chromatic negatives as required are made direct from the picture to be reproduced, the colour negatives being made by means of colour-filters in the usual way. Next, a positive is made from each of the said negatives, and any necessary retouching done upon the positives. Next, a single sheet of ordinary commercial "carbon" tissue is sensitised in the usual manner by a bichromate solution, as used by the carbon printer, and squeegeed, for drying, on a smooth surface, such as a glass plate, from which, when dry, it is stripped, as in the ordinary practice of carbon printing. It is preferable to cut the tissue so that the length of the tissue in the strip runs the long way of the positives when placed side by side ready for exposing the tissue thereunder. The size to which this single sheet of "carbon" tissue is cut is arranged such that all the positive reproductions of the picture may be simultaneously printed thereon; this "carbon" tissue, when developed, furnishing the transfer resist for producing on etching the respective intaglio printing surfaces corresponding to the different colour impressions required.

Thus by providing a single transfer resist, impressed with prints from all the positive reproductions of the picture, shrinkage or stretching will be the same for all the prints, by reason of the conditions being identical for them all during all the operations such as sensitising, developing, etc. Hence perfect register of the superimposed printed picture impressions from intaglio printing surfaces produced with the aid of this transfer resist is ensured.

After the carbon paper has been made sensitive it is first exposed to light through a line screen in the manner described in Specification No. 22,776 of 1909, by which are obtained on the tissue relatively large unexposed areas bounded by hardened lines, and, on the photographic image being impressed, development of the "carbon" tissue on the metal plate or cylinder will give, on etching, well-defined or substantial walls or dykes bounding clearly cut cavities of varying depth, as has been described in the said Specification No. 22,776 of 1909.

Before the positives are laid on the "carbon" tissues lines are carefully drawn at a given distance from the margin of each positive, such lines being afterwards used in positioning the "carbon" tissue on the printing cylinder.

After exposure of the "carbon" tissue to the positives the tissue is squeegeed on to a carefully cleaned copper cylinder, the aforesaid indicating lines being used to place the tissue on the copper cylinder in such a position that the horizontal axis of the picture is exactly parallel with the axis of the cylinder. Then pieces of blotting-paper are pressed firmly round the cylinder by enclosing them in a cover in the form of the "carbon" tissue sheet, the cover being drawn tightly round the cylinder by means of straps and buckles.

After the "carbon" tissue has had time to adhere to the cylinder, the cover with the blotting-paper is removed, and warm water is applied to the cylinder to loosen the paper backing of the "carbon" tissue. The paper backing is then stripped off, leaving the gelatin-film of the "carbon" tissue adhering to the cylinder. The exposed portions of the carbon film have had their gelatine rendered insoluble by the action of the light, whilst the remaining portions of the gelatine are soluble. By means of warm water the soluble gelatine is washed off, whilst the insoluble gelatine, which represents the negative of the picture, remains. The cylinder, after covering those parts which it is necessary to protect from the etching agent with asphaltum, is ready for etching in the usual manner of photogravure printing surfaces. Through the etching of the cylinder the positive of the picture is sunk into the same, but is by the screen lines divided into rectangular cells bounded by walls, the tops of which are all on the same surface level. These cells have varying depths, according to their position among the highlights, the shadows, or the intermediate tones of the picture.

The cells must be large enough for the walls between them t be of such a thickness that they will not be eaten or cut away by the etching fluid. In other words, the dividing walls must be strong enough to allow of the cells being etched deep enough for them to hold a sufficient quantity of colour to attain the desired effect.

As it is extremely difficult to clean the upper surface of the etched cylinder beyond the picture so thoroughly that the paper on which the picture will be printed shows no colour beyond the picture, the expedient is adopted of arranging an elevated—first plastic, then resilient—surface on the impression cylinder exactly corresponding to the picture, so that during printing the paper shall not be pressed against those portions of the printing cylinder which have not been etched, thereby preventing any set-off of colour from such non-engraved portions of the cylinder.

To produce the multicoloured picture the different impressions are superimposed one over the other in the well-known sequence.

It is found best to print upon sheets of paper instead of upon paper in a roll, and position the sheet for each of the superimposed impressions by placing it against gauges. Paper in a roll will stretch so as to prevent perfect registration of one impression upon another, as its length changes under different conditions of humidity, tension, electricity, pressure, etc. By the use of sheets all of these objections are eliminated.

No claim is made to the printing of coloured components on single bands or sheets of "carbon" tissue set out in coloured strips as has been suggested for producing coloured photographs; the method relates to ensuring equal expansion or contraction of "carbon" prints produced for transference to and development upon metal, to furnish on etching the respective intaglio printing surfaces corresponding to the different colour impressions required; this ensuring of equal shrinkage or stretching of the "carbon" prints being for the purpose of securing exact agreement of the superimposed printed picture impressions in the production of multicolour pictures.

### PHOTO-MECHANICAL PATENTS.

The following patent has been applied for:—

**Intaglio Printing.**—No. 8,924. Multiple-colour knife or doctor for intaglio rotary-printing cylinders. Eduard Mertens.

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# Exhibitions.

## SOUTH AFRICAN PHOTOGRAPHS AT THE KODAK STRAND GALLERY.

A large number of enlargements, from negatives taken during the recent tour of the Duke of Connaught in South Africa, are now being shown at the Strand gallery of the Kodak Company, close to Charing Cross Station. The series forms a complete pictorial record of the tour, from the sports engaged in during the voyage out to the ceremonies of the State opening of the Parliament of United South Africa. The whole are from negatives made by the official photographer, Mr. Ernest Brookes, on Kodak film, the enlargements being on the various grades of Kodak bromide paper. The exhibition thus offers the double interest of a record of an epoch-making event in the history of the British Empire and a demonstration of the perfection of photography in the modern Kodak way.

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**Rajar Monthly Competition.**—The prizes offered by Messrs. Rajar, Ltd., Mobberley, Cheshire, for the best print on papers or postcards of their manufacture, submitted for the competition for the month of March, have been awarded as follows:—Class 1 (open competition) to Miss M. F. Hawker, Mutley House, Plymouth, for print on P.O.P. postcard, purchased from Mr. E. J. Jarvis, Mutley Plain, Plymouth. Class 2 (for those who have never previously won a prize in any class of competition) to Mr. G. C. S. Ingram, 12, Richard Road, Cardiff, for print on matt bromide postcard, purchased from Messrs. The Photo Supply Ltd., High Street, Cardiff.

### FORTHCOMING EXHIBITIONS.

April 25 to 29.—Barrhead Amateur Art Club. Sec., J. M'Grouther, Glenartney, Barrhead.
April 27 to May 4.—Malvern Camera Club. Sec., J. B. Nickolls, The Exchange, Malvern.
May 3 to 4.—Chelmsford Photographic Society. Sec., C. H. Wallis, Rosebank, Moulsham, Chelmsford.
May 8 to 31.—Royal Photographic Society. Sec., J. McIntosh, 35, Russell Square, London, W.C.
May 10.—London Secession. Sec., M. Arbuthnot, Winchester House, Old Broad Street, London, E.C.
May 12 to 20.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

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# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between April 10 and 15:—

**Photographs.**—No. 8,940. Photographs, pictures, and the like. Richard Henry Avenell and Benn and Cronin.

**Development.**—No. 9,261. Method of and means for developing and treating photographic films. John Archibald Gimblette and George Vere Rowden.

**Projection.**—No. 9,096. Picture surfaces or screens for cinematograph and other optical projection apparatus. Sigge H. Lundén.

**Cinematographs.**—No. 9,006. Cinematograph projection apparatus. Carlo Rossi.

**Cinematography.**—No. 9,150. Apparatus for displaying moving pictures. Ambrose Lantzy.

### *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

**Printing Cabinet.**—No. 24,098, 1910 (October 18, 1910). The back of the cabinet is closed, and its front is provided with a door 2. In the top of the cabinet there is provided a rectangular aperture 4, and upon a ledge 5, extending around the edges of the aperture, a glass plate 6 is supported. Upon this glass plate, which is intended to expose the printing paper and negatives to the light, there rests a hinged pressure-back, consisting of a large section 7 and a small section 8. At opposite sides of the aperture 4 are grooves 9 running transversely on the top 1 and extending to the front of the top. A portion of the underside of the top between the grooves is removed, so that the grooves may be extended to the front thereof. These grooves are adapted to receive sheets of cardboard such as are used in making vignettes and other special prints.

To each section of the pressure-back, bow-shaped springs 10 are secured by screws passing through slots 11 in the extremities of the springs. The slots permit the necessary outward displacement of the extremities of the springs when pressure is applied to their centres. In order to raise the pressure-back from the aperture 4 or lower it into the place, a manipulating lever is provided composed of sections 12 and 13. These lever sections, one of which is secured to each of the springs 10, are connected by a joint of special construction. The lever section 12 is provided with a tongue 14, which passes through a slot 15 in the extremity of the lever section 13. A rivet 16 passing through the extremity of the lever section supports the tongue 14, and guides it when the lever sections are swung at an angle with each other. This joint permits the lever to be broken so as to raise or lower the pressure-back sections successively. An equal pressure is transmitted from the lever to each of the springs 10.

The rear extremity of the lever is pivoted to a flat-topped standard 17. The form of the top of this standard is important, as it furnishes a seat for the shoulder 18 of the lever, thus limiting the rearward rotation of the lever, and adapting the lever and pressure-back to hold the position illustrated in Fig. 5 when raised. When in this position, the extremity of the tongue 14 contacts with the section 8 of the pressure-back, preventing the section 7 thereof from swinging further to the rear.

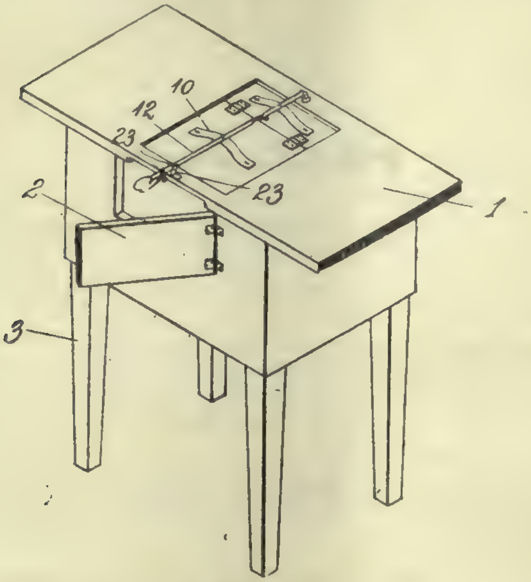

Fig. 1.

Upon a shelf 19, within the cabinet, are mounted a number of white incandescent lamps 29, and a red incandescent lamp 21. Supports 22 are provided for the shelf 19, so that the intensity of illumination acting upon the printing paper may be varied by adjusting the shelf vertically. It is intended that the white lamps 20 be lit only during each separate printing operation, while the red lamp 21 will be lit as long as the operator is occupied with the work of printing. In order that the white lamps may be lit each time that the pressure-back and lever are lowered, a pair of adjacent contacts 23 are mounted upon the front of the cabinet top 1, being so placed that the manipulating lever, when lowered, will pass between them. These contacts are in circuit with the lamps 20, as shown in Fig. 7, so that the lever coming between them closes the circuit of the lamps. The purpose of the red lamps is to permit light while the operator is placing his paper and negative upon the glass plate 6, so that he may place these parts in proper contact. In Fig. 7 a switch 24 is shown controlling the circuit of the red lamp 21, and a switch 25 by which five of the lamps 20 may be cut out, when only a small amount of illumination is required for printing.

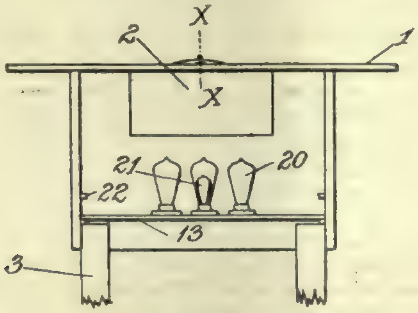

Fig. 2.

If the operator stands upon a non-conducting surface, there will be no possibility of his receiving a shock. To eliminate such possibility under any circumstances, the manipulating lever is provided with a handle 26 composed of some insulating material such as hard rubber.

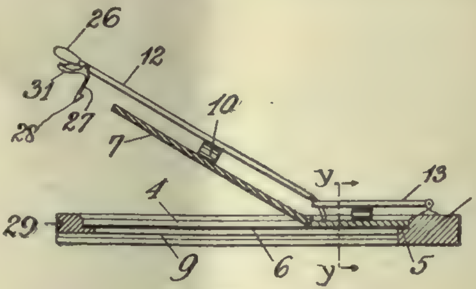

Fig. 3.

In order to retain the lever when in its lowered position and maintain the proper pressure upon the springs 10, a fastening is provided having the shape of a bell-crank, pivoted upon the lower lever adjacent to the handle. The arm 27 of this bell-crank is provided with a projection 28 adapted to enter the pocket 29 in the front edge of the cabinet top, and a spring 30 acts upon the handle portion 31 of the bell-crank, serving to retain the projection 28 in the pocket 29 when the lever is down.

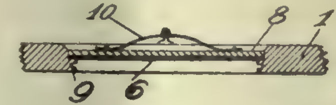

Fig. 4.

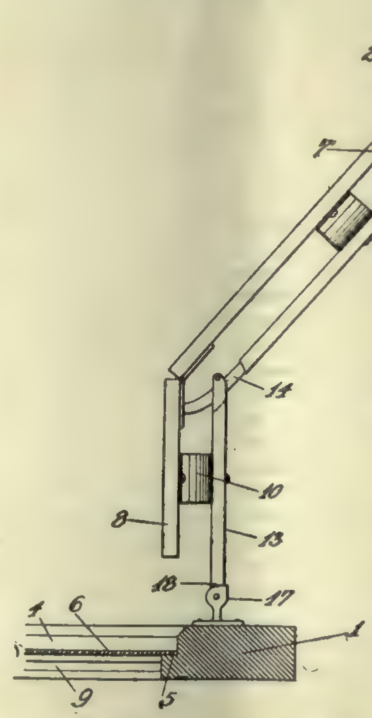

Fig. 5.

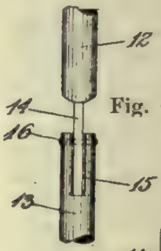

Fig. 6.

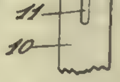

Fig. 8.

The handle portion 31 of the bell-crank is to be preferably covered with some insulating material, as a protection to the operator.

An important feature of the invention lies in the manner in which the hinged pressure-back is raised from the aperture 4 and lowered thereinto. The smaller section 8 of the pressure-back first comes into contact with the glass plate 6, as the pressure-back is being lowered, holding the printing paper and negative steady while the large section 7 is swung into place. Similarly when the pressure-back is raised, its large section 7 is first swung up, as shown in Fig. 3, exposing a portion of the printing paper and negative, and displacement of these parts is prevented until the smaller section 8 is raised from contact with the remaining portion of the paper and negative.

The photographer may thus examine a print, before removing it from the frame, without changing its position relative to the negative.

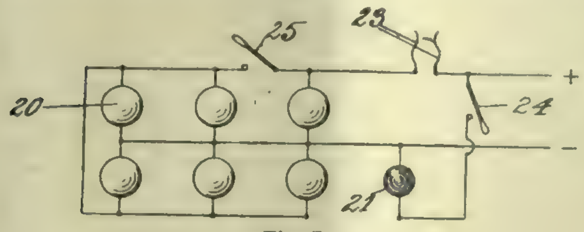

Fig. 7.

Another feature of importance is the convenient position assumed by the pressure-back and its attached lever, when raised. As will be seen in Fig. 5, the pressure-back and lever are swung back sufficiently to leave the aperture 4 clear of obstruction, but are still well within arm's reach of the operator. Also the parts in question maintain this position of their own accord, leaving both the operator's hands free to arrange his paper and negatives. Henry Deveaux Mouzon, McKinney, Texas, U.S.A.

Cinematograph Films.—No. 2,500, 1911 (February 24, 1910). The claim is:—In a cinematographic film, coated with useful emulsion only on the central portion of the support, the extension of the width of such coating so that the natural lateral reduction in the thickness of the layer of emulsion at the edges of the coating is produced on the portion of the width occupied by the perforations, and the borders or selvedges of the film are left free of emulsion. Compagnie Générale de Phonographes, Cinématographes, et Appareils de Précision, 98, Rue de Richelieu, Paris.

Cinematograph Mechanism.—No. 27,675, 1909 (April 1, 1910). The invention relates to cinematographs of the kind which are provided with means for enabling successive pictures to be projected on to a screen in such a manner that they merge into one another so that no visible interval exists between the successive pictures. Usually this type of cinematograph apparatus comprises a pair of lenses or projectors and a pair of film bands adapted to be operated in conjunction with a shuttering device whereby successive pictures may be projected on to the screen in the manner described from each film band alternately. According to the invention, means are provided for enabling each of the lenses to be equally illuminated, so that the pictures projected alternately through them may be of the same intensity; and devices may also be provided for enabling the apparatus to be worked with a single film band when a pair of film bands are not obtainable, or a breakdown occurs. Thomas Percy Middleton, 25, Devonshire Chambers, Bishopsgate, London, E.C.

Cinematograph Mechanism.—No. 7,815, 1910 (March 31, 1910). The invention relates to cinematograph projectors, and has for its object to improve the operation of the usual rotating shutter, so as to diminish the interval of time elapsing between the shutting off or obscuring of each picture on the film, and consequently reducing or eliminating the flickering on the screen.

The shutter is arranged to make two or more rotations for each feeding movement of the film, whereby, notwithstanding the shutter passes across each picture one or more times while the latter is being exhibited, yet it passes at such a high rate of speed as to produce no appreciable effect on the screen, and at the same time the transition from the shutting off or obscuring of one picture to the exposure of the next succeeding picture is more quickly performed than with the usual shutters which make but one rotation for each feeding movement of the film. Leo Kamm, 27, Powell Street, Goswell Road, London, E.C.

The following complete specification, etc., is open to public inspection before acceptance, under the Patents Act, 1901:—

Colour Screens.—No. 8,153. Method of manufacturing polychrome photographic screens. Soc. Anon. des Plaques et Papiers Photographiques A. Lumière et ses Fils.

## New Trade Names.

Manuelia.—No. 330,711. Photographs. Victor Niox, trading as the Photo Printing Paper Co., 61, Marsham Street, London, S.W., drawing office stationer. February 3, 1911.

Noneffio.—No. 331,684. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Wilkinson, Heywood, and Clark, Ltd., 7, Caledonian Road, King's Cross, London, N., varnish, paint, and colour manufacturers and merchants. March 8, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Washing Roll Film.

For washing roll film (writes Mr. E. Forrest in "Photography and Focus" for April 25) nothing is better than a board with a series of wooden pegs on it, so that the film can stand on its edge on the board in a spiral kept open by the pegs. The top edge may be slightly weighted and a stream of water from the tap allowed to flow into the centre of the spiral. The whole is placed in a circular vessel, a tin will do, so that the film is just submerged. The water flowing from the centre outwards washes the whole film quickly and thoroughly.

### An Unexpected Cause of Foggy Negatives.

A well-known scientist (writes Mr. Jas. A. Sinclair in the "Sinclair Sign-Post") called on us and said he was much worried in that he could not get negatives with the crisp detail which formerly characterised his work. His lens and apparatus was by one of the leading makers. So unsatisfactory were his results that he had insisted that his lens must differ in quality from one of the same make had previously, and the makers changed it for another. His negatives were still below the perfection of technical excellence so necessary for his profession.

We suggested that he should bring us the lens and also the camera. The latter was examined and found perfectly light-tight. We then set up the camera on a stand and placed by its side one of our own cameras, fitted with a lens identical in make and focus with the supposed defective one. Focussing both cameras on an object across the road and examining the images with a magnifier, there was undoubtedly a puzzling difference in quality, that given by our lens being rich and brilliant, and that by our client's lens decidedly grey and undecided. We then suggested transferring the lenses, placing our customer's lens on our camera and our lens on his camera. Now, strange to say, what was supposed to be the bad lens gave the best image when on our camera, and our lens when on the other camera gave the foggy one. Removing the ground-glass focussing-screen the cause was soon apparent. Our customer's camera, excellent as it was in workmanship, had a very conical bellows for the sake of portability, and the lens, being a modern anastigmat, naturally covered a larger field of view than that shown on the plate, and consequently the edge of every fold in the bellows was brilliantly illuminated. Unfortunately, the angle formed by this line of bellows was such that the light was directly reflected on to the sensitive plate itself. In the case of the "Una" camera, the bellows, being nearly square, was at such an angle that any excess of light was not reflected on to the plate, and consequently a richer and more brilliant image was the result. We have never had a case previously which so conclusively showed the trouble that may occur with many of the modern types of cameras in which efficiency is sacrificed to save a few inches in cubic capacity.

### Stripping Films from Negative.

Writing in the "Pharmaceutical Journal" for April 22, 1911, p. 543, Mr. W. S. Galbraith, jun., recommends the following method as quite successful in its results. Immerse plate in the following stock solution for half an hour:—

| | |
|---|---|
| 50 per cent. solution of potassium carbonate ... | 2 oz. |
| Glycerine ........................................................ | 1 oz. |
| 40 per cent. solution of formaline ................. | 1 oz. |
| Water ................................................................ | 50 oz. |

After half an hour in the solution, drain for a few minutes and wipe off surface moisture with an old cambric cloth in the form of a pad. Dry slowly till *quite* dry, then cut round the edges with a sharp knife ⅛ in. from edges. The film comes away quite readily.

### The Effect of Colour Filters Upon the Definition of a Lens.

If colour filters be used with a lens (writes Dr. C. E. K. Mees, in "Knowledge"), it is clear that considerable attention should be paid to the optical accuracy of those filters, so that they do not introduce aberrations which may affect the definition of the image. Apart from the accuracy of the glass itself, distortion may be produced in colour filters in the course of their manufacture in several ways.

In the first place, if the filters are prepared by coating coloured gelatine upon the glass, then when this gelatine dries it will contract and bend the glass; also, when the filter is cemented with Canada balsam, too rapid drying or drying at uneven temperatures will distort the filter; while, finally, if pressure is exercised upon a thin filter in its cell, the filter may easily be permanently strained. If these strains were symmetrical they would be of small importance, as they would simply produce a lens of slight positive or negative power, and so, to a small extent, change the focal length of the lens with which they are used. But generally they are either in one direction only, or are much greater in one direction than in the other, and so produce a cylindrical lens, which introduces astigmatism. The effect of such aberration naturally becomes much greater as lenses of longer focal length are used, the effect varying as the square of the focal length of the lens, so that a filter which would be perfectly satisfactory on a hand camera lens of six inches focus, would be with a telephoto combination quite useless. With medium and high power telephoto lenses only filters of the highest optical accuracy can be used.

This point must be carefully borne in mind, in view of the recent introduction of what may be termed semi-telephoto lenses, such as the Busch Bis-Telar, which naturally require that a filter should be far more accurate than would be assumed to be necessary for its diameter.

The aberrations of filters can be minimised by making them of as thick glass as possible, having regard to its optical accuracy, and for filters of the very highest quality it is usual for the two glasses to be about five millimetres in thickness.

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CHANGE OF ADDRESS.—Mr. Chas. R. H. Pickard, who has hitherto carried on his business of commercial photographer, photo-enlarger, and engraver, at 5, Park Lane, Leeds, has now removed to more extensive premises at Briggate Chambers, Kirkgate, Leeds, to which address all communications should in future be sent. His new telephone number is 4123 Central.

## New Books.

"Practical Photo-Micrography." By J. Edwin Barnard, F.R.M.S. London: Edwin Arnold. 15s. net.

This well printed and handsome volume, of over 300 pages, deals with the subject of photo-micrography in a very complete and up-to-date manner. Nearly all the latest introductions and improvements in apparatus are mentioned and illustrated in its pages, while the instructions for use are extremely practical. Recognising the fact that many workers are compelled to fit up their own apparatus, the author has, we are pleased to note, devoted some space to Kelvin's geometric slide and to the general principles of the "three point support," want of knowledge of which often leads amateur constructors into most unnecessary complications and expense. He also discusses practical methods of obviating the effects of vibration, such as the use of rubber supports, of suspension cords and springs. The photographic instructions are very clear and practical, and we note that Mr. Barnard strongly recommends the iodide focussing screens made by the method first introduced by Mr. C. Welborne Piper. We may, however, point out here that the very best screens obtainable by this method are made on fine-grain bromide lantern plates, not on the extra rapid plates originally used. For determining exposure a somewhat novel application of the Chapman-Jones plate tester is suggested. The tester is laid against the focussing screen of the camera, and the last number visible in this situation is taken as a guide to the exposure required, supplementary, of course, to the other factors involved. We are glad to be able to recommend this book as a valuable aid to the photo-micrographer, who will find its price of 15s. an excellent investment.

A REFERENCE BOOK OF THE FRENCH PHOTOGRAPHIC TRADE.—Messrs. Charles Mendel, 118, Rue d'Assas, Paris, have just published the eighth edition of their "Annuaire du Commerce et de l'Industrie Photographiques et Cinematographiques." The first part, that dealing with the photographic trade, forms a substantial volume of two inches in thickness, containing the following sections, each of which is printed on a differently coloured paper, so that reference to the various lists is greatly facilitated:—A directory of manufacturers, dealers, etc., in Paris, the French provinces, and abroad. A classified list of photographic materials and apparatus, somewhat similar to that in the "British Journal Almanac," but containing the names of French and a few foreign firms supplying the goods. A list of retail dealers in Paris, the French provinces, and in certain foreign countries; a list of professional photographers arranged likewise on the last-mentioned plan. A list of photographic trade names, illustrated in a number of instances by drawings of the goods to which they refer. The latter portion of the book contains miscellaneous information of interest to the French photographic trade, such as tariff rates, regulations for dangerous chemicals, etc. The cinematograph trade is to be dealt with in a similarly comprehensive way, but those of our readers who have any photographic dealings with France will find the volume one of the greatest service to them.

A HANDBOOK OF CINEMATOGRAPHY.—A new edition of the "Handbuch der praktischen Kinematographie," by F. Paul Liesegang, has been issued from the press of M. Eger, Leipsic. The text has been thoroughly revised since the appearance of the first edition over two years ago, and describes at considerable length the mechanical and illuminating equipment of the cinematographer, whilst it also deals with such later developments as the conjunction of cinematograph and phonograph, dealing also with the practical work of taking and printing cinematograph films and with the production of effects in their exhibition. A very comprehensive work, of which there might well be an English translation.

"THE NATURE PHOTOGRAPHER."—The second issue of this monthly periodical, the official organ of the Nature Photographic Society, reaches our table. It contains a brief statement of the objects of the Society by the president, Mr. J. J. Ward, a note by Mr. F. Martin Duncan on a useful branch of work for Nature photographers, and other articles on the special department of photography to which the periodical is devoted. "The Nature Photographer" is published at the price of twopence, presumably by the secretary of the Nature Photographic Society, Mr. Carl Edwards (who is also the editor), Woodlesford, Leeds.

Beginners' Troubles.—No. 114 of the "Photo-Miniature" is issued under this title, and deals in a clear and elementary way with the difficulties which the veriest tyro in photography experiences in his early efforts. From it he gathers the precautions which he must take in holding the camera, in using the finder, in focussing, in releasing the shutter, and generally in ascertaining the exposure for film or plate. The directions in which he can go wrong in development by the dish or tank method, in fixing, washing and drying the negative, are likewise the subject of very practical advice. The little monograph, which should find a place on every dealer's counter, if only for the means it provides of saving the dealer long explanations, is written by Dr. Malcolm D. Miller. It is issued in this country by Messrs. George Routledge, Ltd., 68, Carter Lane, E.C., and in America by Messrs. Tennant and Ward, 122, East Twenty-fifth Street, New York.

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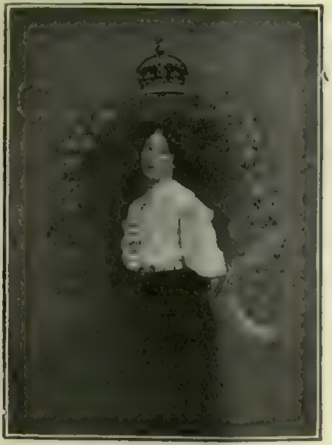
# New Apparatus, &c.

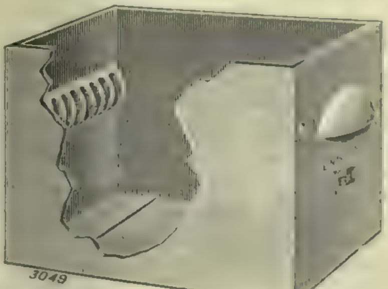
**Coronation Backgrounds. Made by John J. Griffin and Sons, Limited, Kemble Street, Kingsway, London, W.C.**

In this new series of backgrounds, specially designed and produced for the present season, Messrs. Griffin have provided photographers with a novelty which will enable them to produce a form of photograph which will doubtless find much favour among the lower and lower-middle classes. The background, as shown in one of the five designs which we reproduce herewith, includes the drawing of a crown, or other Royal emblem, accompanied by other slight decorative design. The fact that the exposure was made in the Coronation year is thus automatically recorded in the photograph, and many persons will therefore favour this style of portrait for themselves or their children. The grounds are produced on stout paper, done in a superior style, at the very low price of 8s. 6d. each.



New "Adon" Fixed-Focus Telephotos.—Messrs. J. H. Dallmeyer, Ltd., Denzil Road, Neasden, N.W., have recently introduced a series of five new "Adon" lenses, working at the large apertures of from $f/4.5$ to $f/10$. These new lenses are issued primarily for use as fixed-focus telephotos, giving an equivalent focal length of about 2½ times the back focus, that is to say, 12 in. in the case of the $f/6$ lens for quarter-plates, which requires a back extension of 5½ in. But by taking advantage of the draw extension of the front lens (provided chiefly for the sake of portability), a certain variation in focal length may be produced, and, at the same time, a slight diffusion of definition obtained. This will appeal to the pictorial worker, to whom a slight diffusion of focus no less than a narrow angle of view is of advantage, but, as pointed out in a short leading article in our issue of last week, the advantages of a fixed-focus telephoto should be given due consideration by professional workers, and for these the two new lenses made to cover a half-plate will be of particular service. That working at $f/6$ gives an equivalent focal length of 17 in. and requires a back extension of 7½ in., its price being £11, whilst the $f/10$ lens gives an equivalent focal length of 20 in., and requires a back extension of 8 in., the price in this case being £7 15s. In the quarter-plate series of three lenses the equivalent focal length of 12 in. and back focus of 5½ in. is obtained, with the apertures $f/4.5$ and $f/6$, whilst with the $f/10$ lens the focal length is 15 in. and the back extension 6 in. The prices run, in order of the aperture, as follows:—£9 9s., £6 6s., and £4. These new additions to the "Adon" series of lenses give remarkably good definition over the plate which they are listed to cover, and represent the maximum aperture at present obtainable in objectives of this class.

"Ensign" Porcelain Fixing Tank.—Messrs. Houghtons, Ltd., have just issued a series of fixing tanks made in a fine hard-surfaced porcelain, and very conveniently designed for the easy removal of the plates. We are glad to see that the grooves are very accurately made, so that the plates cannot slip from one to the other, a defect which is not infrequently met with in tanks of this description owing to the unavoidable irregularity in contraction during manufacture. The tanks are made in the following sizes, and their use should appeal both to the professional and amateur worker on account of their cleanliness in use and the great saving in space which they permit:—



| For Plates. | 6 Grooves each. | 12 Grooves each. |
|---|---|---|
| 4¼ x 3¼ | 2s. 9d. | 4s. 6d. |
| 5½ x 3½ | 2s. 9d. | 5s. 0d. |
| 6½ x 4¾ | 4s. 0d. | 5s. 6d. |
| 8½ x 6½ | 6s. 6d. | 9s. 6d. |

Combined to hold 12 quarter-plates or 7 half-plates .... 5s. 6d.
Combined to hold 16 half-plates of 12 1/1-plates ........ 12s. 0d.

◆

Monster Photograph.—"Camera Craft" claims on behalf of a Denver photographic studio, the Mile High Photo Company, the honour of having produced the largest photograph ever taken in the world. The perfected photograph, which is an enlargement sixteen times the size of the original negative, is seven feet high and nine feet in length, depicting Montgomery 2787, a beautiful Kentucky-bred saddle horse, owned by a leading Denver horseman.

## CATALOGUES AND TRADE NOTICES.

The Sinclair Signpost.—No. IV. of this helpful little monthly, issued by Messrs. James A. Sinclair and Co., Ltd., 54, Haymarket, London, S.W., contains some useful notes on the illumination of the dark-room, on developing in an ordinary room, the toning of bromides, and the care of oil and Bromoil brushes, as well as an interesting paragraph on an unsuspected cause of fog in negatives which we reprint on another page under "Analecta." "The Sinclair Signpost" may be obtained by sending the postage to Messrs. Sinclair.

Sale at Messrs. Griffin's.—A price-list of "seconds" photographic papers, apparatus, mounts, and sundries has just been issued by Messrs. John J. Griffin and Sons, Ltd., at whose premises, Kemble Street, Kingsway, London, W.C., the goods may be seen.

The Goerz-Anschutz Folding Camera.—A most handsome list of twenty-four pages describing the ever-popular Goerz-Anschutz camera and illustrating the accessories to be obtained for it, together with numerous examples of its work, has just been published by Messrs. C. P. Goerz Optical Works, Ltd., 1 to 6, Holborn Circus, London, E.C., from whom it may be obtained free on application.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, April 28.

Guernsey Photographic Society. "Tramps abroad with a Kodak." W. F Slater.

### Saturday, April 29.

North Middlesex Photographic Society. Record Outing to Hampstead.
Halifax Camera Club. Ramble to the Colden Valley.
Hackney Photographic Society. Excursion to Hayes.
Liverpool Amateur Photographic Association. Excursion, Halli'th Wood, Bolton.
Southampton Camera Club. Outing to Eling.
United Stereoscopic Society. Outing, A City Ramble.

### Sunday, April 30.

United Stereoscopic Society. Conversazione and Distribution of Awards.

### Monday, May 1.

Bournemouth and District Camera Club. "Composition." Mrs. Cottam.

### Tuesday, May 2.

Hackney Photographic Society. Special Sale of Apparatus.
Sheffield Photographic Society. Annual Meeting.
Manchester Amateur Photographic Society. "Telephotography." R.P.S. Affiliation Lecture.

### Wednesday, May 3.

Croydon Camera Club. Exhibition of Prints from Good Friday Excursion.
North Middlesex Photographic Society. Lantern Slide and Print Competitions.
G.E.R. Mechanics' Institution, Stratford, Photographic Section. Annual Meeting.
Edinburgh Photographic Society. "Platinum Printing." Alexander J. Kay.
Balham Camera Club. "Mounts and Mounting the Print." W. C. Munsey.

### Thursday, May 4.

Midlothian Photographic Association. Ten Minutes Papers, with Discussion by Members. Nomination of Office-Bearers and Councillors.

## THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A meeting of the Council was held at the Royal Photographic Society, 35, Russell Square, W.C., on Friday, 21st inst. Present: Messrs. W. Gill, F.R.P.S., W. E. Gray, F.R.P.S., A. Ellis, S. H. Fry, F.R.P.S., G. Hana, A. Mackie, R. N. Speaight. Lang Sims, W. Illingworth, Knights, Whittome, and H. C. Spink. Mr. W. Gill, Past President, in the chair.

Mr. Lang Sims was re-elected Hon. Treasurer, and Mr. A. Mackie Hon. Secretary of the Association.

Croydon Camera Club.—When the name of Mr. C. W. Raffety, F.R.A.S., appears on the club's fixture list for a discourse on any topic members expect a "stiff" evening, and in this respect are never disappointed. That Mr. Raffety also succeeds in making his subjects interesting to all was fully evidenced by the large audience which gathered last week to hear him lecture on "The Progress of Spectroscopy in Astronomical Research." The lecture was illustrated by a large number of beautiful spectrographs and some really superb photographs of nebula recently secured in the great American observatories by the aid of instruments of extreme power, assisted by an atmosphere far more favourable to astronomical work than exists in this country. In the absence of diagrams and illustrations it is only possible to allude to those remarks of Mr. Raffety which were not dependent upon them.

In reviewing the progress of physical science during recent years, the lecturer said one of the most striking developments is found in that department of astronomy known as astrophysics. The application of the methods of spectroscopic analysis to the problems of the sun and stars had begun to yield a rich harvest before the days of celestial photography, but with the advent of the dry-plate in the observatory the power of the methods of research was increased enormously. So far back as 1863 Sir W. Huggins made attempts to photograph the spectra of stars on wet-collodion plates, but the inconvenience of this process prevented satisfactory results being obtained. With the introduction of the dry-plate the work was continued with success, and later improvements in the instrumental equipment of the observatory resulted in minute investigation of stella spectra by photographic methods. The value of photography is evident in three directions: firstly, the securing of permanent records of spectra, which can be examined and measured at leisure; secondly, the possibility of investigating spectra much too faint for visual observation; and, thirdly, the exploration of those portions of the spectrum to which the eye is insensitive. The importance of the exploration of the ultra-violet is emphasised by Sir W. Huggins, as his system of classification of the stars is an evolutional order according to spectral characteristics, and is based mainly on the intensities of the calcium lines (H and K) which occur in the extreme violet region, and can be adequately observed only by means of photography. The results of his work are embodied in a magnificent atlas of representative stella spectra, extending from about λ 4800 A° to the ultra-violet.

Since the initial work this branch of observational astronomy has been rapidly developed by many energetic workers. Instruments have increased steadily in power and optical perfection, until special observatories elaborately equipped and fully staffed are now engaged in the exhaustive investigation of the sun and stars by spectroscopic means. Photographic methods have been used successfully in conjunction with the concave grating in securing records of the solar spectrum with a very high dispersion and an accuracy far superior to any drawings. The most notable achievement obtained by the application of photography to spectroscopic work on the sun, however, is embodied in the exquisite instrument known as the spectroheliograph. The evolution of this instrument is associated with the names of M. Deslandres and Professor G. Hale, the latter now directing the Mount Wilson Solar Observatory in California. The spectroheliograph enables a photograph of the entire solar disc to be obtained in the light of one selected line in the spectrum, and the resulting image shows the distribution over the visible hemisphere of the vapour of the element to which the selected line is due. The two most important elements for the investigation of solar activity by this beautiful method are calcium and hydrogen. With the former the line used is that denoted by the letter K, and the images obtained reveal great masses of calcium vapour of mottled appearance extending over the disc, and notably in the regions of sun-spots. Using red-sensitive plates, Professor Hale has photographed the sun in the hydrogen line H α (λ 6563 A°), and one plate obtained in 1908 shows two hydrogen vortices or cyclones over two sun-spots.

The resources of the Mount Wilson observatory are remarkable; giant tower-telescopes, in conjunction with long-focus spectrographs, enable large images of the sun to be obtained, and surface details to be investigated with minute precision. With the enormous dispersion available, evidence has been found of powerful magnetic fields in some sun-spots, which give the "Zeeman effect" in the spectrum lines of the spot. Such magnetic fields suggest the circulation of large masses of ionised vapour, but little is known as to how such fields are maintained. Other problems which can be investigated by means of photography relate to the velocity of stars in the line of sight. Such motion makes itself evident by the shift of the spectrum lines from their normal positions, the displacement being either towards the violet (approach) or towards the red (recession). The measured displacements—corrected for the earth's motion—give the velocity of the start relative to our system in kilometres per second, and such observations are, of course, independent of the distance of the star. A similar principle is involved in the detection by the spectroscope of pairs of stars in orbital revolution whose separation is too small to be visible in any telescope. If any lines are common to both spectra of the pair, they appear alternately double and single every quarter of a revolution, and their maximum separation shows their relative velocity.

# Commercial & Legal Intelligence.

Street Photography—Damages for Knocking Over a Camera.—On April 21, in the Sheriff Court, Airdrie, Sheriff Glegg heard evidence at some length in the action by R. C. Platt, photographer, South Bridge Street, against Wordie and Co., carting contractors, Caledonian Station, for £5 4s. 6d., being price of a camera destroyed by being knocked down in Graham Street by a lorry negligently driven by one of the defender's workmen, and also for loss of orders for photographs. The defence was that there was no negligence on the driver's part, but contributory negligence on the part of pursuer. Mr. G. B. Motherwell, jun., appeared for the pursuer, and Mr. Jas. A. Reid for the defender. The pursuer's evidence showed that he was engaged by Mr. A. Taylor, butcher, Graham Street, to photograph some prize bullocks in front of his premises (one of the animals having been bred by the King). His camera was placed opposite the shop, and he was engaged posing the animals when the defender's lorry came down the street and knocked over the camera, so that it was smashed, as also the plates it contained. For the defence it was stated that there was a large crowd around the bullocks, and that when the driver of the lorry came along he had to go off the straight track on which he was going in consequence of the crush. He did not see any camera, and was not aware it was knocked over till someone called on him to look at it. He had to watch the crowd to get safely past. The Sheriff held that the driver of the lorry was not looking out, and that if he had been doing so he would have seen the camera. It was his duty to have looked all around. His Lordship gave decree for the sum sued for with expenses. Mr. Reid respectfully asked his Lordship to mark the summons in case his clients should desire to appeal. This was done.

Frauds on Domestic Servants.—At Highgate Police Court, last week, Sidney Duncan, twenty-seven, photographer's canvasser, of Clapton, pleaded guilty to charges of obtaining various small sums of money from servant girls in Highgate and the neighbourhood. Detective-Sergeant Barrell said that for the past two years Duncan had been in the habit of calling upon servants and promising to send them enlargements of their portraits. He told them there would be nothing to pay, as the firm he represented were anxious to advertise in this way, but that money would be required for postage. In each case money to cover the postage was handed to him, and altogether there were 300 complaints against him. A representative of the firm which Duncan alleged he travelled for repudiated all knowledge of him. Sir Alfred Reynolds said this was a mean way of obtaining money from girls who had to work hard for it. For the two offences which had been formally proved he would go to prison with hard labour for three months.

## NEW COMPANIES REGISTERED.

Artistry, Ltd.—This company was registered with a capital of £6,500 (6,000 ordinary shares of 1s. each, and 6,000 7 per cent. part. preference and 200 deferred shares of £1 each). Objects: To carry on the business of manufacturers of, and dealers in, photo rubber stamps, as formerly carried on by the Photo-Stamp Syndicate, Ltd., at 42, Dartmouth Road, Forest Hill, S.E.; also to adopt an agreement with the above-mentioned syndicate, and other persons. The firm of Pook Bros. and Co., Ltd., have power to nominate one director. Qualification (except nominee of Pook Bros. and Co., Ltd.), £200 shares or stock. Remuneration (except managing director), £100 each per annum (chairman £50 extra). Registered office, 1, Metal Exchange Buildings, Whittington Avenue, Leadenhall Street, E.C.

# News and Notes.

The Two Sides of a Portrait.—The two sides of a person's face are often quite unlike, and Hallervorden, a German physiologist, has been bringing out the peculiarities of the right and left face very strikingly in some novel pictures. A full-faced negative of the person is taken on a very thin film. A positive is then made in the usual way, and another with the film side of the negative upward, and each print is divided in two by a cut halving the line between the pupils of the eyes. Combining the true and the reversed print of each side gives an entire portrait, having only right-sided features, and another showing the left-sided face. In right-handed people, the right-sided face seems, according to the "Singapore Free Press," more truly expressive of the intellectual character, and the left-sided to be more lifeless.

Waterproofing Fabric.—M. A. Balland, one of the French Government Chemists, relates in one of the service papers the various experiments made by the War Department with a view to rendering fabrics waterproof but not airproof, according to the "Chemist and Druggist." Among the substances employed were rubber, gelatine, lac, boiled oil, castor-oil soap, various aluminium salts, and solid hydro-carbons, but none of these gave satisfactory results. On the suggestion of the author of the paper, the committee which had charge of the matter successfully used aluminium acetate solution, which is employed as a mordant in dyeing the fabric. The strength ultimately adopted was a dilution of one litre of aluminium acetate solution (sp. gr. 1.050), with 40 litres of water. The cloth is placed in this solution for twenty-four hours, taken out and dried in the shade. A company of soldiers wore clothing waterproofed in this manner for three winter months, and the success was such that the method is being tried on a larger scale.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## REPAIRING SHUTTER BULBS.

To the Editors.

Gentlemen,—The following tip may possibly be of use to photographers, who, in common with myself, have a sudden leakage in the pneumatic ball or tubing of their studio or outdoor shutters. The application of a rubber solution, as used for filling cuts in outer covers of cycle tyres, will make a temporary repair in about three minutes, and if there is sufficient time to give three or four coatings my experience is that the repair is quite permanent. The solution I use is the Chemico Company's "Tyre Cure," but doubtless any other make would do as well.—Yours faithfully,

A. Wildman.

The Maybury Studio, Maybury Road, Woking.
April 19, 1911.

## SPIRIT SENSITISERS FOR CARBON TISSUE.

To the Editors.

Gentlemen,—In your issue of April 14 you publish an abstract of a paper read by M. Georges Balagny, on using a sensitising bath containing alcohol.

On August 12 of last year you published some notes on a somewhat similar formula by the same worker, in which the same advantages for this method of working were claimed.

I gave the bath then advocated a thorough trial, but was unable to find that any material advantage accrued from its use. I could not use any hotter water than I had done previously, and in my hands the results were flatter from very thin negatives than I obtained by other special methods.

Leaving out the question of the Autotype spirit sensitiser, which is so good that it does not want any commendation from me, I found that for spirit sensitising I got better results with acetone as the drying medium than with alcohol, and though the solution was not permanent, the deterioration was very slow.

I should be glad to know if other workers have found the advantage that M. Balagny claims for his method, as, if so, the formula is worth further trial; but, as stated above, so far my results have been purely negative.—I am, yours faithfully, A. H. Hall.

1, Eliot Vale, Blackheath, S.E.
April 19, 1911.

## FLASHLIGHT POWDER.

To the Editors.

Gentlemen,—I feel it a duty to sound a note of warning *re* flashpowder mentioned in your issue of March 24. Over the name of Mr. G. W. Betz, M.D., a formula is given, which the writer thought to be the *safest possible*, and warns his readers to steer clear of chlorates, etc., etc. Now, I have for six or eight years used a powder in which chlorate of potash enters largely, and have never had an accident in mixing, but as chlorates seem to have a doubtful character, I thought I would like to try a *safer* mixture, as recommended by Mr. Betz, so made up his exact proportions of each, and dried each separately over the fire, and then put into an "Ideal powder box," which is a tin box with a piece of fine gauze stretched across the middle, and a lid on one end, and by putting the powders in one end and then shaking the box with a circular motion, the powder all passes through the sieve, thoroughly mixed, on the other side. In my first test, the report was very much too loud, so made another test, using much smaller quantities (fortunately), but the same proportions of each, except an increase in the magnesium powder, with a view to getting softer report. This was put into box with gauze as before, but this time the mere act of shaking the powder through the gauze caused a violent explosion. The box was blown into three pieces, and my hand somehow escaped with a slight burn. There was only 57 grs. in all—less than a dram. Had the full quantity been used, I should not have been writing this.—Yours truly, F. E. G.

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photograph Registered:

H. S. Stringfellow, 2, Bath Terrace, Seaham Harbour. *Photograph of Seaham Harbour Amateur Operatic Society in "The Mikado."*

Mask.—Messrs. W. Butcher and Sons, Camera House, Farringdon Avenue, E.C., issue a mounting paper closely corresponding with your sample.

Book on Miniature Painting.—I shall feel greatly obliged if you will tell me through your columns the best book I can get for painting miniature photographs in water-colour.—L. Parker.

A shilling handbook published by Winsor and Newton, Rathbone Place, W.C.

Portable Studio.—Can you give me the name of any firm that supply portable studios. If possible, I am desirous of hiring one for a short period.—G. W. S.

See the firms named in reply to X. Y. Z.; but we think you will not be able to hire a studio.

Celluloid.—I would be extremely obliged if you will give me the address of a firm who will supply me with a small quantity of clear celluloid. I require it for making varnish. I have tried several places, but have not been able to procure it. Will you please reply in your next issue if possible? We do not use films, so are unable to use spoils.—H. S. Ash.

S. Guiterman and Co., 35-36, Aldermanbury, London, E.C.

Soft Focus.—Can you tell me the variations of a Heliar lens by altering the combination? My object is diffusion. Is this possible?—Norman.

You must use the Heliar lens complete and intact. There is no perceptible amount of diffusion to be obtained by unscrewing either of the combinations. The Dallmeyer portrait and $f/4$ Stigmatic lenses and the Cooke portrait lens have adjustments for securing "soft focus."

Press Photography.—I want to take a snapshot of a topical event. Is it absolutely necessary that I should send up a bromide enlargement to an editor? Please state the general way of procedure.—F. A. Moy.

Prints should usually be half-plate in size. All the better if whole-plate. It depends on the importance of the subject. You must judge for yourself from the size of the blocks in the paper, making your print about 50 per cent. larger than the block is likely to be.

Chromium Intensification.—Ought the bleaching of a negative for chromium intensification to be done in the dark-room or not?—*vide* page 744 of this year's "Almanac."—J. E. Gubbins.

It does not matter at all. The whole process can be carried out in either light or darkness, but it is advisable to avoid very bright light, such as sunlight or arc light, as either may solarise the image and render it undevelopable. Ordinary diffused daylight will not matter at all, provided, of course, that the bleached plate is not exposed to it for a very long time.

Flexible Lantern Screen.—Kindly tell me a mixture which we can apply to linen so that same will roll for use as a lantern screen.—Ludwig and Salmon.

A mixture which has been recommended is as follows:—

| | |
|---|---|
| Glycerine | 1 lb. |
| White glue | 1 lb. |
| Zinc oxide, French | 2 lb. |
| Hot water | 1 gal. |

Apply while hot, stretching the linen on a smooth surface while doing the work and also during drying.

Enlarged Negatives.—Having recently been securing some orders for large prints which are used by my customer in good numbers as advertisements on railway stations, I am anxious to use a method which is cheaper, both in materials and labour, than separately enlarging each one. Moreover, my customer prefers a print of the P.O.P. tone, and I would ask if you can suggest making a large negative and printing from that. Any hints will be gratefully received.—Estament.

You will not find P.O.P. from a paper negative work out very much cheaper than bromide enlargements, but if you choose a semi-matt P.O.P. you can use the enlarged paper negative satisfactorily for supplying your customer's requirements. See the article by Mr. Thompson on another page.

Binding Lantern Slides.—I should like to know the best adhesive for coating binding strips for lantern slides and other large transparencies, also passe-partouts. Have tried some of the commercial pastes, and also a gelatine mountant, such as I usually use for prints, but I find a difficulty in getting the binders to stick flat.—G. F.

There is nothing better than fish-glue, which can be coated over large sheets, which are then cut up into strips or may be applied at the time of use. Buy the ordinary fish-glue sold for process work, or in a cheaper form as an adhesive, and thin it down with water. Your dealer should be able to supply you with commercial lantern binding in roll prepared with a fish-glue adhesive.

Autochromes.—Can you please let me know what shall I do with twenty dozens of Lumière Autochrome plates which are marked to be used till April, 1911? I understand that if the plates were not used freshly they will not give good result. Is there any way either to refresh the Autochrome plates, or can the firm of Lumière accept any old plates and supply a fresh batch instead?—A. Yousef (Cairo).

In July, 1910, we used some Autochrome plates that were marked to be used up to September, 1909, and found them to be in quite good condition, excepting that they had gone slightly around the margins. Your plates should, therefore, be quite serviceable. We know of no treatment for restoring stale Autochromes, while we are quite certain that you cannot exchange them for fresh ones.

Books on Photography.—Could you oblige me with the information as to where I may find in a simple and concise form information on the H. and D. system of measuring plate-speed, also the methods of making and using a pinhole in place of a lens. I shall be glad, too, to have your opinion as to the best small book which I could obtain at a moderate price on the history of photography. I do not want a large treatise, but just something which will give me an idea of the invention of the art.—Art-Science.

The following numbers of the "Photo-Miniature," 6d. net, from George Routledge and Co., 68, Carter Lane, E.C. :—No. 56, "The Hurter and Driffield System." No. 70, "Advanced Pinhole Photography," and No. 60, "Who Discovered Photography?"

Prints on Glass.—I have an order for a lot of landscape views, which my customer says are to be opalines. I have written to him asking what he means, and he replies, "Paper prints on glass." Should be glad of some advice, as I am in the dark as to the kind of print to do.—Short Reader.

An opaline is a print on P.O.P. or other gelatine paper squeegeed down into optical contact with a piece of glass. If the prints have not been alumed or otherwise hardened, it is sufficient to squeegee them to the clean glass plates just as they come from the last wash water. But if they have been hardened, or have been made on a hard-surfaced paper, they should be given a soak for a few minutes in a thin solution of gelatine, in which the glass plates are likewise immersed, the prints pressed into contact, removed together, and squeegeed down. It is usual then to glue a strut-back to the back of the prints, when dry. All the materials can be got from any of the larger photographic houses, such as Fallowfield.

Studio and Studio Lens.—Will you kindly advise *re* the following :—1. We have erected a studio, 26 ft. x 11 ft., the *whole* of roof clear glazed, side light to a foot from floor, 13 ft. wide; glazed with rough rolled glass. What curtains should we use? Please state materials and the two colours (whether dark on top or underneath). 2. Please give name of most suitable lens, price about five to six pounds, that can be used for all kinds of portraiture and groups.—Don.

1. You will require two sets of curtains for the roof, one of dark green or dark blue sateen and the other of white nainsook or jaconet, running on wires in two rows with a good overlap, the white set beneath. The side curtains should be of similar materials, in two rows, one extending from the bottom of window to 4 ft. 6 in. from the floor, and the other from the ridge to overlap the lower set by about 6 in. The sunny side of the roof should be permanently blocked up. 2. A Dallmeyer 3 D portrait and group lens would be excellent for your purpose, and can be bought second-hand for the price you mention. You would require a smaller lens for full-length C.D.V.

Enlargements as Backgrounds.—Kindly let me know if an enlargement, 6 ft. by 4 ft., mounted on canvas stretcher, would make a good background for three-quarter-length figures and busts. I would like to make a few pretty local scenes, also some interiors, carved oak panelling, fireplace, etc. 1. Do you think it practical? 2. If practical, in making negatives for the enlargements, would you advise (*a*) sharp foreground and distance out of focus; (*b*) sharp all over; (*c*) sharp negative thrown out of focus when making enlargement? Any further information you can give *re* same I will be much obliged for. If any other pro.'s have done anything of the sort, I should be glad to have their opinions of same, if they would be good enough—A. L. Cranch (Abertillery).

1. Certainly, it is practical, but extremely unadvisable, because the enlargement of this size will most likely be hard, and will contain too much chalky detail. A better plan, we think, is to get the grounds painted from the photographs by one of the firms named under "Backgrounds" on page 1139 of the "Almanac." But if you try the process we advise you to start with as large a negative as you can make or use, and to produce it soft in both gradation and definition, using for the latter a lens with some spherical and chromatic aberration, such as the "Anachromatic," sold by A. E. Staley and Co.

Anthracite Stoves.—The work-room which I have to use as a dark-room in these old-fashioned premises is a deep, dry cellar, which even in summer time is none too warm, and the greater part of the year uncomfortably cold. Seeing the remarks the other week in the "Journal" on anthracite stoves, I have thought of putting in one of these, but would like your opinion on two points: 1. Shall I require a great amount of draught? There is no stove register in the cellar, and I should have to take an iron pipe up through a window and a short distance up the side of the house, and am afraid that this would be insufficient for burning a fuel like anthracite. 2. Does the stove give off any fumes which are likely to prove injurious to plates or prints in stock or prints hung up to dry?—Fule.

1. You will have no difficulty at all on this score; all the commercial stoves are made so that the draught can be increased as much as necessary, and the difficulty frequently is to damp down the combustion of the fuel. Assuming your cellar is about nine or ten feet in height, if you carry the pipe about ten feet above ground, this should be ample for all purposes. 2. None whatever; the stove may occasionally give rise to a slight back pressure of gas, but even this will be quite without action on photographic materials, and, of course, much less on photographic prints.

Numbering Negatives.—Will you kindly advise me, through your journal, the best and simplest way of numbering plates?—i.e., the sitter has a numbered receipt, which he shows the operator, who notes the number, and, when changing the plate exposed upon that subject, marks in some way upon the film the number tallying with the sitter's receipt. Would a pencilled number be distinguishable after development, or is there some other means of marking them?—J. M.

There was formerly a repeating back on the market with which each number was printed on the negative at the time of exposure from a stencil set of figures, but we do not know if anything of the kind is still obtainable. An ordinary pencil mark can be used, and the number will be quite legible after development, when it can be inked over. This is our ordinary procedure. A copying-ink pencil can also be used, but sometimes the colour spreads a little in development. Another method that we use for outdoor work is to nick the edges of the rebates of the dark-slides, so that each slide records on the plate its own number. At the time of exposure the slide number is recorded, and when the plate is developed the subject can be identified by the slide number, after which it can be marked in ink with a general-register number. This method is very simple and certain with a number of slides in use, but it is not applicable when the same slide is used repeatedly in studio work. In such a case we should advise pencil marking before exposure, or else directly after it.

Portable Studio.—Having been very successful in outdoor portraiture, and having a good business training, I contemplate having a cheap movable studio erected, and, being somewhat of a novice in this direction, I should esteem it a favour if you would reply in your next issue *re* the following :—1. Should an 18 x 12 ft. studio give me a reasonable room to work in (it hardly being possible to have it larger)? 2. What height should it be? 3. Should both slopes of the roof be of glass, or only the north side? 4. And if this were so, should the slope with the glass side be longer than the other? 5. Do you know of anyone who would draw up plans, which I could submit to a builder; or perhaps give me advice *re* the building of same, as I am anxious that when I have it I should be able to have good portraits in it? I have a book on studio construction, but it does not seem to give clearly what I require.—X. Y. Z.

1. Eighteen feet is rather short for a studio, if full-length pictures are to be taken, as you will have to get the sitter and camera very close to their respective ends, but you can manage with it. 2. Eight feet to the eaves and about 11 ft. to the ridge. 3. Only the north side should be of glass, and 3 ft. of this at each end may be solid. This will save blinds and risk of leakage. 4. No, the ridge may be equi-distant from both sides. 5. We can give you the address of a gentleman who would draw you plans for a studio, but most of the horticultural builders have stock models, which can be obtained much more cheaply than special designs. E. G. Walton and Co., of Newark, Boulton and Paul, Norwich, and Cooper, of Old Kent Road, London, all list studios, or J. Priest and Son, Bristol, might suit you.

**Telephoto Lens** (7in. Goerz-Dagor in front).—Three negatives are taken, one each with 1⅞in., 3in., 4in. negatives, camera so extended as to secure same size image in each case. The number of magnifications in each case will, of course, be different, but, presuming the front lens is stopped down in each case to an extent which will make it equal in relation to the varying focal lengths produced, say equal to *f*/64 in each case, then what difference may be looked for in the resulting negative as a consequence of the use of the high, medium, and low powers to obtain the same sized image? It would perhaps be better to be definite and say we want six magnifications (of the normal given by the 7in. lens) in each of the three cases. We shall thus have extensions in use of 9⅜in. for the 1⅞in. negative, 15in. for the 3in. negative, and 20in. for the 4in. negative. I hope you will not think I am setting a conundrum for fun, and shall much value your opinion.—N. F. H.

The difference will lie in the circles of illumination. As these depend to some extent upon the *diameter* of the negative lens, we cannot state what they will be in the three cases you mention, but you can make an approximate calculation for yourself by the following simple formula :—If $M$=magnification, $f^1$=focal length of positive, $f^2$=focal length of negative, and $d^2$=diameter of negative, then the circle of illumination, ignoring the effective aperture, will be $(M-1)\left(\frac{f^1d^2}{f^1-f^2}\right)$. Talking of aperture, your question shows that you are under a misapprehension as to the manner in which both aperture and focal length are arrived at in telephotographic calculations. In the three cases you mention there will be no variation in the focal lengths produced. The magnification being six throughout, the focal length in each case will be $f^1 \times M=42$. And the aperture will be the aperture to which the positive is stopped multiplied by M. In practice you might find it necessary, when using your 1⅞ in. negative, to stop the positive down to *f*/16, in order to obtain the same definition at six magnifications as you would get with a 4 in. negative at *f*/11. But much depends upon the size of plate used, and, of course, on the quality of the negative lenses.

**Copyright.**—Your comment on the following would perhaps interest other photographers as well as myself. I am in the habit of supplying photographs to the local paper. In some cases I am generally told of certain events coming off, and that a photograph might be taken for press publication from me if of sufficient importance. I take a negative of a group on my own account, and the paper pays for use of photograph, if accepted, while I also sell copies to group. The other day I was asked if I would like to take a photograph of a certain high personage, who reputedly entertained strong objections to being photographed. The photograph was to appear in the paper. I said, "Certainly, I would be glad to take the photograph." A special envoy from the paper went up to get the desired permission for a sitting and publication, with the result that I took the photograph satisfactorily to all parties. The paper now claims copyright, on the ground that they commissioned me to take photograph. My objection to that is (1) I took the photograph simply to supply them with a print for publication, and they to pay me for same, like previous practice. (2) There was no price mentioned for payment of sitting, and no agreement or undertaking of any kind that I was to take the negative, and that it would be their property; but I was told afterwards that £1 1s. would be paid for their using it as supplement. (3) Who can claim copyright, and can it not be joint copyright? (4) If they can claim copyright, what would be a fair charge? If they can stop me from selling postcards and photographs this will mean a loss to me, as I cannot expect another sitting, and, as they might bring out postcards themselves, a fair charge should be made. Three negatives were made. Can claim be laid to the three, though they only claim one? They tell me verbally I can dispose of photographs to the public, but they could easily withdraw that if it suits them. I take my stand on my previous practice. They knew perfectly well that I would not have taken it and copyright to be vested in them.—Press Photographer.

The copyright cannot be held jointly; it belongs to one or other of you. The question is: Were you acting in a free lance capacity as in previous cases, or as a photographer of the paper? The fact that the paper obtained the permission for the photograph to be taken is strong evidence that you were working for them. The fact that they took action to have you do the work distinguishes the job from others where they simply indicated certain events which you might take or leave as you chose. We rather think that, in the absence of any letters or substantial evidence to the contrary, it would be taken that you were working for them, and that the copyright is therefore theirs. In this case it will be theirs in all the negatives made. We should suggest that you offer to accept £1 1s. for the print supplied for reproduction, and endeavour to have assigned to you the rights in, say, one of the negatives for registration as postcards.

◆

**Colouring Lantern Slides.**—At a meeting of the Royal Microscopical Society, held on April 19, Dr. E. J. Spitta exhibited a large number of lantern slides, almost all of photo-micrographic subjects, coloured by a method which was the outcome of long experiments made by Dr. Spitta, in collaboration with a lady artist. Dr. Spitta showed the extreme transparency of colouring which they had been able to secure, coupled with remarkable delicacy and fidelity. In a number of the examples the rendering of texture and of fine coloured details in the subject was most excellently obtained, and a critical audience frequently testified its appreciation of the results shown. The method adopted was not made public, but Dr. Spitta stated that the artist was prepared to execute commissions.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2661. Vol. LVIII. FRIDAY, MAY 5, 1911. Price Twopence.

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## SUMMARY.

Professional photographers should note the further particulars of the P.P.A. Congress, which opens on Monday week, May 15. (P. 337.)

Members of the photographic trade are invited to attend the Congress dinner to be held on Thursday, May 18, at the Criterion Restaurant. (P. 350.)

Some notes on a number of the portraits at the Royal Academy will be found on page 338.

A clause of the Copyright Bill dealing with the reproduction of works of sculpture, etc., has been modified in Committee. (P. 349.)

We regret to record the death of M. A. Lumière, founder of the famous Lyons firm. (P. 343.)

We reprint this week the first part of a recent paper by Mr. Chapman Jones on the relation between the size of the particle and the colour of the image recently read before the Royal Photographic Society. (P. 339.)

The record of an old experiment in the use of hydroquinone developer made up without sulphite is the subject of a letter from a correspondent on page 350.

An album for colour transparencies, methods of producing distorted photographs, developing tanks, etc., are included among "Patents of the Week." (P. 343.)

### "Colour Photography" Supplement.

M. F. Monpillard, in a recent paper before the French Photographic Society, has described an attachment to a roller-blind shutter for the purpose of actuating the latter at the same moment as firing a flash-powder. (P. 33.)

A number of practical hints on Autochrome work are given by Professor Namias in a recent paper. (P. 38.)

The Comte de Dalmas recommends development, etc., of Autochromes while on tour. (P. 34.)

The daily press of Tuesday and Wednesday last contained accounts of a method of colour photography on paper which is being worked by the Dover Street Studios. (P. 39.)

A developing tank for Autochromes is described on page 40.

M. V. Crémier has described recent experiments with the Dufay screen-plate. (P. 37.)

## EX CATHEDRA.

**Next Week's "B.J."** The three exhibitions, which open in London during next week, will be fully dealt with in the next issue of "The British Journal of Photography," namely, that for May 12. The Royal, which opens at Prince's Skating Rink on Tuesday next, May 9, and the Salon of the London Secession, to which the public will be admitted on Wednesday, May 10, at 29, Newman Street, W., will be the subjects of our reviews. As the Arts and Crafts Exhibition at the Horticultural Hall, Westminster, opens on Friday, May 12, and closes on May 20, we shall deal with it by describing, from information kindly supplied by the exhibitors, the novelties, of which there are a good many, of particular interest to professional photographers. Many of those from the provinces visiting the London exhibitions will doubtless do so during the period during which the Arts and Crafts Show is open, and the Congress of the Professional Photographers' Association in full swing, and to all these we can recommend a study of the pages of the "British Journal" for May 12 as a useful guide to all three exhibitions.

* * *

**The P.P.A. Congress.** A further circular has been issued by the Professional Photographers' Association describing in detail the programme of the Congress, which will be held at the Photographic Arts and Crafts Exhibition, Horticultural Hall, Westminster, from May 15 to 19. On the evening of Monday, the President, Mr. F. P. Moffat, will deliver his address, and Mr. W. Crooke, of Edinburgh, will give a short account of his recent tour in America, and of his impressions of American professional photographers. The greater part of Tuesday will be occupied by a visit to the works of the Kodak Company at Harrow, to which members will travel in special saloons from Euston as the guests of the Kodak Company, reaching Harrow in time for lunch. At the evening lecture Mr. T. C. Turner, of Hull, will deal with the use of artificial light in photography. On Wednesday, the members of the Congress will visit the Ensign factory at Walthamstow, travelling in special saloon carriages from Liverpool Street Station as Messrs. Houghton's guests. The lecture in the evening is by Mr. Drinkwater Butt, who will illustrate his subject, "The Studio: Its Construction and Decoration," by means of a large number of lantern-slides, including photographs of studios possessing notable decorative or constructive features. The afternoon of Thursday is set apart for a semi-informal meeting for the discussion of the business side of photography, whilst the Congress dinner, to which members of the photographic trade are also invited, will be held at the Criterion Restaurant, at seven p.m. The last day of the Congress, Friday, May 19, will be devoted, in the afternoon, to a visit to the Platinotype Company's works at Penge, and in the evening to two papers, one by Mr. Pirie McDonald, of New York, on "The Photography of Men," and the other by Mr. Edgar Clifton, on "The Lens in the Studio." It must be understood that the meetings of the Congress and the visits to the leading centres of photographic manufacture are strictly confined to members of the Professional Photographers' Association. All those desirous of taking advantage of the unique privileges set forth in the programme and of the opportunities of meeting with their professional brethren from all parts of the United Kingdom should apply to the hon. secretary, Mr. A. Mackie, 89, Albany Street, London, N.W.

* * *

**Chromium Compounds.** In a letter which appears an another page Mr. Manly appears to have misunderstood our notes of April 28. The $Cr_3O_4$ product was not discovered by Piper and Carnegie; it is a well-known, but little understood, compound mentioned in all the text-books. It simply happened to be the only one with which the compound found in the intensified image had any common characteristics. Also, the time and study to which we referred was not devoted to the almost hopeless task of determining the composition of the compound found, but to that of comparing it with other specially prepared compounds, work which involves the continual observation of rates of decomposition and of colour changes, etc., during long periods. We understand that these observations extended over several months. We may point out that such compounds as these cannot be accurately analysed, and of the large number of chromium and oxygen compounds known to exist $Cr_2O_3$ is the only one that is really understood. $CrO_2$ is a well-known compound, but its exact composition is uncertain, and it is still doubtful whether it is an oxide or a chromate, though the latter is the favoured theory. CrO exists, but is a most impossible thing to deal with, as it changes in a few seconds to the mysterious $Cr_3O_4$ compound, which is itself very unstable, and exists only in a continual state of change. Whether its formula is rightly expressed is a matter of doubt, but it is a useful symbol. Here we have only mentioned the four best-known chromium compounds out of a large number of others, which may be combinations of the better-known compounds, and possibly may not be oxides, but chromates. In regard to the compound produced in the carbon process, we are not aware that basic chromate of chromium is the generally accepted theory. We have more often heard the compound referred to as chromic oxide. Chromate of chromium is another name for the $CrO_2$ compound to which we have already referred. If this is a chromate, its proper formula is $Cr_3O_6$ instead of $CrO_2$ and nowadays it is generally considered to be a chromate. It is produced by the reduction of bichromate with hypo, and is therefore generally looked for when a bichromate solution is reduced by any means. In the case of chromium intensification, however, the compound seems to be reduced from a chloro-chromate. A peculiarity of most, if not all, the chromium compounds is that if they are dissolved in an acid and then an alkali is added the original compound is reprecipitated. Thus, if we take the trioxode, the dioxide, and the tetroxide, and dissolve each in hydrochloric acid, the addition of ammonia will bring down the trioxide, dioxide, and tetroxide again. By this means we can separate the various compounds from gelatine or silver and then attempt to identify them with similar compounds produced more directly.

## THE ROYAL ACADEMY.

One would think that the opportunities of a Coronation year would spur on painters to surpass themselves. That surmise is sadly proved incorrect by the present exhibition at Burlington House. We do not remember such a poor show for many years. It may be possible that the Academicians have assumed that the crowds of foreigners and provincials that will swarm over London in June will be regaled to the best advantage, pecuniary and otherwise, upon commonplaces, upon catch-penny effect, "cheap" colour schemes, and pretty-pretty finish. If that is so, we, on our part, can only deplore the fact that British art has thus deliberately offered to its largest market its less superior goods.

Only one artist of pre-eminence has been true to himself and his art, and has given of his best, and that is George Clausen, R.A., who thus shows himself to be an artist and not a shopkeeper. The year 1911 will be known as a Clausen year, and his works will save the present situation. Only one of them comes within the scope of this article, as the others are all landscapes; but "The Maiden" (357), which is presumably a portrait, claims our admiration as a supreme example of style. It represents a half-length of a partially clothed girl, who stands partly within the shadow of a dull red curtain at her left. The colour is chaste and simple, and the treatment is classic and "large" at the same time that its subject is charming.

There are three other portraits that stand out in merit, and they are by William Orpen, A., Philip A. Lázlo, and Sir Hubert von Herkomer, R.A., respectively. The first is of "Claude E. S. Bishop, Esq." (771), and on account of its freedom and largeness of treatment we think it the high-water mark of Mr. Orpen's portraiture. The sitter is in full light, so that there are no shadowy corners as in the conventional way. He is clad in a greenish lounge suit, and sits with an easy pose in an arm-chair, whilst a brightly coloured window-curtain or two supply a background. The face has much character and animation, and all is open, airy, and clear. Mr. Lázlo's portrait is more conventional; but is, nevertheless, a triumph in its way. "The Lady Wantage" (338), in her carved oak chair, with her hand upon a walking-stick, her fine mass of silvery hair, and her intense and absorbed expression, calls up every association of ancestral tradition and baronial romance. The background, a dark and lordly interior, goes well with the lady's seeming cogitations of skeletons in cupboards, and so forth. Needless to say, the painting is sound and direct. Sir von Herkomer's great achievement is an intimate and engaging portrait of "The Admiral of the Fleet, The Lord Fisher of Kilverstone, O.M., G.C.B., G.C.V.O." (163). It possesses none of the evidences of haste and slightness that this artist's work displays at times, and it will certainly do much to underpin his reputation in this respect.

J. H. F. Bacon, A., has also done well this year, perhaps better than usual. His "A. G. Temple, Esq." (388) is Hals-like in its mastery and directness. In "The Earl of Lonsdale" (134) the painter has done well with the military uniform of the Earl, whose jolly face gives him the air of an early nineteenth-century soldier, with nothing of the dandy in him. It is a forcible and lively full-length and an excellent likeness. In "Henry Cecil Buckingham, Esq., Sheriff of London" (280), Mr. Bacon has made an error of judgment in allowing a red robe to appear in clamorous prominence right in a corner of the picture. Of course, there are other fine portraits; but they do not rise above the average of the work of recent years. There is but one Sargent, namely, the portrait of "The Archbishop of Canterbury" (206), and that, alas, is "painty" to a disappointing degree, and without the master's usual charm. Frank Dicksee, R.A., has several of his society ladies, handsome, beautifully attired, charmingly posed, and generally immaculate in their exhaustive painting and the "sweetness" of their finish. In a different way, the same might be said of J. J. Shannon, R.A., whose "Sholto and Angus, sons of Douglas Vickers, Esq." (68), is like another version of the Princes in the Tower, and is in the artist's flimsy vein. "Lady Hindlip" (151) is his nicest work. It has a beautiful pose. The lady leans forward over some structure covered with drapery, supporting herself upon her elbows. The picture composes finely. This recalls to us something similar that we should, in fairness, say of F. Dicksee's "Mrs. Archibald Walker" (270), which is graceful in pose and charming in the management of the interlocked fingers. He has also used to advantage, as regards form and colour, a fur mantle, lined with white satin, which slips from the sitter's shoulders.

The best effort of A. S. Cope, R.A., is the handsome and charming "Mrs. Alexander" (50), a half-length, with a garden or park background, and we must commend the true boyish attitude—elbows thrust back upon the table against which he leans, of "Keith, son of Robt. L. Moss, Esq." (65), which comes from Isaac Cohen. The most startling of all the portraits, however, is the immense full-size equestrian portrait, called "The Amazon" (85), by John Lavery, A. It is statuesque to the last degree, horse and rider alike being in strict profile. In spite of her modern costume, the horsewoman holds upright in her hand a long spear. The effect is of brilliant sunshine falling from above and slightly behind the figure, which is placed upon a hill-top. Behind is a far-stretching landscape. No one will deny the power and cleverness of this great work; but we doubt whether it will live to be loved.

In the water-colours Miss Mary Gow repeats her successes of former years, to which we have more than once drawn attention, and amongst the miniatures we are pleased to notice two charming works by Mrs. A. L. Speaight.

# ON THE RELATIONSHIP BETWEEN THE SIZE OF THE PARTICLE AND THE COLOUR OF THE IMAGE.

(A Paper read before the Royal Photographic Society, and reprinted in the Society's Journal.)

It is not unusual in photography to get a coloured image when the material that forms the image, if taken in bulk, has either no colour or a different colour. Coloured images can be produced in lantern slides from a silver salt emulsion by development only, so that presumably the image consists of silver particles, and silver itself is not coloured. I show a gold print made by coating one surface of the paper with ordinary gold chloride solution, drying it, and exposing it under a negative for one hour in the shade. No effect was visible, but after remaining apart from the negative for nine days in the dark the detail began to show, and after remaining for four months in the dark the image had good density. This was in the middle of the year 1885, and now, after twenty-six years, the image is still visible, though the surface of the paper is covered all over with a good deposit of gold. The gold is mostly purple, though reddish in parts, while gold itself is yellow. In another example the gold had been reduced by ferrous oxalate after the manner of preparing a platinum print, varying the conditions so as to get in one case the reddest, and on the other hand the bluest, deposit that I could. This possibility of getting gold deposits either red or blue is of first importance in gold toning, as with the blue deposit the maximum colour-change is produced with a minimum of precious metal, while with the red deposit the toning power of the print may be exhausted, the maximum amount of gold may be deposited, but with very little modification of the red colour of the print. Finely divided platinum is obtained as a reddish-brown or sepia deposit in sepia platinum prints, and of any colour between this and a full black, though platinum has a colour very similar to lead. Amorphous carbon is black, but if very finely divided, as in Indian ink and some other forms of lamp black, it may have a distinct brown or reddish tint. These substances can be obtained in a finely divided condition in liquid media, and I show a bottle containing water coloured red with gold that is in such small particles that standing on the shelf for thirty years has not caused the particles to subside.

It is perfectly clear that in these coloured substances the material is in a finely divided condition, and the colour has often, for a long time past, been ascribed to the smallness of the particles, though the proof that it is due to this may not appear to be very direct.

The production of colour by small particles is an old problem, and has engaged the attention of innumerable investigators. Experiment seems to show that it matters little if anything at all of what substance the particles consist. It is supposed that they may be liquid or solid. They may be metals or carbonaceous. Apparently they may be water or complex organic substances.

About the year 1869, and a little later than that, the subject engaged the attention of Professor Tyndall, and also of Lord Rayleigh, especially in connection with the blue colour of the sky. Tyndall produced clouds of small particles from the vapours of many organic substances, and rendered the clouds visible by passing a beam of strong light through them, as the motes are visible in a sunbeam.

The idea as to the actual size of the particles that produce colour effects appears to have been very vague. Lord Rayleigh gave reasons for the conclusion that a large proportion of the light of the sky might be due to scattering by the very molecules of the air themselves. The particles could not well be smaller than this. Again we read that "the standard of linear dimension with reference to which the particles are called small is the wave-length of light." In some experiments the particles had grown to such a size that their diameter would bear "no inconsiderable proportion to the wave-length of light," when the light scattered or reflected by them lost most of its apparent colour. Tyndall says of his method of producing clouds, that is, by passing a powerful beam of light through the vapour of the given substance (generally an easily volatile liquid) mixed with air, that he has "no reason to doubt that particles may be thus obtained whose diameters constitute but a very small fraction of the length of a wave of violet light."

During the last ten years or so a great deal of attention has been paid to the properties of liquids containing small particles suspended in them, that is colloidal solutions. This is doubtless largely due to the method of rendering visible ultra-microscopic particles by the method elaborated by Drs. Siedentopf and Zsigmondy. This method is on the same principle as that employed by Tyndall, namely, the sending of a strong beam of light through the medium, but it is more refined in detail, and under such control that the number of particles rendered visible can be counted. It is obvious that if the total quantity of the material of the particles in a known volume of a liquid is known—and this, of course, is very easily ascertained—and if the number of particles in a unit volume is also known, then the average size of the particles can be calculated. Working on these lines, and especially with gold, as that is a convenient substance to employ, various investigators have from time to time given the sizes of the particles associated with different colours. But we find almost alternating with these estimates, the statement that the colour is independent of the size of the particle. Zsigmondy, for example, in his recent manual on colloids, says that results "confirm, in agreement with Faraday, the statement heretofore often made, that there is no recognisable interdependence between the colour and size of the gold particles in ruby glass and those in gold hydrosols, and that therefore no inference as to the size of the particles can be drawn from the nature of the absorption curve of light rays." Again, he says, "We may regard as ill-conceived any attempt to calculate from the light absorption the size of the particles in metal hydrosols."

The method just referred to of getting at the size of the particles obviously has severe limitations, and may lead to much error. For example, if the particles are of all degrees of smallness, the brighter the light employed the greater the number that can be detected and counted. So that the figure obtained for the average size depends upon the light. Again, suppose, by way of illustration, that a liquid containing particles of uniform size shows certain colour effects, then if to this is added a considerable quantity of particles too small to produce any colour phenomena, though not so small as to be invisible by ultra-microscopical methods, we shall now get a smaller average size for the particles, and may therefore argue that the same colour is produced by particles of very different sizes, though really the colour is produced by particles of exactly the same size in both cases. But if molecules themselves produce colour effects by selective scattering, no particles can be too small to be effective. I hope, however, to show that particles may be too small to produce a colour effect. It may be argued that the great bulk of the particles must at least approximate to the average size as found by the concentration and counting method, but I hope to show that a very few particles indeed are sufficient to give notable colour effects, and that therefore it may be just the few larger particles alone that are effective.

It is a well-known and common experimental fact that when the particles in a red colloidal gold solution coalesce, the particles gradually increasing in size, the colour of the liquid gradually changes to blue, and that soon after this the particles become too large to remain in suspension. I do not think that this change of colour in this course of events has ever been disputed. An unprejudiced and superficial observer would therefore imagine that the particles giving a blue liquid were larger than those giving a red liquid, and that the difference between their sizes was not remarkably great.

Professor Zsigmondy, finding by the concentration and counting method that the same colour may be associated with particles of different sizes, urges that the cause of the colour must not be sought for in the sizes of the particles, but rather in the distances between them. If it is not the size nor the material, this seems to be the only alternative. He points out that a red colloidal gold solution with gelatine may become blue on drying, and will again become red if wetted. On drying, the particles are brought closer together; on wetting, they are separated again. I have repeatedly noticed, and I dare say many others have, changes of colour in gelatine films by drying and wetting. Certainly here it seems that it is the distance apart that settles what the colour shall be. But this distance may have only an indirect influence. It is easy to imagine, when the distances between the particles is considerably reduced, that the same particles, that were at first far enough apart to produce an independent effect, may be brought so near together that the distance between them is negligible for this purpose, and that although they do not actually coalesce, because they are held in a more or less rigid medium, the little group behaves, so far as light is concerned, as if it were one particle. So it may be, even in this case, the size of the effective particles that determines the colour, the change of distance being a mere accident of the experiment, and influencing the colour only in a secondary sense. I shall show that the distance between the particles may vary very greatly indeed for the same colour, and may be the same for different colours, but that directly the size of the particles is altered the colour changes.

## My Method.

My method of investigation is very simple, and I think essentially different from any preceding method. My particles are in gelatine films, therefore they do not move as particles in liquids do; the distance from one to another is fixed and unchangeable, therefore it is possible to measure it with accuracy. I do not use any so-called "ultra-microscopical" method, but simply enlarge the particles as they stand by definite steps, noting the effect, and continue to enlarge them until they are of measurable size. Knowing how much I have enlarged them, the calculation of the size of the original particles is easy. So far as I know, this is the first attempt, or successful attempt, to actually measure ultra-microscopic particles.

I have used, to begin with, only silver particles, modifying them as stated below. My results tend to indicate that the colour effects are independent of the nature of the material of the particles, and this I believe to be unmistakably the view of the earlier workers. This view appears still to be held in a general sense, though Zsigmondy says that the substance of the metal is not without influence on the colour of the diffracted light, gold always giving red, green, and yellow, palladium and platinum mostly white or white-grey, and with silver the most variously coloured particles with a brilliant play of colours. Concerning a colloidal silver solution prepared by Bredig's method, he says, "It can hardly be imagined what a beautiful colour play this unsightly fluid offers upon ultra-microscopic examination. Blue, violet, yellow, green, and red particles of various shades and rare brilliancy of colour move in endless array." I want to suggest that though the material of the particles, and perhaps their shapes, may have something to do with the brilliancy of the scattered (or reflected) light, the colour, or want of it, is due to their sizes, and the different colours to different sizes. But this is a large question, to which my work is only a small contribution.

I enlarge the silver particles by adding mercury to them, and I see no difference between pure silver particles and particles containing more mercury than silver, if their size is the same. The mercury is added in definite proportions by treating the film containing the particles first with mercuric chloride and then with ferrous oxalate, with precautions that I have often described in connection with intensification. Each treatment adds one atom of mercury to each atom of silver, or of silver and of mercury, that is present. We therefore get a series—

$Ag$. $AgHg$. $AgHg_3$. $AgHg_7$. $AgHg_{15}$, etc.

## Qualitative Results.

I want to lay stress on the qualitative results, although this attitude is against the general tendency of the day. In all cases qualitative work must precede quantitative, and it has a peculiar value in its directness and freedom from the complications that refinements introduce. If one plate is much darker than another when looked at casually, no amount of measurement will make it other than darker. One may argue for a generation as to how much darker it is, and I am not drawing altogether on my imagination when I say that in this argument the fact that it really is darker may be forgotten. Qualitative results have often a special importance when compared with quantitative results, because they may be more simple and direct.

To discover or eliminate any effect of the method of production, I obtained my silver particles by different processes: (1) Wratten's bromide lantern plates exposed and developed; (2) Paget phosphate lantern plates exposed and developed; (3) Paget phosphate plates exposed but not developed—that is, printed out; (4) Paget ordinary slow lantern plates exposed and developed. Thus we have silver particles from silver bromide, silver chlorobromide and silver phosphate, so-called "physical" as well as "chemical" development, and printing out. Every plate was fixed in alkaline thiosulphate (the use of which I have recommended for so long), and washed, using suitable precautions to get clean plates ("pure silver in clean gelatine").

I have not found the method of production of the silver particles to affect the result. In all cases the enlargement of the particles changes the colour of the transmitted light, and always in the same direction. A yellow film becomes either brownish yellow, orange, a purplish colour, or pink. An orange becomes brownish or purplish grey, a pink becomes a brownish red, and the deeper browns, purples, and reds become grey. As the particles are enlarged the light that is lost (scattered or perhaps partly absorbed) increases in wave-length. Granting that it is the size of the particles that govern the light-effect in the direction stated, by getting smaller particles still there should be no colour—the light lost being in the ultra-violet. This I have succeeded in doing. Such plates show no colour, under the microscope the film is quite transparent, with no sign of any particles. But the evidence that the particles are really there, and show no colour merely because they are too small, is complete, without resource to any measurements or other refinements of manipulation. By merely enlarging the particles the film transmits yellow light; by enlarging them again the transmitted light becomes a deeper yellow, then an orange or of a brownish tint, and finally grey, giving the same changes of colour, though beginning lower down in the scale, as the films showing pronounced colours to begin with. The distance from centre to centre of the particles remains the same throughout because the particles are fixed as to their positions. The actual distances between them is reduced as they are enlarged, but I shall show shortly to what an exceedingly insignificant extent this is. Again, films that obviously contain many more particles than others, judging by the intensity of the colour that they show and the method of preparation, may have the same colour as those of much feebler tint, and therefore presumably many fewer particles.

I think that these qualitative results show that Zsigmondy's warning is ill-founded when he says that "we may regard as ill-conceived any attempt to calculate from the light-absorption the size of the particles in metal hydrosols." And these results are distinctly opposed to Zsigmondy's suggestion that we must seek for the explanation of the colour effects in the distances that separate the particles, at least, so far as the metal particles that I have worked with are concerned. The general conclusion that it is the size of the particles that controls the colour effects are fully confirmed by measurements.

### Preliminary Measurement.

*The Indices of Refraction of Various Media.*—The measurement of these particles could not be undertaken directly, as there was not sufficient data available for the purpose. I could find no reference in the usual sources of information to the refractive index of gelatine. I tried several times to get a direct estimation, but failed to get the gelatine in a fit condition. The gelatine with the water that it would absorb was melted and filtered very many times until it was as clear as possible, and then evaporated slowly over sulphuric acid, in glass vessels of suitable but different shapes. By concentrating to about a tenth the bulk very tough jellies were obtained, but in all cases as soon as the gelatine began to get dry, it either left the surface of the glass or tore away the surface of the glass as it contracted. For these stiff jellies I got refractive indices for the D line of 1.388, 1.379, 1.396, 1.381, and 1.42. The last was the best, for I caught it just a few hours before it broke away the surface of the glass vessel. It is the index of refraction of perhaps the stiffest jelly that one can hope to obtain.

Being unable to get the index of refraction directly, I prepared mixtures of xylene and nitrobenzene in different proportions, determined the refractivity of each, and found the position of the gelatine in the series. The method was to immerse a fragment of the gelatine in the mixture and examine the edges of the fragment under the microscope, using oblique illumination. One edge is light and the other dark, and these effects are reversed, according to whether the index of refraction of the liquid is higher or lower than that of the gelatine. As the match gets near, the borders are coloured, because of the difference in dispersion. I also examined in the same way the gelatine of a Wratten's bromide lantern plate, actually used in the experiments, and of a Paget lantern plate, by dissolving away the silver deposit in the one case, and fixing out in the other, well washing, drying, and scraping away the film so as to leave a narrow strip or line of the coating. This method does not give such good results as the other, perhaps because the gelatine has glass on one side of it instead of being thoroughly immersed in the liquid.

Nelson's No. 1 and a hard "red cross" gelatine both came between 1.525 and 1.534. By the appearance, the hard gelatine was probably a little over 1.53, and the No. 1 as near to 1.53 as possible. The gelatines on the two plates were both between 1.516 and 1.525, the Wratten plate above the mean, that is, rather over 1.52, and the Paget plate below, that is, rather under 1.52. As these plates had had deposits removed from them, the film may have been a little spongy, or not quite so dry as the fresh gelatines. Apparently, any treatment such as they received would tend to lower the refractive index.

Therefore, I have taken the—

Refractive index of air-dried gelatine, as—1.53.

If the figure 1.52 were taken instead it would make no appreciable difference in my results.

The cedar-wood oil, used for the immersion of the objective, had a refractive index of 1.5180, as taken from the stock bottle, but the small quantity in a wooden capped bottle, as commonly employed, thickened by its exposure in this bottle for a few weeks, had an index of 1.5216.

An ordinary "cover glass," tested by the immersion method, had a refractive index of 1.52. Therefore the gelatine, the cedar-wood oil, and the cover glass may be, for our purpose, regarded as optically identical, any variation of refractive power being well under 1 per cent., and therefore negligible for this work.

*Measuring Thickness.*—The ordinary rule for finding the true thickness of a dense transparent medium from its apparent thickness, obtained by focussing the upper surface and then the under surface through the medium, is to multiply the observed figure by the refractive index of the medium. In ordinary microscopic practice I have found this method to give a low result, and I refrain at present from making any suggestion as to the cause of it. One part of the edge of a cover glass was marked, and its thickness measured in various ways—

| | |
|---|---|
| By a screw gauge of the common type .............. | .207 mm. |
| *Microscopically.*—1. With the edge of the cover towards the objective, by means of an eye-piece scale calibrated by a stage micrometer | .210 mm. |
| 2. Pressed into close contact with a glass slip and focussing in turn the upper surface of the cover and the upper surface of the slip working through air .............................. | .210 mm. |

There can be no doubt as to the thickness of this particular cover, as the micrometers used were distinct in the three cases, and the first was independent of the microscope. The following results were obtained in the order given by focussing the two surfaces of the cover in turn, working through the glass:—

| Objective. | Approximate N.A. | Apparent thickness. |
|---|---|---|
| inch. | | mm. |
| 1 | ·15 | ·127 |
| 1/4 | ·5 | ·127 |
| 1/4 | ·2 | ·132 |
| 1/12 | ·75 | ·124 |
| 1/8 | ·2 | ·126 |
| 1/6 | ·75 | ·125 |
| 1/12 | ·2 or under. | ·125 |
| 1/4 | ·5 | ·132 |
| 1/4 | ·2 | ·129 |
| 1/4 | ·6 | ·132 |
| 1/4 | ·15 | ·128 |
| 1 | ·15 | ·126 |
| | Average ... ... | ·128 |

The refractive index of this cover was 1.52, and the average observed apparent thickness multiplied by this gives .1946. By increasing this figure in the proportion of 12:13 we get .21 mm., which is the actual thickness. That this addition of one-twelfth gives the correct figure, I have confirmed on a Zeiss test-plate, where the thickness of the cover is indicated by the maker, and is therefore independent evidence of the real thickness.

*The Specific Gravities of the Amalgams Produced.*—It is necessary to know these in order to calculate the enlargement resulting from each operation. The specific gravity of silver is taken as 10.5, and that of mercury 13.55. The first amalgam, AgHg, I showed to the society in bulk last year. It is a quite solid powder. Its specific gravity, taken in water at 20 deg. C., and compared with water at 20 deg. C., I find to be 12.61. This figure has been confirmed, using xylene instead of water to eliminate the possibility of the water being slightly decomposed by the amalgam.

The second amalgam, $AgHg_3$, has not had its specific gravity estimated. It certainly contains a very large proportion of liquid mercury, that can be squeezed out of it by simple hand pressure.

Joule in 1863 subjected silver amalgams to a pressure of 72 tons to the square inch, and from the results of his experiments came to the conclusion that probably all the mercury in excess of AgHg was in the liquid state. More recent work indicates that the solid amalgam containing the maximum of mercury has the formula $Ag_3Hg_4$. A. Ogg in 1898 ("Zeitschrift für physikalische Chemie," xxvii, 302) compared the vapour pressures of various silver amalgams and pure mercury, and found that by starting with an excess of mercury there was a slight and constant difference until the mercury was reduced to the proportion expressed by the formula $Ag_3Hg_4$. At this stage there was a slight increase in the difference. But when the mercury was reduced to the proportion AgHg there was a sudden and large increase in the difference. This indicates that any mercury in excess of AgHg is much more loosely held in the amalgam than the mercury in this compound. As the contraction that takes place when silver and mercury combine in atomic proportions causes a difference of less than 1½ per cent. on the linear dimensions of the particles of the amalgam, and there is a strong probability, if not direct proof, that the addition of a third more mercury in order to produce $Ag_3Hg_4$ will give an effect very much smaller than this, the discrepancy due to the assumption that all mercury in excess of AgHg combines or mixes with the amalgam without contraction must be far too small to have any effect on the present work. I have therefore made this assumption, and, calculating on this basis, I get the figures given in the following table for the linear enlargement of particles at each step of the process:—

LINEAR ENLARGEMENT OF SILVER PARTICLES BY TREATMENT WITH MERCURIC CHLORIDE AND FERROUS OXALATE.

| | — | Total Enlargement. |
|---|---|---|
| Original ... ... ... | 1·000 | — |
| 1 enlargement ... ... | 1·327 | 1·327 |
| 2 enlargements ... ... | 1·306 | 1·733 |
| 3 ,, ... ... | 1·281 | 2·220 |
| 4 ,, ... ... | 1·270 | 2·820 |
| 5 ,, ... ... | 1·265 | 3·567 |
| 6 , ... ... | 1·260 | 4·494 |
| 7 . ... .. | 1·260 | 5·663 |
| 8 ,, ... ... | 1·260 | 7·134 |

Therefore the diameter of the particle that has been enlarged eight times is divided by 7.134 to get the diameter of the original particle, and so on. It will be noticed that the amount of enlargement becomes practically constant after the sixth stage. The formulæ of the amalgams at the sixth, seventh, and eighth enlargements are $AgHg_{63}$, $AgHg_{127}$, and $AgHg_{255}$ respectively, and these contain only .85, .42, and .21 per cent. of silver respectively, and these differences are negligible for the purposes of this work.

## The Measurements.

*Practical Details.*—The objective was a homogeneous immersion one-twelfth Watson-Conrady "parachromat" of N.A. 1.3. An apochromat is too costly for me, and I failed in my attempt to borrow one. But probably an apochromat would have made very little if any difference, certainly no difference in the main results. As apple-green was the preferred colour in the chromatic correction of the objective, I used an apple-green screen. I think that this method of getting the finest definition possible is often preferable to the more usual practice of giving up a measure of defining power and a good deal of light in a struggle after a little extra resolving power, by the use of a screen transmitting a green of shorter wave-length. The sub-stage condenser was achromatic; it was used dry, with an aperture as near to N.A. 1.0 as a dry condenser can give, and an aplanatic aperture well over N.A. .9. The illuminant was a paraffin lamp, and the illumination was "critical." I have already shown that the use or omission of a cover glass would have no optical effect. After the first few experiments none was used.

The micrometers were all tested, including the Males-Watson double-lever fine adjustment used for measurements downwards into the films, and any deviation from absolute truth was much too small to have any practical effect. In this connection it may be observed that the particles to be measured, although approximately spherical, are not of regular shape. A little averaging may sometimes be necessary on this account. The particles in any given film are not uniform in size; it is, therefore, of no use to measure indiscriminately a particle here and there—it is necessary to discover which of the particles really constitute the image. This rarely, if ever, introduces any practical uncertainty, and with the exception of a very few large particles that occur in some films, and are evidently accidental, it is the largest particles that are of importance. By careful examination this is quite obvious. But there is another and distinct reason why it is the larger particles that chiefly concern us. If particles of all sizes up to a maximum give a certain colour effect, and these particles are then all enlarged to the same degree, any difference in the colour effect must be due to the larger particles in the second case which were not present before the enlargement. Particles of the smaller sizes are common to both, and therefore cannot be the cause of a difference. At the same time, if the smaller particles were included in the calculations of my results as far as possible, the final result would not be essentially affected.

The method of measurement in any given layer is to measure several particles of those that are obviously the most important, and there is not often any doubt as to this, and if they vary a little the average is taken. As a rule, the variation is insignificant.

Every plate has been measured systematically after the manner of the following example:—

| Plate number .. .. | 68 | 67 | 66 | 65 |
|---|---|---|---|---|
| | | Diameters | of particles | |
| Top layer ... ... ... | ·25 | ·25 | ·25 | ·25 |
| Microns below top layer— | | | | |
| 2 | ·50 | ·32 | ·30 | ·25 |
| 4 | ·63 | ·45 | ·38 | 25 |
| 6 | ·70 | ·58 | ·45 | ·37 |
| 8 | ·75 | ·58 | ·45 | ·37 |
| 10 | ·75 | ·63 | ·45 | ·37 |
| 12 | ·75 | ·63 | ·45 | ·37 |
| 14 | ·75 | ·63 | ·53 | ·37 |
| 20 | — | — | — | ·45 |
| Average ... ... ... | ·74 | ·61 | ·46 | ·37 |
| Divisor for enlargement .. | 5·66 | 4·49 | 3·57 | 2 82 |
| Diameter of original particles ... ... ... | ·131 | ·135 | ·129 | ·133 |
| Average ... ... .. | · 32 | | | |
| Figure taken ... ... | 13 | | | |

The "Top layer" refers to particles, not to the upper surface of the film. The position of this last could not be discovered without a radical change of method. I have always found, even after the maximum enlargement, a top layer of very small particles, the smallest measurable; they may therefore be even smaller and show only as diffraction discs. These small particles generally extend a certain distance downwards into the layers that contain the larger particles that constitute the true image. For reasons already stated, the three upper lines of sizes are omitted in taking the average. The .45 in the last row is also omitted, as it is clearly of accidental occurrence, being exceptionally large and considerably deeper than the rest. The averages obtained for each of these four stages of enlargement are in good agreement and confirm the trustworthiness of the method. Other confirmations of a quite different kind will be given later.

All plates will not give results so full as shown in the above table. When the particles are notably fewer, the thickness of film in which they are distributed is less. When the plate is more strongly coloured, the particles are more numerous and closer, and the lowest layers cannot always be seen because of the overlying mass of particles, especially in the greater enlargements. But in no case is there any practical doubt as to which are the effective particles, even if the other confirmatory facts given below were not available.

It is difficult to say exactly with what degree of accuracy these measurements can be made. The actual reading is of the divisions on the drum head of a micrometer screw, and the diameters are calculated from the found value of these divisions. The differences between the four averages in the above table must obviously be beyond the range of experiment. A plate measured a second time after an interval of two or three weeks gave substantially the same result—a difference well under 10 per cent.

CHAPMAN JONES.

*(To be continued.)*

## DEATH OF M. ANTOINE LUMIERE.

We regret to record the death in Paris, on April 16, of M. Antoine Lumière, the founder of the well-known Lyons firm of photographic manufacturers, A. Lumière et ses Fils.

At the age of thirteen M. Lumière started life as a sign painter in his native village near Besançon, and during his latter years devoted himself to art. In 1883, in conjunction with his two sons, he established at Lyons one of the first photographic dry-plate factories in France, having previously attained considerable reputation as a practical photographer. Under his guidance the business increased rapidly, and photographers the world over are indebted for many of the developments in photographic processes to the enterprise of the firm. Since his retirement from business M. Lumière, who was an officer of the Legion of Honour, occupied himself with painting. He was an exhibitor at several Salons, and various landscapes by him were purchased by the State. At the time of his death, M. Lumière was in his seventy-second year.

# Photo-Mechanical Notes.

### Precautions in the Use of Nitric Acid.

At the conclusion of an article on the danger attending the use of nitric acid, the "Zeitschrift für Reproduktionstechnik" gives the following advice to those handling this uncomfortable material. The acid container should only be touched by adults, never by learners or apprentices: it ought to be kept in a place which is level with the ground, having an acid-proof floor, and the carboy should be provided with a mechanical arrangement for emptying, and should not be emptied by the hand. If acid is spilled, it must not be soaked up with ashes or sawdust, but it should be diluted by pouring over plenty of water, strewn with clean sand, and neutralised with chalk, ammonia, or lye. A room in which a large amount of acid is spilled should at once be left by the workmen, and not re-entered until a complete clearance of the fumes has been effected. In case of poisoning a doctor should be fetched at once. Those suffering from heart or lung disease should avoid the use of nitric acid. Symptoms of acid poisoning are: sickness, want of breath and oppression, pain in the heart and chest. It may be an hour after breathing the fumes that these symptoms declare themselves, and even if death does not occur immediately, danger may not be over for weeks after the accident.

### Are We Standing Still in Process?

It is sometimes complained that no progress is being made at present in photo-mechanical work, because no startling inventions have to be constantly recorded. But it must not be forgotten that the very perfection to which process has now attained prevents results and inventions being put forward that would have been hailed as revolutionary a few years ago. Any new method, to succeed now, must not only give as good or better results than those currently attained, but they must be secured with equal simplicity, and to satisfy both these demands is a task so difficult that it frequently leads to the abandonment of promising inventions. Nevertheless, in recent times we have seen great improvement in various directions, as, for example, in the production of better newspaper illustrations, the application of rotary photogravure to newspaper and colour illustration, and improvements in photo-lithography, including the application of the Bromoil process, and the printing of half-tones, both in black-and-white and colour, from the offset machine.

### PHOTO-MECHANICAL PATENTS.

The following patent has been applied for:—

**Process Blocks.** No. 9,659. Process of producing photo-mechanical pictures and printing blocks. Otto Luppe.

# Exhibitions.

## BARRHEAD AMATEUR ART CLUB.

The eighth annual exhibition of the Barrhead and District Amateur Art Club was opened in the Public Hall, Barrhead. The exhibition consisted of paintings, photographs, woodwork, needlework, etc. Mr. Dan Dunlop, Motherwell, judged the photographs, which were divided into five classes—one open, one confined to the associates of the Scottish Federation, and three members' classes. In the open class there were fifteen entries. First prize was gained by "Exchange Arch—Night," by John McClure, Prestwick; second, by W. S. Crocket, Tollcross, "Sunshine ond Shadows"; third, by John Baird, Glasgow, "Landscape."

Federation Class (29 entries).—1. "The Quayside, Night," John Baird, Glasgow; 2, "A Fresh Breeze," Allen Bowie, Paisley; 3, "Sunlight in an Old Close," W. S. Crocket, Tollcross.

Members' Class.—Portraiture or Figure Study: 1, "Peggy," R. Murray; 2, "A Profile," J. McGrouther.

Any Other Subject.—1, "A Moorland Burn," R. Murray; 2, "In Callander Woods," J. McGrouther.

Local (taken within five miles of Barrhead).—1, "In Killoch Glen," J. McGrouther; 2, "A Pastoral," T. Wheelan; certificate, R. Colquhoun. The invitation section included a number of pictures by Mr. Dunlop, "Edinburgh Castle, from Greyfriars," "Forth Bridge—Early Morning," etc.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between April 18 and 22:—

**Tripod.**—No. 9,579. Tripod or support for cameras and the like. Michael Sweeney.

**Printing on Metal.**—No. 9,511. Photographing, or printing photographically, real photographic prints on aluminium, alloys of aluminium, brass, copper, tin, silver, or alloys of those metals, or others. Michael Jacobs.

**Printing Plans.**—No. 9,497. Machinery for printing plans from colloidal films. Benjamin James Hall.

**Telegraphic Transmission of Pictures.**—No. 9,406. Telegraphic transmission of pictures and the like. Frank Wyndham.

**Colour Cinematography.**—No. 9,532. Production and projection of animated coloured pictures. Otto Fulton.

**Cinematographs.**—No. 9,552. Moving-picture projecting apparatus and the like. Gustav Dietz.

**Cinematography.**—No. 9,621. Machine for the purpose of exhibiting moving pictures. Edwin Glanville.

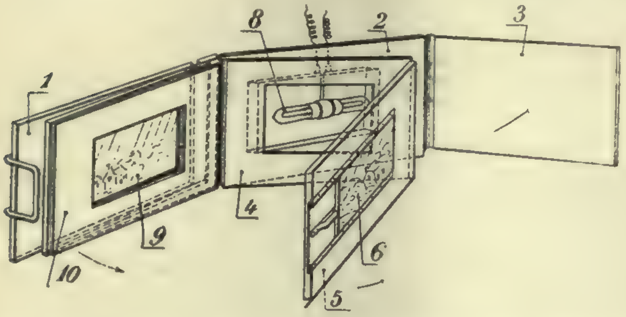
### *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

**Colour-Transparency Album.**—No. 15,347. 1910 (January 21, 1910). The improved album consists of two strong cardboard sheets 1 and 2, which form the cover and are united by a back. At the right-hand end of the part 2 of the cover a cardboard leaf 3 is fixed so that it can be turned over to the right in order to support the photographs already examined. In the album there are shown only two leaves in order to make the drawing clearer.

Each leaf is double, and consists of two parts 4 and 5 connected by hinges; each of the parts has a central opening; the opening of the outer part 5 is destined to receive a photograph 6. In the part 2 of the cover a box 7 is arranged, which contains an electric lamp 8.



To examine the transparent pictures the first leaf 4, 5 is turned over to the right, its two parts being folded the one over the other; the leaf 4, 5 is thus placed upon the part 2 of the cover and over the lamp 8. As the opening of the part 4 of the leaf is empty, the photograph 6 appears transparent. After the photograph has been examined the part 5 of the leaf is turned over, so that it rests upon the part 3 of the cover, and the next following photograph 9 can be examined after the double leaf 10 has been turned over to the right, and so on. Paul Duchenne, 133, Rue de Clamart, Vanves (Seine), and Victor Forbin, 12, Rue du Croissant, Paris.

**Distorted Photographs.**—No. 22,940, 1910 (October 4, 1910). The claim is for apparatus provided with a reflector which reflects distorted images into the camera, and is mounted freely, so as to turn, in order to vary the distortion; a design may also be impressed on the mirror.

In Fig. 1, the housing or casing $a$ is provided with a movable bottom $b$ hinged at $c$, and formed with a slot $d$ at each side. The lateral walls $e$ of the casing $a$ are each provided with a threaded stud $f$ and each of these studs $f$ project through one of the slots $d$ and is engaged by a thumb-nut $g$. These thumb-nuts $g$ serve to clamp the hinged bottom $b$ of the housing in adjusted position. The casing $a$ is supported by a pedestal $h$, upon which rests a U-shaped bracket $i$. The arms $j$ of the latter extend upwardly on each side of the casing $a$ and through the upper end of each arm $j$ and the lateral wall $e$ of the casing adjacent thereto passes a threaded stud $k$, the outer end of which is engaged by the thumb-nut $m$. The arrangement just described permits the casing $a$ to swing in the arms $j$ and to be clamped in the adjusted position by thumb-nuts $m$. The front end of the casing $a$ is open, and in it is slidably mounted a carrier-plate $n$ formed with a central hole $o$, through which passes a shaft $p$, upon the outer end of which is formed integral a turn-knob or disc $q$. The carrier-plate $n$ is slidable in the casing $a$ and its inward travel is limited by the flanges $r$ $r^1$. Fast to the inner end of the shaft $p$ is a mirror-carrier $s$, in which is mounted a curved mirror $t$. Journalled in the sides $e$ of the casing $a$ is a shaft $u$, one end of which is provided with a turn-knob $v$. Upon the shaft $u$ is mounted a plane mirror $w$, which may be turned upwardly, as shown in Fig. 1, and held by the catch $x$. The casing $a$ is formed with an opening $y$, in which is placed the lens $z^1$ of a camera $z$ supported by the casing $a$. This camera is of the well-known type adapted to take successive photographs of a subject upon a single plate or film, and forms no part of the invention.

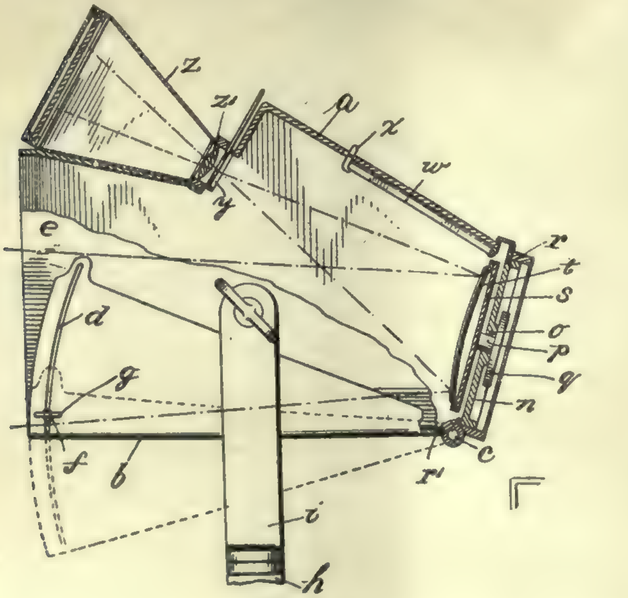


Fig. 1.

In taking pictures with the apparatus just described the plate $n$ is moved outwardly far enough to allow the lower end of the plane mirror $w$ to rest against the shoulder $r^1$. With the apparatus so adjusted, the normal photograph is taken. The plane mirror $w$ is now turned upwardly and fastened by the catch $x$. The plate-carrier $n$ is next moved inwardly against the flanges $r$ $r^1$ so that the curved mirror $t$ now reflects a distorted figure into the camera. Upon the central portion of the same photographic plate or negative is taken the photograph distorted sideways.

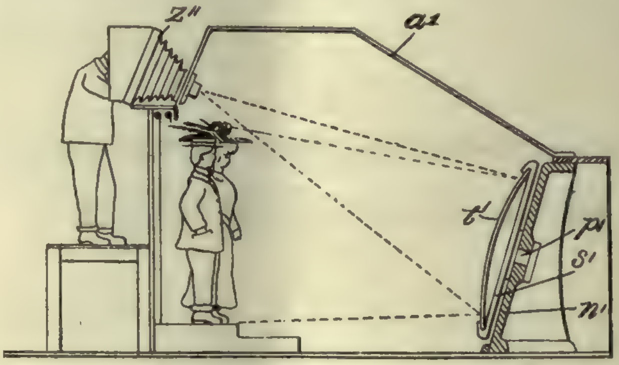


Fig. 2.

The disc $q$ is now turned, turning with it the shaft $p$ and the mirror-carrier $s$, thereby bringing the curved mirror $t$ at right angles to its former position. Upon the same photographic plate or negative is now taken the photograph distorted longways.

The arrangement shown in Fig. 2 is for taking full-length figures, and comprises a housing $a^1$ in which is mounted a slidable support $n^1$. In the latter is journalled a shaft $p^1$, upon which is mounted the mirror-carrier $s^1$. The curved mirror $t^1$ is of a size sufficiently large to reflect the full length of the body of the subject into the camera $z^{11}$. W. E. Lake, 7 and 8, Southampton Buildings, London, for James Hamilton, 31, Nassau Streset, New York, U.S.A.

**Plate- and Film-Envelopes.**—No. 15,498, 1910 (June 28, 1910). The envelope is chiefly made of some cheap material, such as paper or thin cardboard, that can be thrown away after use, and consists of an inner part provided with means for holding the plates in position, an outer part taking the form of an opaque sheath or cover, adapted to slide telescopically over the inner part, and means for facilitating its use in combination with daylight developing boxes such as referred to above. A particular feature of the invention is the provision of means for opening and closing the envelope whilst entirely enclosed within the developing box, so that the box may be opened and the solution changed without injury to the negative even in the brightest light.

To a cross strip of cardboard or other material is fixed, on each side, a flexible open frame, on one of which at its upper end a second cross strip is cemented. The strips are of sufficient thickness to accommodate the sensitive plates and an opaque dividing plate, which is slightly corrugated for the purpose of preventing erratic movement of the plates and to keep them pressed up to the focal plane during exposure.

The dividing plate is not made of one with the inner part of envelope as heretofore, but is placed between the plates prior to their insertion into the holder. The first strip with the open frames attached, is inserted into a metal cup or binder, and permanently fixed therein by depressions made in the metal with a pointed tool or other suitable means. The metal cup or binder is formed with a funnel-shaped opening which is designed to guide the lower end of the outer cover as the envelope closes.

For the open frames there may be substituted flanged **U**-shaped side arms into which the sensitive plates with the opaque dividing plate slide, an end block being then inserted to fill the space formed by the extension of the side arms beyond the ends of the plates when in position. Inwardly projecting tongues are provided on the side arms to retain the plates and end block in position. In the process of filling, the side arms are strained slightly open to admit of the plates passing the tongues.

The outer cover or sheath may conveniently be made of thick black paper, and is of suitable dimensions to slide freely over the inner part with its contained plates. The upper part of the outer cover is provided with a cross-piece for the convenience of coupling this part of the envelope to a clip contained in the developing box above referred to, and to form a handle for manipulating the envelope when in the camera. Other means for this purpose are as follows:—

Firstly, a cross-piece or handle provided with holes which engage over pins fixed to the slide of the developing box referred to. Secondly, a cross-piece with end slots to engage on similar pins. Thirdly, a recessed cross-piece to slide in a clip on the aforesaid slide; and, fourthly, an extension of the cover reinforced by compressing and cementing the front and back to form a double thickness which may be perforated to engage over pins fixed, as above stated, to a part of the developing box.

The edges at the open end of the outer cover are turned back to form narrow flanges, which answer the double purpose of stops to prevent the cover from being entirely withdrawn from the inner part of envelope when in the camera, and also to act as a light-proof connection with the metal cup or binder when the envelope is closed. Magnus Neil, Djursholm, Sweden.

DAYLIGHT DEVELOPING TANKS.—No. 8,405, 1910 (April 7, 1910). The invention relates to upright daylight developing tanks into which dark-slides or plate-holders are introduced in daylight and the plates exposed therein to the developer. The invention consists of an improved upright light-tight developing tank in which the plate to be developed is transferred from the dark-slide or plate-holder, the dark-slide or plate-holder being then withdrawn from within the tank, leaving the plate inside the tank in an upright position for development, washing, and fixing (thereby tending to prevent the formation or deposit of air-bubbles) without injury from light. The tank is fitted with a light-tight lid in which is an aperture or slot to allow the plate-holder to be inserted. This slot is closed (immediately after the withdrawal of the plate-holder) by a roller or cover made of or covered with indiarubber or other flexible material, or made of accurately fitted metal or other rigid material. In operation the lid is placed on and secured to the tank; then the plate-holder (containing the plate) is inserted within the tank through the slot provided for that purpose. The shutter-slide of the plate-holder is then withdrawn, and a plate-releasing mechanism consisting of a pin with a controlling spring or "spring-pin" is brought into action. This "spring-pin" is contained within a casing which allows it to be pressed downwards and which is fitted upon a plate sliding horizontally between suitable guides forming part of or attached to the lid of the tank. When required to operate, the "spring-pin" fitting is advanced more or less horizontally towards the plate until the lower end of the "spring-pin" is above or upon the upper edge of the plate. A downward pressure upon the "spring-pin" causes it to press down the plate on to and so compress the spring or springs upon which the lower edge of the plate rests within the plate-holder, until the upper edge of the plate is free of the plate-holder when the upper part of the plate is pushed forward by a spring provided for that purpose in the plate-holder immediately behind the back of the plate. As soon as the upper part of the plate is quite out of the plate-holder the recoil of the spring or springs (upon which the lower edge of the plate rests) tends to lift up the plate clear out and away from the bottom of the plate-holder, and the plate is transferred into the tank. The whole operation is nearly instantaneous. The "spring-pin" fitting is then withdrawn sufficiently to allow the shutter slide to be replaced in the plate-holder. The roller or cover is now placed in position behind or in front of the plate-holder (as may be arranged), and is so actuated by one or more springs that it instantly closes the slot in the lid of the tank when the plate-holder is quickly withdrawn from the tank. The interior of the tank is provided with a light-tight inlet for liquids and a light-tight exit, both of which may be formed by one straight upright tube which passes through the lid and the bottom of the tank, and which is provided with a passage or port communicating with the interior of the tank, so placed and guarded as to be absolutely light-tight. The inlet end of the straight tube may be screwed so as to be used to secure the lid firmly to the tank. The interior of the tank is also provided with an overflow so guarded as to be light-tight in regard to the position of the plate within the tank. The whole or any part of the tank or of its lid may be made of metal, glass, porcelain, vulcanite, or other indiarubber compound, or celluloid or other material, or may be covered externally or lined internally with celluloid or other material of like nature.

The rapidity of the action of the roller or cover for closing the slot in the lid of the tank may be varied to suit the sensitiveness of the plate by varying the action or the arrangement of the spring or springs which actuate the roller or cover. John Seaton Warburton, 19, Stanwick Road, West Kensington, London.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

CINEMATOGRAPHS.—No. 9,006. Cinematograph projecting-apparatus. Rossi.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### White Backgrounds.

When a small object is required with a perfectly white background (writes M. B. Hopetoun in "Photography and Focus" for May 2) it will be found that it is not at all easy to get a negative which will give all the detail in the object and still will have the background dense enough to give a perfectly white print.

The following dodge will be found to be effective. The background must be a sheet or some other not altogether opaque object, and must be kept well away from the object itself. When the exposure has been made, a supplementary exposure may be given, illuminating the back of the background by burning a few inches of magnesium ribbon behind it. The ribbon must be held to one side, and screened so that none of its light falls on the lens or on any part of the background in a direct line between the flame and the lens; but this is generally easy to do.

A somewhat similar dodge may be adopted with an opaque background, burning the ribbon between the subject and the background, and shielding both the lens and the subject itself from any direct light. The plan is successful enough if one guards against overdoing the supplementary exposure, a course which makes it difficult to get the details of the object. Backed plates, I find, are an absolute necessity.

### Thiocarbamide Toning Bath.

The thiocarbamide toning bath (writes M. Puttemans in "Le Moniteur de la Photographie" for April 30, p. 50), being employed in acid solution like platinum toning baths, keeps perfectly and is very economical in use. It is, moreover, extremely simple in preparation and yields permanent results with all kinds of printing-out paper. The bath is made as follows:—A 2 per cent. solution of thiocarbamide is prepared and 100 c.cs. (3½ oz.) placed in a measure. A 1 per cent. solution of chloride of gold is then added little by little. A precipitate is formed, but disappears again on continuing the addition of the gold. The amount of gold solution required for this purpose is about 30 c.cs. altogether (1 oz.). A clear solution is thus obtained, which is then diluted to 2 litres (70 oz.), to which is then added citric acid 1 gm. (15 grs.) and ordinary common salt 20 gms. (310 grs.).

Before toning, the prints may be washed thoroughly, but this is not absolutely necessary, and even without it toning takes place quite regularly. The toning bath gives a full range of tones, but it should be noted that the formula given above tends to bluish prints; those who prefer brown tones should replace the citric acid by an equal quantity of tartaric acid.

The action of a new bath is very rapid, and only one or two prints should be introduced at a time. Fixing should be done in the usual way, paying care to a thorough washing of the prints between the toning bath and its acid fixer.

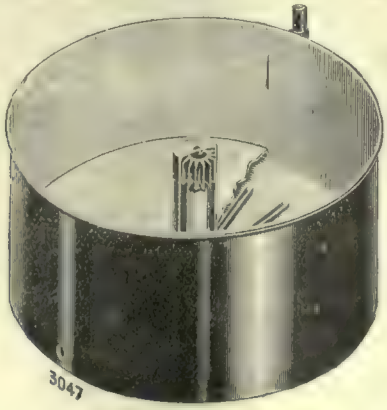
## New Books.

"When We are Rich." By Ward Muir. London: Stanley Paul and Co. 6s.

We welcome Mr. Ward Muir's second novel most heartily, for it is written in the author's breeziest style, and has set us all laughing again. The book simply sparkles with fun; we laugh out loud, and enjoy it. The characters are delightfully drawn; we feel the author must be personally acquainted with them all. The story tells of the doings of an artistic and Bohemian circle of friends, poor—in the ordinary adoption of the word, yet possessing that great gift that money cannot buy—a merry sense of humour. Into their sympathetic midst is drawn a wealthy young Baron, painfully conscious—nay, almost ashamed—of his worldly riches. He, however, turns them to practical account by taking the whole party, including a fat and fascinating old maid, for a delightful trip to the Continent. This frivolous record, however, is not without its pathetic side, and there are times when the tears come as readily to the eyes as laughter to the lips. Mr. Ward Muir has created some very real human types, and we may congratulate him upon a book which maintains—indeed, it enhances—his reputation as a writer of entertaining fiction.

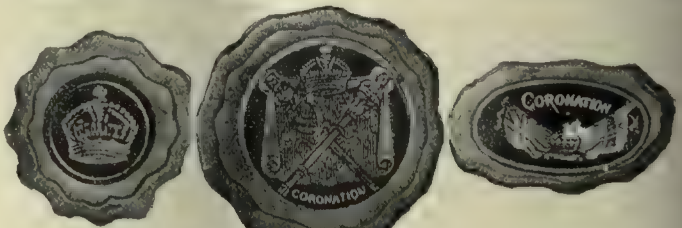
## New Apparatus, &c.

THE "NEW CIRCULAR" PRINT AND PLATE WASHER.—Messrs. Houghtons Ltd. have just issued a new model of washer, suitable for both plates and prints, under this name. It consists of a circular vessel, 11 in. diameter and 5 in. deep, to which water is admitted by a narrow slit aperture in the side. When washing plates the latter are placed in grooves fixed to the bottom of the tank and held in position by a series of other short grooves on the top of an upright stem. In washing prints, both these sets of grooves are covered by a loose fitting, the washer being thus free from any sharp projections. The price is 4s.



## New Materials, &c.

CORONATION SEALS.—Messrs. W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London, E.C., send us samples of the very neat paper imitation seals which they are just issuing for a season in which all things promise to be "Coronation." The seals may be readily attached to mounts, stationery, envelopes, etc. They are issued in three separate patterns shown in the drawing. The price, in boxes of 30, 1s., or in bulk, 4s. per gross, or 26s. per thousand.



### CATALOGUES AND TRADE NOTICES.

MARION'S NEW GENERAL LIST.—Messrs. Marion and Co. have just issued a new catalogue of photographic requisites, which is a complete revision in style and arrangement of their previous lists. While it includes the latest items of equipment of their own manufacture and that of other makers, which they have confidence in recommending, the list has been thoroughly rearranged so as to bring goods for a particular branch of work together in the volume. Messrs. Marion are in the special position of being both manufacturers and dealers, wholesale and retail, of photographic goods, and thus the list is one of particular interest and value to both professionals and amateurs. Particular reference may be made to such quite recent introductions as the Boardman "Northlight" apparatus for copying and enlarging, the "Soho" science lantern and slide-making apparatus. We cannot too highly commend the arrangement of the volume, which, in its stout board covers, should find a place on every photographer's shelves. Unlike other lists, it is not a compendium of everything upon the market, but a selection of apparatus and materials, a large number of which are Messrs. Marion's own specialties. The list is sent free to professional photographers; to amateurs the price is 9d. post free, this amount being refunded on purchase of Marion goods to the value of 5s.

CAMERAS FOR 1911.—A large illustrated list of 12 pages, describing cameras of the more popular kinds, from the all-convenient "Ensignette" to the handsome Houghton reflex, has just been issued by Messrs. Houghtons Ltd., 88 and 89, High Holborn, London, W.C., from whom it may be obtained on application.

THE LATE MR. OTTO SCHOLZIG.—We regret to announce the death of Mr. Otto Scholzig, on April 14, after a long and painful illness. Mr. Scholzig's business will be continued in an unaltered condition under the principal management of Mr. Oscar Scholzig. All communications should henceforth be addressed to 38, South Lambeth Road, London, S.W.

THE RAJAR MONTHLY COMPETITION.—The prizes offered by Messrs. Rajar, Ltd., Mobberley, Cheshire, for the best prints on papers or postcards of their manufacture submitted for their April monthly competition have been awarded as follows:—

Class 1 (open competition) to Mr. J. G. Hughes, 8, The Mall, Waterford, for print on glossy P.O.P purchased from Messrs. Hughes and Co., photographic dealers, The Mall, Waterford.

Class 2 (for those who have never previously won a prize in any class of competition) to Mr. H. Law, 23, Carisbrooke Road, Walthamstow, Essex, for glossy P.O.P. print on paper purchased from Messrs. Boots, Ltd., Moorgate Street, London, E.C.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

SATURDAY, MAY 6.

Borough Polytechnic Photographic Society. Outing to Shere.
Manchester Amateur Photographic Society. Ramble to Liverpool, for River and Docks.
North Middlesex Photographic Society. Outing to Northfleet.

MONDAY, MAY 8.

Southampton Camera Club. "Night Photography." F. S. Albert.

TUESDAY, MAY 9.

Bradford Photographic Society. Excursion to Baildon Moors.
Hackney Photographic Society. "Technical Photography." H. W. Bennett.
Manchester Amateur Photographic Society. "Tone Values in Pictorial Photography." J. D. Berwick.

WEDNESDAY, MAY 10.

Croydon Camera Club. "A Loon in London." W. L. F. Wastell.
Balham Camera Club. "Water in Landscape." Discussion, opened by W. C. Munsey.
North Middlesex Photographic Society. "Hints on Landscape Composition." Horace Mummery.
South Essex Camera Club. 1909 Affiliation Competition Prints.
West Surrey Photographic Society. "About the Mendips."

THURSDAY, MAY 11.

Handsworth Photographic Society. "Autotype Carbon Printing." C. W Clarke.

CROYDON CAMERA CLUB.—Mr. F. C. Tilney, last week, gave a talk (vide the syllabus) on "Some Principles of Picture Making." The so-called "talk" resolved itself into a closely reasoned and terse paper, full of valuable suggestions, both to the advanced worker and beginner, and was illustrated by a number of reproductions of well known and other paintings. The club has had a surfeit in the immediate past of criticisms on print displays, these, with few exceptions, being of a weak and hackneyed character, and it therefore must have come as a revelation, to some at least, that such transcendental matters as shading foregrounds, toning down obtrusive high-lights, securing leading-in-lines, and trimming to suit the subject, etc., etc., are not the only factors in the construction of pictures, and do not form the entire stock-in-trade of art criticism. Something like this was probably in Mr. Terry's mind when he said, in the appreciative discussion following the paper, that "he was certain all present must feel like miserable worms," though obviously any real certainty in this respect could only apply to the speaker. Mr. Keane, who spoke in accents of tearful, but indignant, sorrow, pleaded for *sympathetic* criticism. "Their art was so very, very young." Mr. Harpur, amongst other observations, evolved a mixed metaphor in connection with a white shirt. The drift of this was not understood by Mr. Tilney, or by anyone else, which was unfortunate, as it doubtless analogised some important truth.

On a prior evening Mr. J. A. Sinclair gave a lantern lecture on "A French Wonderland and the Devil's City," quite the very best of its kind, both as regards slides and narrative.

GLASGOW AND WEST OF SCOTLAND.—The office-bearers for the season 1911-12 have been elected as follows:—President, James McKissack; vice-president, A. H. Duncan; hon. secretary, James W. Mackenzie, 14A, Renfield Street, Glasgow; hon. treasurer, Alex. G. Watson; librarian, Arch. Dowie; lanternist, J. W. Downs; curator, H. A. Garwood; council, Thos. Calder, J. Barclay, Robert Crerar, John McClure, J. Sawers, and John Martin. It was agreed to hold two or three summer outings, and also that a class for photographs taken at the Scottish National Exhibition be included at the next members' exhibition. Mr. A. G. Watson read a lecture by Mr. W. F. Wastell, "A Dive into Belgium," illustrated by many lantern slides.

◆

R.P.S. LECTURES.—The following lectures will be delivered at Prince's Skating Club, Knightsbridge, at 8.30 p.m.:—Tuesday, May 9, "A Wayfarer in Rural Japan," by Harold E. Young. Wednesday, May 10, "English Wild Flowers in Colour" (slides by the Autochrome process), by H. Essenhigh Corke. Thursday, May 11, "Aerial Photography: Views from Cloud Lane," by Miss Gertrude Bacon. Friday, May 12, Red Book Night, "The Swiss Alps," by R. Gorbold. Saturday, May 13, "A Loon in London," by W. L. F. Wastell.

# Commercial & Legal Intelligence.

LEGAL NOTICES.—A receiving order has been made in the case of Andrea Balestra, photographer, 95, Wigmore Street, W., and Evershot, Shoot-up-Hill, Brondesbury, Middlesex. The first meeting has been fixed to take place on May 8 at Carey Street, W.C., and the public examination on June 14, also at Carey Street.

DAMAGES AND LOSS THROUGH STRUCTURAL ALTERATIONS.—In the Edinburgh Court of Session last week, judgment was issued in an action at the instance of Augustus Charles Huber, photographer, 120c, Princes Street, Edinburgh, against Alexander Mackenzie Ross, 14, Atholl Crescent, Edinburgh. The premises in Princes Street tenanted by the pursuer belong to the defender, and in this action the pursuer sued for £400 damages in respect of loss alleged to have been sustained through certain operations by the defender, or authorised by him, on one of the lower floors of the tenement and on the tenement to the east. The pursuer took his premises from the defender's predecessor for the purposes of a photographic business, with entry at Whit Sunday, 1907, for seven years, at the rent of £60. By arrangement with the landlord the premises were converted by the pursuer at considerable expense into photographic rooms. In January, 1910, the defender presented a petition to the Dean of Guild for warrant to make extensive structural alterations on the tenements entering by 118 and 120c, Princes Street. Warrant was granted by the Dean of Guild, and the work was executed. The pursuer's claim consisted of (1) repair of structural damage, including under that head injury to painting and papering; (2) injury to materials; and (3) loss of business. The defender maintained that the alterations, having been executed under legal warrant, and with due care, he was entitled to absolvitor. He stated that on April 13, 1910, his architects on his behalf offered to the pursuer to get the contractors to make good all damage caused through their operations. The pursuer refused this offer. Again, and also before the action was raised, the defender offered to repair all such damage, and that offer was repeated on record.

Lord Guthrie found in fact (1) that the defender's operations caused injury (a) to the structure, including the painting and papering of the pursuer's premises, the restoration of which (the pursuer's business being simultaneously carried on in the premises) would involve an expenditure of £85 during a period of a month to six weeks, in the course of which the pursuer's business would be prejudicially affected to the extent of £30; (b) to the furniture and materials in the pursuer's premises to the value of £40; and (c) to the pursuer's business, apart from the period of six weeks above mentioned, to the extent of £100; and (2) that the operations were conducted with reasonable regard to the pursuer's interests. His Lordship found in law (1) that the defender was bound (a) to restore the pursuer's premises to the condition in which they were prior to the commencement of the defender's operations, or, failing restoration, to pay to the pursuer the sum of £85; and (b) to pay to the pursuer the sum of £30; and (2) that in the circumstances the defender was not liable in damages for the injury to furniture, materials, and business (apart from the sum of £30) claimed by the pursuer. With these findings his Lordship appointed the cause to be put to the roll for further procedure, reserving in the meantime the question of expenses. His Lordship said that the first head of the pursuer's claim raised no question between the parties, except, possibly, one of expenses. The defender offered to repair all structural damage at the sight of a man of skill appointed by the Court. In his Lordship's opinion, the defender's common law obligation as landlord to maintain the pursuer's premises in a tenantable condition during the course of the lease involved this liability; and the extent of his obligation would not be affected by the badly designed or structurally defective condition of the premises at the time when the operations were begun. In case, however, a different view might be taken on appeal, his Lordship valued the operations necessary to restore the pursuer's premises to a tenantable and habitable condition at £85. The other heads involved serious questions, both of fact and law. So far as loss of business would result from the total or partial stoppage of the pursuer's business during the period of structural restoration, his Lordship thought it followed that, while the defender would not be liable under this head if the loss of business had resulted from the operations of another proprietor, he must be liable in the circumstances of this case for this loss of business as a necessary result of his own voluntary act. His Lordship assessed this amount at £30. Putting aside structural damage and loss of business resulting directly therefrom, had the pursuer any claim? Or, to put it in another way, suppose there had been no structural damages, would the pursuer have had any claim? The defender admitted that, in so far as his operations were not conducted with a reasonable regard to the interests of the pursuer, he was liable, but not otherwise. The pursuer maintained, first, that the defender was liable for all injury to his furniture and material, and for all loss of business resulting from the defender's operations, even if conducted with the utmost regard reasonably possible for the pursuer's interests; and, second, that in any case the defender was liable for all such damage and loss, because his operations were not conducted with reasonable regard for his interests. The operations themselves, in their object and in their method, were of an ordinary nature, and they were planned and executed by competent and experienced architects and contractors. It was remarkable that no complaints were made by any of the other tenants in the tenement, of which the pursuer occupied the top storey and attics, or by any of the tenants of the adjoining tenement. The result was that his Lordship held the pursuer's case for damages (apart from his right to restoration) as irrelevant, and that he had failed to prove that the operations had been conducted improperly and illegally, and in gross and in wilful recklessness of the rights and interests of the pursuer, and so as to produce great and unnecessary loss to the pursuer.

Agency Dispute.—At the Bloomsbury County Court, on April 27, before Judge Bray, the case of Sawyer v. Tilney was decided. This action first came before the Court in January, when Mr. Sawyer, trading as the Autotype Company, of New Oxford Street, sued Mr. Tilney, a well-known artist, for the recovery of £3 16s. for the supply of certain prints which it was alleged Mr. Tilney was to subject to the oil process and to deliver to Mr. Walter Barnett, of Knightsbridge, who was to be responsible for payment. Mr. Sawyer claimed that the order was in fact given by Mr. Tilney on Mr. Barnett's behalf, but the latter, some time after receipt of the invoice, repudiated the agency, stating that Mr. Tilney had no authority to give the order. The case had been adjourned twice, once owing to Mr. Barnett's absence in America, and in the interval Mr. Barnett had been made a co-defendant to the claim.

Plaintiff now, as before, conducted his own case; Mr. Reginald Vaughan, solicitor, appeared for Mr. Tilney; and Mr. Goldberg, barrister, represented Mr. Barnett, who was absent.

Mr. Vaughan, on the case being called, intimated that there was no dispute as to the goods being delivered to Mr. Tilney; it was a question of who had to pay for them. Mr. Tilney admitted giving the order, but said he did so on Mr. Barnett's authority.

Plaintiff, in reply to Mr. Vaughan, said he was required to produce enlarged negatives and prints from them, and Mr. Tilney was to work upon these prints.

Mr. Vaughan: Mr. Barnett is a photographer carrying on business in Knightsbridge, and it is common ground that the prints reproduced from these enlargements were to be used at an exhibition of the Royal Photographic Society?

Plaintiff: I believe they were.

Mr. Vaughan: When Mr. Tilney gave the order, did he not give it on behalf of Mr. Barnett?

Plaintiff: Quite distinctly. Plaintiff went on to say that he sent the invoice for the work to Mr. Barnett in September, 1909, and no question as to payment arose until January, 1910, when witness happened to be visiting Mr. Barnett. The matter of payment then cropped up, and Mr. Barnett repudiated entirely giving any authority for the order. Witness produced a letter received from Mr. Barnett a few days after the interview mentioned, which contained the following passage: "I am sure Mr. Tilney and myself will come to an understanding upon this matter in dispute, and I think if you leave it for a few days you will find that the amount will be paid in due course."

Mr. Vaughan: You see, he did not repudiate the order in that letter.

Plaintiff replied that he had several other letters from Mr. Barnett on the subject, and produced one dated January 12, 1910, a few days prior to the interview, in which Mr. Barnett stated that Mr. Tilney had the negatives in question on his own account, and that he (Mr. Barnett) had paid Mr. Tilney for them long ago.

Mr. Vaughan: He sets up that he paid Mr. Tilney for them, although he (Barnett) never ordered them. (To plaintiff) Isn't it a fact that Mr. Tilney occasionally does work for photographers, and you prepare the material on which he is to work, and you send the invoice for your work to Mr. Tilney's clients?

Plaintiff: Occasionally; it goes both ways, but Mr. Barnett generally paid me direct—not Mr. Tilney. In answer to further questions, witness said that the present was the first occasion on which there had been any dispute over the accounts with either defendant.

His Honour said they ought to have some evidence to show that Mr. Tilney really said he came from Barnett when the order was given, and he finally ordered Mr. Barnett to be called.

Mr. Goldberg said his client had been in court, but was now absent, and suggested that the case be put back for a time. Mr. Vaughan stated that Mr. Barnett had not been seen in court at all.

His Honour thought it might not be necessary to call Mr. Barnett, and Mr. Goldberg proceeded to ask plaintiff exactly what took place when Mr. Tilney gave the order.

Plaintiff: I did not see Mr. Tilney at the time; he did not give me the order, he gave it to my assistant. I have the order book here with the order entered in the ordinary way; there is no dispute about that.

Mr. Goldberg: The difficulty is this, I must know exactly what took place.

The order book was produced, and Mr. Goldberg stated that the entry read "Verbally ordered by Tilney." Such order, he contended, could not be evidence against Barnett.

Mr. Vaughan: I don't know; my friend has put the book in evidence!

Mr. Goldberg: I want the precise terms of the order given to the assistant.

His Honour said it seemed as if plaintiff would have to call the assistant who took the order, but if there was an adjournment somebody must pay for it.

Mr. Vaughan opposed an adjournment, saying it was the third time they had been before the court.

His Honour: Is there any letter from Mr. Barnett showing that he admitted that Mr. Tilney purported to give the order for him?

Plaintiff: Yes; I can produce the book.

His Honour: Did Mr. Barnett, when you had the interview with him, dispute that Mr. Tilney had purported to place the order on his behalf?

Plaintiff: No, he didn't dispute it.

His Honour: That is sufficient evidence.

Mr. Goldberg submitted that this was not sufficient evidence, for it only amounted to a statement by Mr. Tilney that Mr. Barnett was prepared to guarantee payment. He contended that Mr. Tilney was primarily liable for the goods.

Plaintiff: I do not agree; the order was distinctly given on behalf of Mr. Barnett.

Mr. Goldberg: I submit that you have not proved it.

His Honour: When plaintiff called upon Barnett he (Barnett) did not dispute that Mr. Tilney had purported to give the order in his name, but said he had no authority to do so.

Mr. Goldberg: That may be, but Mr. Barnett had no opportunity of knowing what took place at Mr. Sawyer's.

At his Honour's suggestion, Mr. Tilney was then called, and examined by the plaintiff. Witness said he gave the order with Mr. Barnett's knowledge and concurrence.

Mr. Goldberg asked witness to give as nearly as possible the exact words used when the order was given.

Witness said he did not say that he would pay for the goods himself. He went direct from Mr. Barnett and said, "Here are some negatives Mr. Barnett wishes you to enlarge so that I may make prints"—what are known as "oil prints," explained witness. Plaintiff accepted the order and put it through in the usual way of business, and it was perfectly well understood by all parties that the invoice was to be rendered to Mr. Barnett.

Mr. Goldberg reminded witness that when the case was first heard plaintiff had sworn that he (Tilney) owed him the money, and asked why it was now said somebody else might owe it.

Mr. Tilney: I don't know. It's a mystery to me.

Mr. Goldberg: Have you ever suggested to plaintiff that his statement that you owed the money was incorrect?

Mr. Tilney: I have written on several occasions repudiating the transference of this debt to myself from Mr. Barnett.

Mr. Vaughan: I have the letters, if my friend wants them.

At this point his Honour brought the case to an end by giving judgment for the plaintiff against Mr. Barnett, with costs. Plaintiff would have to pay Mr. Tilney's costs for bringing him into the action, but such costs would have to be refunded to plaintiff by Mr. Barnett.

Mr. Vaughan: That means that Mr. Barnett will have to pay the costs of the whole business?

His Honour agreed.

## NEW COMPANIES.

**H. E. Howorth, Ltd.**—This company was registered with a capital of £800 in £1 shares. Objects, to adopt an agreement with H. E. Howorth for the acquisition of the business of a photographer and dealer in photographic materials carried on by him in Dock Street, Fleetwood, Lancs. First directors, H. F. Howorth, C. Spencer, and C. A. Smyth. Qualification, £50. Registered office 10, West Street, Fleetwood. Private company.

**Royal Avenue Studio, Ltd.**—This company was registered in Dublin with a capital of £500 in £1 shares. Objects: to carry on the business of photographers, etc. First directors, T. A. Higgins, J. Higgins, sen., and J. Higgins, jun. Registered office, 79, Royal Avenue, Belfast. Private company.

## News and Notes.

**Early Closing.**—Messrs. C. P. Goerz write:—"Some of your readers might perhaps be spared a little inconvenience and disappointment were you to announce that from May 1 to September 30 next the hours of business at this office, 1-6, Holborn Circus, will be 8.30 a.m. to 5 o'clock p.m., Saturdays 1 o'clock."

**House of Commons Photographs.**—A number of photographs illustrative of events connected with the Houses of Parliament during recent years have been presented to the Office of Works by Sir Benjamin Stone, and have now been hung in the dining-room corridor at the House of Commons, as the commencement of a historical series.

**The Illingworth Monthly Competition.**—The results in the March competition held by Messrs. Thomas Illingworth and Co. are as follows:—Open Class: W. G. Steenmeijer, Hilbelinkspad, Winterswijk, Holland. Novice Class: G. W. Morgan, 8, Braedburn Crescent, Edinburgh. Junior Class: F. Harrison, 49, Granton Street, Leeds Road, Bradford.

**A Book of Sports Records.**—A little volume of 250 pages has just been issued in its eighth edition by the Royal Insurance Co. Ltd., 1, North John Street, Liverpool. It contains a summarised and tabulated statement of recent records in all branches of sport, including such modern developments as motoring and aviation. Press photographers and all those who have occasion to photograph sporting subjects should find it a most useful volume of reference. It is sent post free on application to the Royal Insurance Co.

**Dangers of Wave Photography.**—A visitor to Filey had a narrow escape from being drowned last week when standing on the edge of Filey Brigg photographing the waves. A larger breaker rose suddenly and swept the reef, sucking the photographer back in its retreat into deep water. At this point of the coast the water is in a state of constant turmoil, owing to the obstruction offered by the reef to the tide, and it is almost impossible for even a strong swimmer to struggle ashore. The visitor's case would doubtless have been hopeless but for the fact that the next wave succeeding the one which had washed him off the reef threw him bodily back again, bruised and breathless, but with sufficient strength to clutch the rock and crawl into safety.

**Press Photographers and Journalists.**—At the annual conference of the National Union of Journalists held recently at Birmingham, a proposal was submitted by the Leeds branch to exclude photographers from membership of the Union. It was felt that they could hardly be called journalists, although they might write an explanatory note to append to their photographs. (Laughter.) Mr. R. C. Spencer pointed out that they had admitted a large number of highly respectable Press photographers in the North of England, men who were engaged upon a kind of work that was going to extend. The Chairman thought that if this proposal were carried, the photographers already in the Union would take it as a strong hint to get out. The proposal was rejected.

**Kinemacolor.**—Mr. Charles Urban, a leading principal of whose managerial policy at the Scala Theatre is a constant change of programme, will present a wide variety of new "Kinemacolor" subjects in his entertainment at this beautiful playhouse on Saturday afternoon and evening next, May 6, and twice daily. So strongly has natural-colour kinematography appealed to patrons of the Scala that Mr. Urban is reluctantly withdrawing the operetta, "Castles in the Air," after Friday evening to give "Kinemacolor" even greater scope; and several new series, accompanied by vocal as well as exquisite instrumental music, to be then produced will include "Telemachus" (classical), "The Fall of Babylon" (Scriptural), five filmed playlets of great beauty (theatrical), "Ostend" and "Lake Garda" (travel), and "Strange Mounts" (zoological). The last-named should alone command a visit, the films showing how scores of seldom-harnessed animals—from pigs to llamas, and from ostriches to zebras—take kindly to carrying the saddle. "Kinemacolor" has ever been exceptionally effective in animal subjects, and here it excels.

**A Photographer Poisoned.**—Mr. J. J. W. Wilmshurst held an inquiry at Aston Police Court last week concerning the death of Alfred Marlow (49), 80, Sutton Street, Aston, photographer, which occurred at his residence on Saturday last from the effects of liquid ammonia poisoning.

The widow said her husband had been ill for thirteen years, and had been confined to his bed for the past three months. On Friday night he asked witness for the smelling-bottle. Some time after she heard the bottle rattle, and when she spoke to her husband he told her that he had drunk the contents. He had never threatened his life.

Dr. Hill Norris said he was not informed of the occurrence till nine hours afterwards, and the message he then received was not urgent. Receiving a second message, however, he went at once, but when he arrived the man was breathing his last. A post-mortem examination showed signs of irritant poisoning. Death was due to shock following acute gastritis, following up the taking of liquid ammonia, coupled with the fact of the man's illness.

The jury returned a verdict of "Death from misadventure."

**The Copyright Bill.**—The Standing Committee (A) of the House of Commons held its second sitting on the Copyright Bill on Tuesday last, Mr. Griffith Boscawen presiding.

There was prolonged discussion of the sub-section which allows "the making of paintings, drawings, engravings, or photographs of a work of sculpture or artistic craftsmanship if situate in a public place or building, or the making of paintings, drawings, engravings, or photographs (which are not in the nature of architectural drawings or plans) of any architectural work of art."

Mr. Toulmin moved an amendment to allow "the publishing" as well as the making of pictorial reproductions of such work.

Lord Balcarres and other members expressed the fear that under the provision owners of pictures would be deterred from lending them to the National or other public galleries as readily as heretofore.

Mr. Buxton stated that the interests of owners of pictures in this matter would continue to be protected, as now, by by-laws.

Mr. Toulmin's amendment was eventually agreed to.

Mr. Buxton accepted amendments confining the scope of the sub-section to works "not being private property" and "permanently" situate in a public place or building. The amendments were agreed to.

**Royal Institution.**—The annual meeting of the members of the Royal Institution was held on Monday afternoon (May 1), the Duke of Northumberland, president, in the chair. The annual report of the Committee of Visitors for the year 1910, testifying to the continued prosperity and efficient management of the institution, was read and adopted, and the report on the Davy Faraday Research Laboratory of the Royal Institution which accompanied it, was also read. Thirty-nine new members were elected in 1910. Sixty-one lectures and seventeen evening discourses were delivered in 1910. The books and pamphlets presented amounted to about 239 volumes, making, with 604 volumes (including periodicals bound), purchased by the managers, a total of 843 volumes added to the library in the year. Thanks were voted to the president, treasurer, and the honorary secretary, to the Committees of Managers and Visitors, and to the professors, for their valuable services to the institution during the past year. The following gentlemen were unanimously elected as officers for the ensuing year:—President, the Duke of Northumberland; treasurer, Sir James Crichton-Browne; secretary, Sir William Crookes; managers, John B. Broun-Morison, Esq., Dr. John Mitchell Bruce, Dr. Henry E. Armstrong, the Right Hon. Sir Henry Burton Buckley, Sir John Wolfe Barry, the Right Hon. Earl Cathcart, Dr. Donald William Charles Hood, Henry F. Makins, Esq., Sir Francis Laking, Bart., Alexander C. Ionides, Esq., Robert Mond, Esq., Dr. Rudolph Messel, the Hon. Charles A. Parsons, the Right Hon. Sir James Stirling, and Alexander Siemens, Esq.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SULPHIDE TONING OF BROMIDES.

To the Editors.

Gentlemen,—I have read an article in the "B.J." of this week concerning the toning of bromides with barium sulphide. I wish to draw attention to what, in my mind, is a grave mistake, which, coming from a man like Namias, is rather startling. Professor Namias says that the yellow-brown of the sulphide-toned bromide is partly due to the printing paper and partly to the developer. My experience leads me to say that this is not so. Although different makes of papers give various sepia tones, the colour is never unpleasant. The cause of yellowish bromides is due entirely to over-exposure.

I made several different strengths of sodium sulphide, and toned several prints, which had had identical exposures, and there was not the slightest difference in the colour of any. Further, I have made up a strong solution of sodium sulphide, 1 in 3 (about), and it is just as good now as when first used two months ago.—Faithfully yours, PRO.

April 28, 1911.

## SUNDAY WORK IN PHOTOGRAPHIC STUDIOS.

To the Editors.

Gentlemen,—An interesting correspondence in your columns on Sunday opening of studios seems to have exhausted itself. Some writers hoped the P.P.A. would take the matter up, others that the Shops Bill would become law. The P.P.A., having ascertained that photographers are not shopkeepers within the meaning of the Act, has not thought it worth while to move further in the matter. Neither the annual report nor the latest handbook refers to it, which, I think, is a pity, having regard to the great importance of the subject.

The demand for Sunday closing is not answered by the use of such epithets as "Puritanical," "Killjoy," "Narrow-minded," "Mind your own business, and let me mind mine," etc. Sunday is a recognised institution in this country as a day of cessation from business, and the man who closes his premises, whether in accordance with this custom or from religious motives, is entitled to protection against the unfair competition of the man who keeps open in defiance of the custom.

The practice of Sunday photography may have begun with cheap trade, but it is increasing, and gradually working upwards. Can it be doubted that it is one of the principal causes of the present degradation of photography as a profession?

My object in writing now is to point out that the Shops Bill, having passed a second reading without opposition in the House of Commons, is now being considered by a Grand Committee; and, if it is not already too late, and is really the wish of those principally concerned, the necessary amendment to make it include photographers could yet be inserted. The Government, having taken up the question of the Sunday closing of shops, naturally do not want more exceptions than necessary.

Why could not the P.P.A. take a postcard poll of the profession on the question?

If photographers are not included under the Shops Bill, I venture to prophesy that as soon as that measure becomes law the practice of Sunday opening of studios will appear to have received legislative sanction, and will become general; and then many, finding their receipts diminished owing to competition, will bitterly regret that they took no steps to avert the calamity which makes them slaves to their business from Monday morning till Monday morning comes round again. Yours truly,

Bowes Park, N. H. J. RIGDEN.

## THE P.P.A. CONGRESS DINNER.

To the Editors.

Gentlemen,—I shall feel obliged by your affording me the opportunity of announcing that the Council and members of the P.P.A. will welcome the presence at their Congress dinner of members and representatives of photographic manufacturing and dealing firms, and, in fact, anyone who is interested in the business side of photography.

They hope that this invitation will be at least as fully responded to as that issued for the corresponding event at last year's Congress, when the opportunity afforded for personal intercourse between photographers and those who trade with them resulted in the initiation of many friendships, both business and personal.

The dinner will take place at the Criterion Restaurant, Piccadilly, W., on Thursday, May 18, at 6.30 for 7 o'clock. Tickets, price 6s., may be obtained from either of the stewards, Messrs. Alfred Ellis, 51, Baker Street, W., and Lang Sims, 437, Brixton Road, S.W., or from myself.—I am,

ALEXANDER MACKIE, Hon. Secretary.

89, Albany Street, N.W.,
May 1, 1911.

## HYDROQUINONE DEVELOPER.

To the Editors.

Gentlemen,—Your note in this week's "British Journal of Photography" on the use of hydroquinone with caustic alkalis recalls my own first use of this reducing agent soon after Sir William Abney suggested it. I was in North Wales at the time, at Bettws-y-coed, and sent to Hopkins and Williams for a supply, using it with ammonium hydrate (ammonia) as the alkali. I have turned up the formula, and find it consists of:—Hydroquinone, 1 1-5th gr.; ammonium hydrate 3 1-3rd; to 1 oz. water. The negatives developed with it were principally glen subjects and waterfalls, and I was at once impressed by the splendid detail and softness. I frequently exposed duplicate plates, developing one with pyro-ammonia, the other with hydro-ammonia, and always preferred the latter negative. As you remark, the colour was a close approximation to the well-known uranium colour, not so yellow as that given by pyro-ammonia. On seeing prints from these negatives (albumen) some months later I was perfectly charmed with their quality, soft and full of gradation. When, some years later, I tried hydroquinone made up more in accordance with latter-day formulæ, I could not obtain the same class of negative, so gave it up. My objection to using it with ammonia was its slowness compared with pyrogallol, which was a serious drawback when developing 12 x 10 plates in the usual field tent away from home, generally in the evening, and half-asleep after a hard day's work in the open.—Yours faithfully,

G. T. HARRIS.

"Kelso," Knowle Park, Sidmouth.

## OZOBROME AND CHROMIUM PROCESSES.

To the Editors.

Gentlemen,—I am glad to see that you have made some comments on my paper, entitled "Ozobrome and Other Chromium Processes Viewed in a New Light," which appeared in the "B.J.," April 28, 1911, as my special object was to invoke some controversy, being convinced that this would be the best way to get at something near the truth.

With regard to the Piper and Carnegie process, I confess I have been sceptical as to the $Cr_3O_4$ product, which, as far as I know, has not attracted any independent investigators, and about which the authors themselves do not appear to have come to any definite conclusion as to its behaviour with regard to gelatine. It has remained for some time a mysterious compound, which nobody knows much about. However, now that I know that a great deal of time and study has been devoted to the determination of its composition, and that the compound may have the formula $Cr_2O_3CrO$, I am perfectly willing to accept the fact of its production. As to my remark that basic chromate of chromium is the compound produced in the carbon process, I stated that it was the "generally accepted theory," and made no dogmatic assertion; moreover, I was not aware that one is precluded from referring to a subject that has "never been proved." I presume one must not refer to the latent image next.

Standing, however, above the level of minor details, which I am sorry do not satisfy my critic, is the main point of interest, which may be stated as follows:—

In the carbon process, and in the tanning of gelatine by chrome alum, the reducing action produces oxygen.

In the production of tanned gelatine images by the reducing power of metallic silver, such as ozobrome, an independent reducing action, as well as an oxidising action, must be provided. Imagination, and even sentiment, play a larger part in chemistry and physics than most modern scientists are willing to admit, and I would venture to imagine that the opposing negative and positive ions hammer against the cell walls of the gelatine and produce a structural change.—Yours faithfully, THOMAS MANLY.

[We refer to this letter in an "Ex Cathedra" note on a previous page.—EDS. "B.J."]

# Answers to Correspondents.

PHOTOGRAPHS REGISTERED:

T. A. Cornall, Station Studios, Station Parade, Harrogate. *Photograph of the Swedish Treatment and Mechano-Therapeutic Department at the Royal Baths, Harrogate.*

F. D. Shackley, Station Road, Bamber Bridge, Lancs. *Photograph of Reginald Arthur Tatton, Esq., of Cuerden Hall, near Preston, with his dog.*

H. C. Messer, 29, Castle Street, Salisbury. *Combination Photograph of a Placed Group of "A" Co. of the 4th Batt. of The Duke of Edinburgh's Wiltshire Regiment (Territorials).*

A. S.—Alstona Studio, New Bond Street, W.

DON.—We think you must refer to the article by Mr. L. C. Coward in our issue of January 21, 1910.

F. COCK.—We should choose either the first or third of the lenses you name.

THE P.P.A.—I want to become a member of the P.P.A. Do I apply to you? If not, I should be greatly obliged if you could supply me with address of secretary.

Mr. A. Mackie, 89, Albany Street, London, N.W.

STAINS.—Could you tell me of anything to remove pyro stains from tweed cloth?—H. A. B.

We know nothing which we can recommend as certain. We should adivse sending material to the cleaners, and if they fail, trying a preparation of bleaching powder.

ZAPON VARNISH.—Could you inform me where the thin celluloid varnish known as Zapon can be obtained? I think you recommended it, but the ——— ——— say they cannot obtain it of any London wholesale dealer.—E. R. DARNLEY.

Messrs. Penrose and Co., 109, Farringdon Road, E.C., list the colourless Zapon varnish at 3s. per lb.

PRICE OF NEGATIVE.—On Easter Monday I was requested to go a journey of six miles to photograph a wedding group. After seeing the proofs, my customer expressed a wish to purchase the negatives (two whole-plates). I should be very much obliged if you would kindly give your opinion as to what you consider a reasonable price per negative.—SHAPE BRIDGE.

If no prints are ordered, 30s. each negative.

BOOKS.—Can you recommend a serviceable book, teaching methods of photography and retouching, suitable to a young learner of the trade wishing to improve, with address of publisher and price?—J. HARRIS.

"Retouching," by Arthur Whiting (London: George Routledge and Co., 68, Carter Lane, London, E.C., 1s.). For a handbook on general photographic work containing much useful advice you should get "Professional Photography," by C. H. Hewitt, two volumes, 1s. each (Iliffe and Sons).

VARIOUS.—(1) Kindly give a quick intensifier which can be locally applied to negatives that are to be immediately retouched. (2) An easily removed varnish that can be applied locally and successively to negatives by means of a camel-hair brush.—RETOUCHER.

(1) The uranium intensifier should serve your purpose. You will find a good formula in the "Almanac." (2) Rubber solution might do if you only want a temporary protection. It can easily be rubbed off with the finger afterwards. No regular varnish can be removed easily.

LENS SHADE.—Would a piece of card with a hole in act as a stop if placed close to the front of the lens? as I have been thinking of doing that instead of using a tube as a shade. If it acts as a stop, of course it won't do, as it will thus slow the lens without doing what's wanted.—LENS SHADE.

If close to the lens it will act as a small stop, and if a little distance away it will cut down the size of the image unless it is of a certain size. If of the right size and at the right distance it will act just as a tube, and so a tube is the simplest method of arriving at the desired effect.

MOTH IN RUG.—We have a large bearskin rug in our studio which has gone nearly bare in a few places. We cannot trace moth, but it may be that. Can you tell me anything I could put on rug, and how to treat it to prevent its going further? We have had it only a year; it is a thoroughly good one, and it has had very little wear.—HERTFORDSHIRE.

The best suggestion we can make is to give it a good beating every day in the open air. You can put powdered "carbon" (naphthalene) in the rug, but the odour of the naphthalene is not very pleasant in the studio.

RIGHT OF REPRODUCTION.—It has just come under my notice that a London firm in a large way of business is displaying a picture on their business envelopes, the negative of which is my own registered work. What would you advise me to do in this matter? My negative is a half-plate, their reproduction is "portrait"—4 x 2½. Shall I take proceedings against them, or send in a bill? If the latter, what charge ought I to make?—W. K.

Write them pointing out their infringement of your registered copyright, and either (1) sending them an invoice for twice the amount you would have charged in the ordinary way, or (2), without naming a figure, asking them what they propose doing in the matter.

MATT VARNISH.—Would you favour me by letting me have a formula for ground-glass varnish, hard?—A. QUENTIN SMITH.

The formula for the ground-glass varnish which you require is probably that given in the "Almanac," as follows:—

| | | |
|---|---|---|
| Sandarac | 90 grs. | 103 gms. |
| Mastic | 20 grs. | 23 gms. |
| Ether (0.720) | 2 ozs. | 1,000 ccs. |

Dissolve the resin in the ether, and afterwards add:—

| | | |
|---|---|---|
| Benzole | ¼ to 1½ ozs. | 120-700 ccs. |

The proportion of the benzole added determines the nature of the matt obtained. This varnish must be applied to the cold negative, or the coating will not be matt.

PHOTOGRAPHING FURNITURE.—Will you kindly advise me about the following? I have several pieces of antique furniture to photograph in a mansion house—chairs, sideboards, etc. What is wanted specially is to show the carving and inlaid work. As the furniture has a polished surface, I am afraid the reflections will be troublesome. Would you advise having it done in the room, or out of doors? They are willing to carry the articles outside if I wish. And whether a light or dark background would be most suitable?—FURNITURE.

Certainly you will get on better out of doors. Select a spot with as dark surroundings as possible: a courtyard of fair size, with walls on all sides, would be a good situation. For the best rendering of the wood, you will require to use an ortho. plate and light-filter. If you turn to page 33 of "The Photography of Coloured Objects," by Dr. C. E. K. Mees (Wratten and Wainwright, 1s.), you will obtain the most useful advice you can have in this branch of work. A fairly light background will be best.

**Acetylene on P.O.P., etc.**—Could you, through your columns, kindly tell me if acetylene gas has any effect on P.O.P. papers, as I have had this gas fitted throughout, and since doing so have found several sheets of the above paper show a decided yellowing on the edge of the prints—*i.e.*, outer edge of sheets only? I may add, we have had paper longer in stock than this we are using that has kept all right, and the same make. Also, generator is in a separate building, outside. 2. Are there any electric lamps made which would work on 50-volt current, and could this (electric) light be done satisfactorily by small private plant?—An Old Reader.

1. Certainly, P.O.P. will be affected by acetylene; if not by the gas itself, by the impurities in it. 2. You get lamps for this low voltage from a large supply house, such as the General Electric Co., Queen Victoria Street, E.C. The portable installations are satisfactory, though as a rule not cheaper than the regular supply, if this can be obtained. A very good plant is supplied by Mr. R. R. Beard, 10, Trafalgar Road, Old Kent Road, London, S.E.

**Various.**—(1) What advantage is there in backing plates rather than putting black paper at back of plate, as when washing off the backing one is apt to damp the film side, and so marking the plate. (2) Having a stereoscopic camera which is not large enough for standard-size plates, can I use the lenses on present camera on a larger size? What is the proper size of stereo plates?—J. M.

(1) Optical contact between glass and backing must be secured, otherwise the backing will not act; therefore, paper alone is useless. There is no disadvantage in damping the film if it is damped equally all over. We should advise you to ignore the backing until development is complete; then wash it off before immersing in the fixing bath. (2) All depends on the focal length of the lenses; if this is not less than 3½ in. they will serve for full-size plates quite well. The standard size is 6¾ x 4¾ in. (3) This is virtually a collotype process. With care and practice it will produce fairly good results, but we should hesitate to recommend it for postcards unless you want to produce work of a very cheap type. (4) Certainly; it is a very useful instrument.

**Silvering Mirror.**—I propose trying my hand at making a new mirror for my reflex camera. Is Martin's formula for silvering glass a good one, or could you recommend a better? Is there any special difficulty with the process? What kind of dish should be used to hold the silvering solution, and would a glass or porcelain dish cause the solution to deposit silver on the dish instead of on the intended mirror? When the mirror is made, which is the better for coating the surface with—collodion or celluloid varnish?—Fad.

Martin's is a good formula, but every worker has his own formula, and the result probably depends less on the formula than on the user of it. Silvering is a tricky process, and often fails, but probably the chief cause of failure is want of cleanliness. The glass must be absolutely clean, and so also must the dish, else more silver will deposit on the dish than on the glass. You can use glass or porcelain dishes; the former are preferable, as they are more easily cleaned. In any case, the dish is silvered as well as the glass. Collodion or celluloid can be used, but the varnish must be absolutely free from any trace of water and also perfectly clean.

**Lantern Arc-lamps.**—I have a lantern taking 10 ampères, but the arc does not seem to be brilliant enough to pierce the slides sufficiently to light a 15-ft. picture. The screen used is a good sheeting, but unprepared. Would you mind telling me if 10 amp. is enough, and also if I could have the sheet faced or prepare it some way myself?—Q. S.

A lamp taking 10 ampères should give quite sufficient light for the size of disc you mention. You do not say whether the current is direct or alternating, so that it is difficult to suggest where the fault is. If the current is direct, you must place your carbons so that the crater is facing the condenser, the positive carbon slightly in front of the negative, and the whole system tilted so that the positive carbon does not obstruct the light from the crater. We assume that your slides are clear and not too dense. It is impossible to get a bright image from an over-exposed and over-developed slide. If you are showing Autochromes you must be content with a smaller disc, say, 6 ft. to 8 ft. You will find a considerable gain in light if you give the sheet a coat of distemper. The white "Kalko" background paint sold by all photo dealers is excellent for the purpose.

**Glycin Developer.**—Undoubtedly something is wrong with the formula I use for my developer, for I am getting increasing fog as the days are getting warmer. To test this fog I developed in tank an *unexposed* Wratten panchromatic plate with the following developer:—

| | |
|---|---|
| Glycin | 10 grains. |
| $Na_2SO_3$ (anhydrous) | 15 grains. |
| $Na_2CO_3$ (crystals) | 88 grains. |
| Water to | 455 c.cs. |

The time was eighty-five minutes at 58° Fahr., which was found by test to be right for $\gamma = 1$. I measured the fog produced, and it had a density of .55, which I think is considerable at such a comparatively low temperature as 58°. Once before you suggested pot. carbonate, but I do not use it, because it is of indefinite strength, and, as I develop by time method, strength is of utmost importance to me. I use both the $Na_2CO_3$ and $Na_2SO_3$ in tabloid form. I shall be highly obliged if you could suggest some remedy.—S. N. Banerjee.

We do not quite appreciate your objection to potassium carbonate, and would still recommend it. The sulphite may be at fault. Try a fresh sample of ordinary crystalline or anhydrous sulphite.

**Various.**—(1) Would you kindly tell me the names and addresses of firms employing operators to travel in England and abroad to take views, such as Underwood and Underwood, etc.? (2) Also if there are any positions on the Cape or Australian liners for anyone with a good photographic knowledge? I mean, is there a department on these boats for the development, printing, etc., of the passengers' plates and films taken on the voyage, and, if so, to whom should I apply? (3) Are the prospects in Australia, South Africa, or New Zealand for photographers (portrait and general work, view, etc.) any better or about the same as in England? When would be the best time of year to go out, and what professional papers are published in these Colonies? Are they obtainable in England?—Traveller.

(1) Valentine and Co., Dundee; the Photochrome Co., 61, St. Paul's Churchyard; the White Co., 110, Strand, W.C. (2) So far as we know, there are no such departments on the ocean liners. Why not write inquiring of the shipping companies? (3) Conditions are very much as here. In Australia prices for portraits are cut very fine. There is no journal in South Africa; in Australia there are "Australian Photographic Review," 379, George Street, Sydney, and "Australian Photographic Journal," 386, George Street, Sydney; in New Zealand, "Sharland's New Zealand Photographer," Lorne Street, Auckland. Apply direct for copies and tariff.

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THE BRITISH

# JOURNAL OF PHOTOGRAPHY.

No. 2662. Vol. LVIII. FRIDAY, MAY 12, 1911. Price Twopence.

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## EXHIBITION NUMBER.

### SUMMARY.

The diary for the week of the Professional Photographers' Congress is given on page 366, where will be found a list of the members attending.

The exhibition of the Royal Photographic Society, now open at Prince's Skating Rink, Knightsbridge, is representative of all departments of photography, pictorial, scientific, and commercial. A review of the various sections commences on page 355.

The pictorial section this year, though it is better than that of last August, certainly falls below the immediate predecessors of this latter. The work of Arthur Norman, David Kay, and J. M. Whitehead forms a notable feature of it. (P. 356.)

The new "general" section contains photographs which are pictorially good and others which are technically bad. Apparently certain of the prints in this section appear there in consequence of rejection by the pictorial judges, not at the expressed wish of the exhibitor. (P. 357.)

The professional section is no better than it has been of late at R.P.S. exhibitions. (P. 359.)

Examples of photo-mechanical processes, though few in number, illustrate progress in some important directions. (P. 359.)

Some excellent examples of screen-plate work, chiefly on Autochrome plates, are shown. (P. 359.)

Colour photography on paper is represented by the excellent examples of the Clifton process shown in the "professional" section. (P. 359.)

The application of photography to the study of natural history provides a number of excellent exhibits in this class. (P. 360.)

The section devoted to scientific photography and applications of the camera in scientific work is a stronger one than has been brought together for several years past. (P. 360.)

The trade exhibits include the apparatus of a number of leading firms. (P. 361.)

The programme of lectures to be given during the exhibition will be found on page 361.

Our review of the exhibition of the London Secession, now open at the Newman Art Gallery, will be found on page 362.

The leading items of interest to be seen at the Arts and Crafts Exhibition, which opens to-day (Friday) at the Horticultural Hall, Vincent Square, Westminster, will be found mentioned on page 363.

## EX CATHEDRA.

**Processes at the R.P.S. Exhibition.** It is always interesting to note the various processes employed by the pictorial workers at the R.P.S. Exhibition, for the comparison of different years affords a clue as to the direction in which the best workers are moving, and also sometimes suggests the desirability of effecting practical improvements in one or other process. For example, the introduction of the oil process and its immediate evident popularity suggested that the bromoil process should be an eminently serviceable one. Figures now show that this anticipation has been more than realised; for in the present exhibition the original oil pigment process is represented by the insignificant percentage of 2½, which is only over one-fifth of the percentage for last year, while bromoil prints have increased from 19 to 28 per cent. Unfortunately, the figures can fairly be compared for the last two years alone, for in 1909 only about half of the exhibitors took any notice of the request to state on their entry forms the process used. In the 1910 and 1911 exhibitions, however, just on 90 per cent. of the exhibitors have given this information, and so these two years can quite justly be compared. We give a summary of the results in the form of percentages of the total number of processes stated. In addition to the very striking fall in oil prints, it will be noticed that bromides show a very marked advance, more than half the total number of prints being either bromides or dependent for their origin on bromide prints:—

Percentages.

| | 1910. | 1911. |
|---|---|---|
| Oil prints | 11½ | 2½ |
| Bromoils | 19½ | 28½ |
| Total of oil pigment prints | 31 | 31 |
| Bromide | 27 | 33 |
| Platinum | 17½ | 15 |
| Carbon (including ozobrome) | 11 | 11½ |
| Gum | 6 | 6¼ |
| Total prints with bromide basis | 50 | 65 |
| Control processes (oil, bromoil, and gum) | 36 | 37 |

It will be noticed that oil processes, carbon, and gum show almost exactly the same percentages, while bromides have become more numerous and platinum prints less so. The so-called "control" processes show very nearly the same proportion in each year. If the prints in Section II. were to be considered as well, then the figures for bromide printing would be greatly increased, for this seems to be the most popular process in "general" photography as well as in the pictorial variety. Only one bromoil print is to be found in this section, according to the catalogue, while nineteen carbons and eight platinum prints alone are to be found, against some sixty bromide prints. This represents about 60 per cent. of the total of which the process is named, and so it is evident that bromide enlarging is still by far the most popular process of the day.

**Sulphide Toning and Colour.** The suggestion of a correspondent last week to the effect that the colour of a sulphide-toned bromide print depended entirely on exposure has much to commend it. It is now generally admitted that a good colour can only be obtained on prints in which the image possesses what we may term a good body of silver, and this quality is not merely one of development, as some seem to think. It is one of exposure and development combined, and if the exposure is more than that which is accurately required, then development has to be cut short, with the result that a given density is produced by a different physical disposition of metallic silver. Apparently it is necessary that the metal should be deposited compactly if a good colour is to be obtained, and there can be no doubt that a considerable physical difference exists between the result of correct exposure followed by full development and over-exposure followed by partial development. To a certain extent shortened development will compensate for over-exposure, and many photographers who are accustomed to aim at black tones alone rely a good deal on this fact in their work. When they attempt sulphide-toning trouble ensues, for the results that they are accustomed to are quite unsuited to the process.

* * *

**Loyal Manifestations.** In the coming period of decoration and illumination, the photographer should, of all people, be the one to take full advantage of any opportunities for advertisement. The tasteful decoration of window or showcase with the national colours, preferably in natural flowers, will serve to draw attention to a few carefully selected specimens, as well as a large portrait of the King. Many clubs, schools, and other institutions will be purchasing such pictures, and possibly more than the one window sample can be disposed of. Where the circumstances are favourable a lantern show with a selection of, say, a dozen slides of the Royal Family, the palaces, etc., will attract much notice, but a long series must not be shown, as this is likely to cause a congestion of traffic. The general scheme of decoration or illumination may safely be left to the taste of the individual, but our advice to photographers is to be in all the Coronation festivities for all they are worth. The occasion should also furnish an opportunity for a little judicious invitation work. The committee who direct the local junketings and erect the clock tower or drinking fountain will feel flattered to see themselves on view in a Coronation window, and will hardly fail to give an order which would never have resulted from their own initiative. Some photographers know how to work this sort of thing, others never give it a thought. Verb. sap.

## THE EFFICIENCY OF IRIS AND DIAPHRAGM SHUTTERS.

Mr. Lan Davis's paper on the theory of sector shutters, to which he referred in an Ex Cathedra note in our issue of March 24, is now published in the "Photographic Journal," and so having his formulæ and figures before us, we can now go more fully into the question we raised in our note. Mr. Davis pointed out in his paper that by diminishing the number of leaves in a sector shutter the efficiency is increased, and by increasing the number of leaves while the efficiency is lowered the shutter aperture becomes larger in proportion to the total diameter of shutter casing. It follows from this that if the shutter casing is of fixed diameter, then the multi-leaved shutter will have a larger aperture than the two-leaved shutter, therefore if each shutter is used on a lens of the same aperture, the multi-leaved shutter will gain efficiency owing to the ratio of its aperture to the lens aperture being greater than in the case of the other shutter. The multi-leaved shutter, therefore, loses efficiency on account of the multiplicity of its leaves, and gains it on account of its large aperture. Somewhere the gain may balance the loss, and if this is so then beyond this point the multi-leaved shutter should have the advantage. On these grounds we suggested in our note that the particular number of leaves giving the best result might possibly vary with the relative proportions of shutter-casing and lens-aperture. On April 7 we published a letter by Mr. Davis dealing with our suggestion, but judging from this letter we could not have made our ideas quite clear, and therefore we now propose to go into the matter more fully with the aid of Mr. Lan Davis's published calculations.

In the "Photographic Journal" we find a table giving the relative variations of shutter openings for varying numbers of shutter leaves, from which table it appears that while a two-leaved shutter gives an opening equal to .5 of the shell diameter, one with twenty leaves gives an opening equal to .79 of the shell diameter. Therefore, with two shutters of equal outside diameter, we may take the shutter openings as being in the ratio of 5 to 8. If the lens aperture is equal to the aperture of the two-leaved shutter then it is $\frac{5}{8}$ the aperture of the twenty-leaved shutter.

From these data we can readily calculate the relative efficiencies by the general formula.

$$\text{Total efficiency} = 1 - \frac{\text{A}}{\text{B}}(1 - e)$$

where A = lens aperture, B = shutter aperture, and $e$ = efficiency, for the case in which shutter and lens apertures are the same size, or, in other words, the shutter efficiency regardless of lens aperture.

For a perfect iris shutter, with circular opening, the value of $e$ is $\frac{1}{3}$, uniform speed of opening and closing being assumed. This is a reasonable assumption in the case of a very short exposure, which is the only case of material importance. The efficiency of the two-leaved shutter described by Mr. Davis is not given in his paper, but probably we shall not be far out in giving it the value of $\frac{3}{5}$.

Taking these two values for $e$, the relative total efficiencies of the two shutters for the same lens-aperture work out at $\frac{3}{5}$ of the total duration of exposure for the two-leaved shutter, and $\frac{7}{12}$ for the twenty-leaved shutter, the ratio of these efficiencies being 36 to 35, or practically equal, the very small difference being in favour of the two-leaved shutter. If we increase the number of leaves to thirty, the ratios are 387 to 395, which leaves a small balance in favour of the multi-leaved shutter. Practically, however, the results are equal, so that we may say that with a number of leaves equal to twenty or more the efficiency is equal to that of the two-leaved shutter, but never materially greater.

This answers the question we raised with regard to efficiency, but the practical point of importance is not the efficiency, but the efficient exposure which is the product of the efficiency and the duration of exposure.

If we assume the duration to be the same in both cases, then, of course, the efficiencies being equal, the efficient exposures will also be equal. That is to say, an exposure lasting $\frac{1}{100}$ second will be equivalent very approximately to $\frac{3}{500}$ in both cases. It must, however, not be forgotten that equal duration of exposure implies a much higher spring tension in the case of the twenty-leaved shutter, the blades of which must move at about $\frac{8}{5}$ the speed of those in the two-leaved shutter to complete the exposure in the same total time. If the spring tensions are the same then the duration of exposure in the case of the multi-leaved shutter is increased in the proportion of 8 to 5, and the efficient exposure in the same ratio. In this case the multi-leaved shutter will show to great advantage, but the comparison is not a fair one, for most evidently in comparing the advantages of various shutters in regard to efficiency we should always take the durations of exposure as equal.

There is yet another case to consider. We have assumed the lens-aperture to be equal to the shutter aperture in the case of the two-lens shutter, but suppose it to be smaller than this, say half the diameter, or *f*/11 instead of *f*/5.6. The efficiency will then be $\frac{4}{5}$ in the case of the two-leaved shutter, and $\frac{19}{24}$, or practically the same in the case of the other. The reduction of the aperture therefore does not make any material difference in the result, but it is of importance to note the rise of efficiency, the effect of which with modern lens shutters is seldom realised. By reducing the aperture from *f*/5.6 to *f*/11, we have lowered its intensity to $\frac{1}{4}$, and in the absence of a shutter this would necessitate increasing the exposure four times. With the shutter, however, the efficiency has gone up from $\frac{3}{5}$ to $\frac{4}{5}$, therefore the exposure required is not four times that originally given, but three times, which means that $\frac{1}{100}$ second with the small stop will be equivalent to $\frac{1}{300}$ with the larger one.

The figures we have given of course only apply to short exposures in which there is no pause in the movement of the shutter blades at the moment of full opening. With exposures under $\frac{1}{100}$ a brake generally comes into play at this period of the exposure, and holds the shutter open for a certain time. The efficiency then rapidly goes up far higher than the figures given, but the relative effects as regards the two shutters will remain the same so long as the speeds of opening and closing are equal. That is to say, the efficiencies of the two-leaved and twenty-leaved shutters will rise rapidly, but will rise at much the same rate, and still bear approximately the same ratio.

To sum up the results, while it is interesting to find that with shutters of the same size the efficiency of a multi-leaved shutter becomes equal to that of a two-leaved shutter when the leaves number over twenty, still, it is not a fact of great importance, because the ultimate theoretical gain is so very small that it will assuredly be counteracted by the increased friction and by the complexities of the construction. The investigation, however, very fully proves the great advantages of shutters with big openings and also shows that the best way of obtaining the big opening is not by increasing the number of leaves, but by increasing the total diameter of the shutter. For a long time past we have insisted in these pages upon the value of big lens-shutters, and it would now seem that the ideal arrangement should be a two- or three-leaved shutter made of as big a diameter as can be fitted on the camera. In fact, this large size is a necessity if the lens shutter is to replace the focal-plane shutter for high speed work, and we see no reason why the shutter should not be made as large as the camera front, nor indeed why it should not itself be utilised as the camera front. It is interesting to note that with a lens of one inch diaphragm aperture a two-leaved shutter of only three inches outside diameter may have an efficiency of .75 per cent. at its highest speed and at full aperture (assuming *e* to equal $\frac{3}{5}$). and it should not be difficult to increase this yet more by making the shutter part of the camera.

# THE EXHIBITION OF THE ROYAL PHOTOGRAPHIC SOCIETY.

THE fifty-sixth annual exhibition of the Royal Photographic Society, held this year at Prince's Skating Club, Knightsbridge, S.W., was opened on Tuesday evening last by a private view and reception held by the President, Lord Redesdale, supported by the Earl of Crawford, Mr. J. C. S. Mummery, Mr. Chapman Jones, and other officers of the Society. The new premises provide ample accommodation for all sections of the exhibition. The pictorial, general, scientific, and natural history sections are arranged in separately built galleries in the further part of the hall, an arrangement which gives the most prominent positions to the trade exhibits. To those who are unacquainted with this part of London it may be said that the exhibition is within three minutes' walk of the Knightsbridge station on the Finsbury Park and Piccadilly tube. Those travelling by omnibus may alight at Sloane Street and walk the short distance from this spot. Hammersmith 'buses pass the door of the exhibition.

There is a feeling both "uttered and unexpressed" that the present exhibition of this society will prove, in the end, a successful venture. Its new locality alone adds an expectant interest to an anticipated visit, and the spaciousness of the hall makes a good impression upon the visitor. There is plenty of room for all the sections, and the trade have spread themselves out with good will, yet there remains ample room for settees and chairs, and for promenading as well. The catering is copious and comfortable, and the loftiness of the hall obviates all feeling of oppression and stuffiness. Added to these material advantages, there is the popular attraction of a collection of photographs taken and lent by Her Majesty Queen Alexandra. These are of the utmost interest from every point of view. For not only is there a distinct sensation of pride in the fact of Queen Alexandra's participation to such good purpose in the pursuit that interests us and our readers, but the subject matter of the royal work commands our respect and regard. The chief feature is a chronological series of portraits and portrait-groups of the late King Edward VII., and his near relatives and friends dating back as far as 1853, which is the date of an old photograph of a print showing the Prince Consort, Prince of Wales, and the Duke of Edinburgh, listening to a lecture by Faraday. Amongst some enlargements of sea views taken upon occasions of various naval functions, there are one or two that make strong claims to pictorial merit. In particular, "Sunset at Sea" (12) has beautiful qualities. The bulk and nearness of a lowering cloud and its shadow upon the water is impressive to a high degree.

Between Section I., devoted to pictorial photography, and Section II., general photography, there will be, we think, little demarcation in the minds of most visitors. It cannot be said that the second section is an organised display of technical work; but then its title of "general" disarms criticism on such grounds. A systematised exhibition of purely technical photography showing varieties of ways and means might have been instructive, but a general show is neither one thing nor the other, and we believe that the attractiveness of this section will, as a matter of fact, rest chiefly upon its successes in a pictorial direction. Many things in it are better as pictures than others that might be named in the pictorial section. On the other hand, one or two should have been disqualified as technical examples if pure untouched or "straight" work was the shibboleth. It is hard to discover the standard or criterion set up by the committee; but when all is said and done, there can be no doubt that the extra field offered by the additional section has secured some work that might never have been placed before the considerations of the purely pictorial judges. In future years the management will no doubt be able to define more clearly the requirements of each section, and be in a position to disqualify all entries that do not conform to those requirements.

The exhibition remains open till May 31, daily, with the exception of Sundays, from 11 a.m. till 10 p.m. The trade section closes each evening at 8.15, and lantern lectures, a list of which is given in a later paragraph, commence at 8.30.

## THE PICTORIAL SECTION.

In the Pictorial Section the work is distinctly better than that of last year, though we do not consider that it reaches the level of one or two shows of recent years. The standard is a high one, and is well maintained, and this, perhaps, explains why no particular picture stands out very far above the average. One or two workers have stepped to a front rank from comparative obscurity; for example, Arthur Norman, Arthur Smith, James McKissack, Thos. Morton, Major Haigh, Miss Blaiklock, and Mrs. Constance Kinder, whilst a few known as good but reticent pictorialists have now surpassed themselves. John Moffat is one of the latter. His "Mother and Child" (1) is a noble oil print, conceived upon the classic lines of the old masters. It is guilty only of a monotony in the darker tones; but the charm of the child is irresistible. Mrs. Ambrose Ralli likewise appears to great advantage in several bromoils, one called "On Lake Orta" (69), a most happy selection, treated with skill; another, an architectural subject of much quality, where an Italian peasant woman sits in "A Shady Corner" (76); still another peasant woman seated in the open sunshine, her face lit by reflected light and wearing "Goggles" (92), and "Childhood" (100), showing two youngsters with a background of dark woodland, too dark for the best effect. All these works are, more or less, distinguished. C. David Kay also does well with "The Walls of Loches" (38), a subject of ruins and trees, of strong rich and varied tones. All his works are in bromoil, the finest being this, and "The Old Moat" (122). John M. Lewis's capital snow scene, "When Winter Binds in Frosty Chains" (80), will do him much credit. So will the highly picturesque "Castle of the North" (133) redound to the credit of R. B. Penman, who has caught the spirit of romance from Harry Wild.

Reverting to those names that are either quite new or but little famous for past pictorial triumphs, the first work that claims our notice is an uncommonly strong bromide by Arthur Norman, called "After Rain" (137). This shows an angry but sluggish sea, the waves of which have fine form, and are dark by reason of the still lowering sky above them. The mood of the scene has been caught to the full, and the treatment of the subject speaks for the artistic equipment of the photographer. In his pretty landscape, "The Delicate River Dove" (77), he is less happy by having lost the exact tones that should give the proper near or far effect of his subject matter. "Polperro" (81) reinstates his reputation by its fine quality. The next print that arrests us is the very captivating "Mother and Child" (118), by Violet K. Blaiklock. The delicacy and firmness of this, and the charm of the posing, will be pleasing to all, especially to mothers, who will endorse the pictured fact that the kissing in these cases is usually an enthusiastic rite on the side of the mother only. Of two oil prints by Arthur Smith, "At Carnarvon" (160) is by far the better. Indeed, it is in our opinion one of the gems of the show. Mr. Smith has very pluckily and happily pressed into foreground service the massy forms of a couple of boats on the near shore. They are strong and rich in tone, yet quite undemonstrative; but they frame up to immense advantage the exquisite forms and delicacies of the castle and all that surrounds it across the water. The light, air and quality of this little print is unsurpassed. James McKissack has succumbed to the beckoning of Rothenburg, which, by the way, must be getting a very camera-infested place. His tones are a little "bald"; that is to say, without suggestion. But he is in his element with the different class of subject shown in "A Patched Sail" (167), a perfectly delightful bromoil where the tones are first-rate in assortment and quality, and where it appears that he may be, after all, in spite of the German town views, a past master of all pictorial matters. Another fine print comes from Thos. Morton, called "Idle Moments" (40), and showing the back view of a lady in evening attire, who lolls upon a couch as she gazes in a mirror. Mr. Morton has understood perfectly the artistic wisdom of allowing his high light to accumulate gently, not furiously, in the frequent manner of photographers, upon one point only of his composition. The quality of the flesh of the lady's arms and back is splendid. Bromoil again scores in Major E. H. Haigh's very noble "Madonna of the East" (42), who is, quite excusably, furnished with a halo by an illogical lightening of the tone of the wall behind her. The chief beauties of this print are the good pose of the woman and the really admirable play of light and shade over the folds of her dress. Two bromoils by Mrs. Constance Kinder deserve special praise, "On the Heights" (33), which shows a finely shaped tree as a foreground object with a distance of bay and hills, and, better still, "From Under the Rowan Tree" (134), a view of a misty lake covered in by overhanging trees. The treatment of this print is beautifully carried out.

Of the well-known men F. J. Mortimer has made a success on the score of incident and action in his "Outpost of Empire" (4), which shows, with an ingenuous disregard of conventional composition, the prow of a boat in which three men are pulling out to a lighthouse. The attitudes and the "go" of the men make the print highly attractive. Mr. Mortimer sends no other exhibit in this section. R. Lincoln Cocks is to the fore with another selection of his Algerian work. "Old Biskra" (73) is a highly impressive view, with masses of trees, only too dark, perhaps, for art if not for nature. "A Corner of the Market, Biskra" (94), is less fierce in its contrasts, showing a gentle but full sunlight effect upon groups of men and heaps of what appears to the ignorant critic as some kind of dried fruit. There is a nice feeling of the generous and relaxing climate of the locality in this print. We fear "The Shepherd" (169) is lacking in light upon the ground. R. M. Cocks sends three bromoils, of which the finest is "Street Scene—Sidi Okba" (172), though the other view of the same town (168) shows a successfully sunny group of figures. "Up the River" (171) appears to be English, and is very charming. We could only wish less contrast in the tones. The white flowers of the foreground are inclined to be spotty on account of all else being so dark. On the whole, the Algerian views of the Messrs. Cocks seem to us to be sunnier and brighter than they were a year ago. It is easy to be "stodgy" with bromoil, but one soon learns better. "Nellie Martyll" (9), by E. O. Hoppé, a lady on a settee with a cat, does not make a great appeal to us; nor does the full-length portrait of "William Nicholson" (125), with his white trousers in hideous contrast, right down to the boots, with everything around them. As we know Mr. Hoppé to be capable of fine work if he likes, we do not feel gratified that in this and in his "Self-Portrait" (132) he should have permitted himself to go to the extreme of harshness and coarseness, avoiding all delicacy and subtlety. Another portrait of an artist, "S. H. Sime" (174), gets nothing of any interest out of the face of such an interesting man. The head is badly placed in the print, and the staring eyes of the mask in the background are most aggressive blemishes. Mrs. G. A. Barton sends to this section three carbon prints, the chief of which—"The First Communion" (34)—we have already dealt with in these pages when reviewing the recent Liverpool exhibition. We do not feel called upon to alter our verdict, which, we think, applies alike to all Mrs. Barton's work. Her posing and her designing are excellent, but her sophisticated "treatment" which results always in flatness of effect and dunness of colour is to be regretted. Her other works here are "My Sweet Highland Mary" (11) and "The Gardener's Daughter" (181), both of which show sweetness and grace in the management of the models. C. F. Inston still goes on to triumph in bromoil in his beautiful seascape, "As Daylight Dies" (144), and the very "moody" "By the River Side" (153). It would be fair to say that for absolute feeling this landscape is *facile princeps*. In the sea view there is a fault—the darkness accumulates too solidly at the left corner—but the moon (of course it *is* the moon) breaking through the clouds, and the gentle yet forceful tones of the whole are in every way admirable. "Low Tide" (12) is also good, and "Mowing Thistles" (29) gives well the sad and gloomy effect that Mr. Inston pins his reputation to. The pictures of E. T. Holding are, as always, fresh in style. He generally has some little variety in store for us. "Friends" (13) is a pretty design of two young girls, one looking over the shoulder of the other, and both in profile. It is a platinum print of rare quality. Next we have two bromides. "In the Harbour" (16) is a good effort that has regard to nature as well as to art; but in "The Old Punt" (17) we fear the old photographic fault of "jumpiness" from light to dark has marred an otherwise excellent subject. There is nothing of this in "The Kitten" (26), however, which shows, besides the animal supporting the title rôle, a child who is, in fact, of more importance. Unfortunately, these are separated by an angle of wall from a shrub of some sort. This feature is an anti-climax in its isolated position. Why ever did not Mr. Holding bring his elements together? The tones and quality of the print are all that could be desired. "Early One Morning" (o1) is another river scene, taken perhaps a little *too* early, since the mists have not ministered much to the charms of the group. Dr. E. G. Boon excels in the management of light, dainty and sparkling scenes. His figure in glinting sun-splashes of a young girl dressed in white and holding in her hand "The Dead Bird" (14) is a delicious example of his style, and so also is "Speeding the Bride" (121), an astounding feat apparently on the part of the operator, who seems to have been supported by supernatural means in mid-air before the out-of-door aspect of a window, wherefrom three young girls with the most animated expressions wave adieux to the unseen departing bride.

One of the newcomers is the Baronin Viola v. Rieveren, or Riederen (accordingly as you look at the body or the index of the catalogue). She sends a strong and admirably worked "pigment" print called "The Swan" (21). There are cygnets also in the composition. The charm lies in the texture and light and shade of the feathers of the swan. C. J. Bryden's "Church on the Hill" (22) we praised at Liverpool. "The Broom-Seller" (23), by T. O. Ralli, is one of those arched by-ways in some foreign town which give the advantages of shaded vistas and bright distances. In the front sits the broom-seller, a moderately important and successful figure. Bertram Park makes a larger pictorial show than most of the exhibitors, and he will doubtless score with his two figure subjects named respectively "Carmencita" (51) and "Zingara" (112). These are similar in subject and presumably from the same charming model, who maintains a pretty pose in both, and whose features show the lit-from-below effect. Mr. Park further exhibits a theatrical scene (30), which is a great falling off from his recent "Follies." It is from Oscar Wilde's play of "Salome," and is a fairly crowded composition. But to our minds it is on an entirely different plane to the effort of "The Follies," which was an artistic attempt to give the tones and the light sensations of a figure on the stage as seen from the darkened auditorium. There was a motive in that. But the Salome photograph is quite on the level of those professional groups which are taken and used for advertising purposes. There is no artistic motive or incentive in it at all. It is simply a close view, taken actually on the boards apparently, and full of the black and meaningless shadows that stage lighting or magnesium lighting results in photographs. Mr. Park is happier in his "Bouley Bay, Jersey" (25), in which the near fir branches furnish a decorative feature. Furley Lewis is content with two portraits only, both heads. They are replete with the qualities we have learned to look for from him. "Teresa Hornsby" (27) is the subject of one, and the other, and, as we think, the finer, is "Fred Enock, Esq." (28), whose animated features and kindly expression give the print a truly life-like charm. Another worker who keeps up to the level of his own excellence is John M. Whitehead. His four landscapes, though conventional, are full of poetry and natural truth. We might perhaps wish for a little more reflection in the water of "Tempest Riven" (37); but "On the Brooding Hills" (41) and "The Distant Toon" (109) have no drawbacks, and the tree and mountains of "'Twixt Spring and Summer" (115) are quite in the large manner of composition.

John H. Gear is faithful to his oil methods, of which "The Dispute" (43) is a fine example. It shows an altercation between some men in boats upon a canal flanked by buildings in sunlight. The flatness of the wall is perhaps a little jeopardised by the modulation of the light upon it in one part. The works by C. David Kay, of which, so far, we have not treated, are "The Palace of the Sleeping Beauty" (39) and "The Velvet Gown" (44). The first is merely a rather ordinary view of a French château, apparently, with moat and trees; but if there was anything about it in mood or effect that suggested to Mr. Kay his title, all we can say is that he has let it slip through his fingers. In other respects we have nothing to say, either against it or for it. The figure subject also is rather puzzling since one expects to find velvet gowns upon feminine people as a rule, whereas this figure looks like a young male. Moreover, we look at the gown, as the title suggests, and we see nothing in it ravishingly velvety, nor in other ways remarkable. So much for aiming too high with a title! "Under the Viaduct" (45) is a capital study of a river scene where men in a rowing-boat form the incident. This is by Alexander G. Watson.

We will notice the remainder of the section next week.

## THE GENERAL SECTION.

The arrangement of the galleries at the Exhibition this year should be very flattering to the pictorialists. Their work is hung in a sort of gallery within a gallery, an inner holy of holies, while in the ambulatory round this is the merely "general" technical and scientific work. We do not quite know on what lines the selection has been made, for, obviously, the selecting committees keep their own counsel on such matters; but it looks very much as if a vast mass of work has been sent in from which the pictorial cream has been selected by the pictorial selection committee, and the residue handed over to the technicians for them to work their wicked will upon. Such an arrangement, we imagine, may not be unsatisfactory to the exhibitors, or some of them, for a good deal of work is hung in Section II., which has quite clearly been produced as pictorial rather than as technical work. We must admit that some of the Section II. work we should have preferred to see in Section I. in place of certain works there hung. This state of affairs makes it somewhat unfair to exhibitors to criticise the work from a purely technical point of view, and we think it will be quite permissible in those cases where a pictorial aim is obvious to refer to the picture from that point of view.

The first ten pictures form an interesting group of architectural interiors with an exterior, No. 186, "St. Sebald, Nuremberg," by W. A. Clark. This is sunny with broad, bold masses, but the architecture appears, even if it is not, somewhat new and clean cut, and so loses picturesqueness. G. J. T. Walford's "South Triforium, Gloucester" (185), is mellow and rich, and John Archer's "North Choir Aisle, Ely," (187), shows clever technique. No. 188, "Norman Columns," by Florence Bell, is a fine study, but needs spotting, a defect which should have ensured rejection in a purely technical section. Richard J. Delf, in No. 191, shows a fine photograph of a *bas-relievo*, and No. 195, "Poet's Memorial, Park Lane," by W. F. L. Wastell, a night effect, is one of the best things we have seen from this worker. The way in which the figure which crowns the memorial is almost lost in the darkness is strikingly true. W. F. Fincham's "Waiting for a Fare," No. 197, is somewhat heavy in tone. The catalogue describes this as waiting for a *foc*, which is rather unkind, as the cab is standing outside a public-house. Nos. 200 to 205 are by H. Ziesemer, and are an exceedingly good series of portraits. Nos. 200 and 202 are both very fine, and from every point of view are to be preferred to the group, No. 204, which has secured a medal. The "Portrait," No. 206, by Harold Moore, is hard and unpleasant, while No. 208, "The Portico Steps," by Louis Dick, is a bold piece of work killed by unsuitable framing. No. 207, Percy W. Morris, "Norwich Cathedral," is a strong, rich print with fine quality, while 211, "The Crypt, Gloucester," by T. M. Weaver, is a well-handled and difficult subject which is glowing with sunlight.

We should have liked to see No. 215, "Pillars of Ely," in the pictorial section. In our opinion it ranks very high as a piece of architectural work, and comes very near to some of our foremost architectural workers at their best. This is by J. R. H. Weaver. His "Southwell Choir Screen" (216) is not so satisfactory, being somewhat spoiled by the cutting off of the top of the ogee. C. Borup has a number of excellent interiors with figures which are all well managed. In one or two the shadows suffer a little, the exposures having, no doubt, been cut down a little to lessen the rest of the figures moving. These are numbers 217, 224, 233, 284, and 287. They all form exceedingly good examples of "at home" portraiture. Miss Kate Smith has one of her dainty woodland subjects, which she calls, scarcely appropriately, we think, "Soliloquizing," No. 226.

No. 229, "Elise," by Arthur Norman, is vignetted in too close to the head, while 232, "Babyhood," by Harold House, is somewhat messy in appearance and immature. Babyhood is, of course, immature, but its portrait need not be so. "Gwendoline," No. 230, by G. Porter Higgins, is hard, and is defective in the high-light gradations. R. B. White has a good, clean, straightforward piece of work in No. 228, "On the Nile at Gherireh," a carbon enlargement; but we feel that "Baumbliste," by Adolph Egerman, No. 231, would have been all the better for more exposure, the shadow tones appearing heavy and solid. No. 234, "Summer Time," is also a trifle heavy in the shadows, and the distant hill which runs almost to the top of the print does not readily explain itself. This is by Fred Whittaker. Dr. G. P. Jordan's "The Mainsail" (235), just misses being a good thing. It is a trifle hard, and needs something at the bottom corner to help the balance. In No. 236, "Winter," E. J. Wilson has managed to lose gradation at both ends of the scale, the foam splashes being chalky and the rock shadows inky black. Contrast with this No. 240, "Winter Haze, Locarno," by Dr. Garratt Campbell, which possesses perfect tonal gradation. "The Sweet Shop," No. 237, is a clever idea, but the figures are bunched together somewhat, and its producer, J. A. Lomax, has got the enlargement a trifle chalky. In "Miss Nora" (328), by W. G. Hill, the touching up of the eyes on the print is much too obvious. This worker's "Hallowed Rest," No. 241, is far too harsh to give any proper effect of sunlight. No. 243, "Aiguelle des Blaitière," by Dr. C. Aitkin Swan, is harsh and crude, and should be compared with No. 269, Thurstan Holland's medalled work which hangs just opposite. "Gooseberries," No. 245, by G. A. Booth, shows beautiful relief and texture, and J. A. Hopson's "The Chameleon" (246) is a good portrait group. No. 247, "The Minster Door," by W. G. Hill, is our old friend the door in the north choir aisle at Ely; but it is not only a fine bit of technical work, but also handled with better pictorial effect than some versions we have previously seen. The effect of light in No. 250, "St. Bartholomew's the Great," is quite characteristic of the place, and T. M. Weaver is to be congratulated on this success.

Mrs. Carine Cadby shows a portrait, No. 252, of "Mrs. E. Whitehead," in which we think the light behind the head is unduly forced. The whole print has a somewhat patchy and ineffective appearance, and is not up to this worker's standard, either technically or pictorially. H. Light's "Chrysanthemums," No. 257, would have been more effective had the arrangement been less triangular, and the print is somewhat too heavy. No. 260, another of G. J. T. Walford's interiors, "The Cantelupe Shrine," shows splendid gradation of tones, but would have been improved by a slightly lower view point. "An Old Doorway, Cairo" (263), by R. B. White, is a fine piece of technique. Florence C. Vandamm has three portraits, all of which fall short in the shadows, the actual backgrounds are either too black or the exposures insufficient. A little more shadow quality would have made No. 268, a portrait of "E. Temple Thurston," a very fine thing, while No. 264, "Jas. Lockyer," is somewhat spoiled by the out of focus right hand, and the fact that the head is rather too near the top left-hand corner of the print. No. 268, by the way, is quite killed by the glaring white lines of the mount. H. R. Campion's "In Ely Cathedral," is very heavy and solid in the shadows. This is No. 265, and its producer has yet to learn how to properly expose on such subjects. No. 270, "Jock," a picture of a small boy eating a large bun, is not satisfactory. The eyes dilate in an unpleasant way, and Thomas Petty might try a subject which would not emphasise the animal to quite so great an extent. No. 271, "A Norman Courtyard," by J. H. Watkins, shows how sunlight ought to be rendered, this being largely a matter of suitable exposure when once the proper lighting has been selected. Essenhigh Corke shows in No. 273 a study which is not particularly satisfactory from any point of view; while the portrait of "Sonny," by Hamilton Smith, No. 274, has a background mottled yet blank, and an expression somewhat vacant.

No. 276, a toned bromide, by G. P. Jordan, is weak towards the sides, and suggests fading, probably the result of the toning process employed. H. Wild's "Frascati's," No. 277, is a little blobby, and is not equal to 329, "Ludgate Hill," by the same worker, in which a fine effect of artificial light on buildings has been obtained. The examples of three-colour carbon by Rev. H. Walter Berry are both pleasing in colour and show a mastery of this difficult process. These are Nos. 291 and 295.

Dr. Adolph Abraham's photographs of Wolfe's eighth attempt to swim the Channel (296) are examples of clean snap-shot work, but 298 and 299, V. E. Morris's decorative effects of "Frost on a Window Pane," are masterly technical renderings of much more difficult subjects. No. 297, the photographs of various coins, by Joseph Chamberlain, F.R.P.S., are remarkable for the way in which they suggest the metallic lustre of the originals.

In 308, "The Foothills of the Alps," Louis J. Steele has destroyed the delicacy of his print by unsuitable mounting, and as a result the print looks weak and a bad colour. Edmund F. H. Crouch, in the medalled picture, "The Monarch of the Night"

(317) shows a mastery of the technique of night photography, and this subject bears enlarging to the size in which it is shown. On the other hand, we think No. 320, "The Hero of Creçy," by H. W. Fincham, is over-enlarged. Henry W. Bennett shows some excellent prints of the sculptures at Chartres Cathedral, the lighting in No. 326 being very suitable for both the shadow and the high-light detail, no easy matter with such subjects as this. T. M. Weaver secures not only good technique but some feeling in No. 337, "Across the Nave, Rochester," a fine rendering of a fine piece of architecture.

## THE PROFESSIONAL SECTION.

This year the examples of professional photography are fewer in number than they used to be when the Exhibition was held in the New Gallery, Regent Street, and they suffer to some extent by being mixed up with work of a totally different character. The excellent tri-colour examples which are in juxtaposition more than hold their own, and as might have been anticipated the monochrome work suffers to some extent.

Messrs. J. Russell and Sons, the Court Photographers, of 17, Baker Street, W., who are the sole licensees of the Clifton Pigment Process, show two cases of examples. The colour rendering in the draperies and furniture and in the fruit and flower examples strikes us as being good. The flesh rendering is not in all cases so pleasing, though in one or two of the prints a satisfactory rendering of complexion has been obtained. This would seem to point to the fact that the complexions are as rendered—more or less—and that to obtain pleasant effects in this direction the complexions of the sitters must be improved in some way before making the exposures. Probably the best way of doing this would be to use reflected light of various colours so as to counteract any tendency to yellowness, sallowness, or other noticeably abnormal flesh tint. It does not follow that the same colour of reflected light would be suitable in every case, and we suggest to the producers of colour portraits that there is scope for much useful experiment in this direction.

Scott's Studios, Ltd., 105, Park Street, Regent's Park, N.W., show a number of examples of their everyday portraiture, and their own description very aptly fits the work. None of it is particularly inspired or inspiring. The work is presented in neat passe-partout mounting, and dark mounts have been almost uniformly employed, whereas in some cases a little more consideration given to the mounting would have materially improved the appearance of the prints.

The exhibit of Messrs. H. S. Mendelssohn of 41, New Bond Street, W., divides itself into three sections. A central group of sepia platinotypes, all portraits of men photographed against dark backgrounds and giving a rich effect, are interesting and in several cases suggest character to a greater extent than usual. The portrait of Sir E. J. Poynter is marred by an unhappy position of the left hand, and one or two others are more or less lacking in balance. It may be urged that these pictures are commercial work, and that the public want likeness rather than pictorial treatment, but if the operator possesses an eye for balance it may, in most cases, be quite easily obtained in such work as this. These sepia prints are somewhat marred by the feeble lettering. The general effect of mounting and framing is good, but there is no excuse for the irregular formation of the lettering of the titles. The group on the left consists of small vignettes printed, probably, from half-plate negatives on the centre of 10 x 8 platinotype paper. The print is surrounded by a number of lines which are too black and heavy, and altogether the picture proper is smothered by the excess of margin and of lines. The portraits, also in black platinotype, on the right are more effective, they fill the space better, and most of them are admirably vignetted and are delicate without any trace of weakness of tone.

Mr. Fredk. Hollyer, of Pembroke Square, W., shows eight platinotype reproductions of Turner paintings. For these he has used the buff platinotype paper with the happiest results. There is no harshness of contrast, but a mellow atmosphere which very effectively recalls the feeling of many of Turner's originals. We suggest to those professionals who visit the Galleries that they study these prints in order to learn how pictures may be copied by photography.

## PHOTO-MECHANICAL EXHIBITS.

The principal process exhibit is that sent by the L.C.C. School of Photo-engraving, which is arranged to show recent developments. Thus there are several frames of newspaper illustrations produced by rotary photogravure, improved relief methods of printing, and new screens. There is also a frame of rotary photogravures in colour, mostly by the Van Dyck Gravure Co., of New York, but one example is by the Rembrandt Intaglio Company, of Lancaster. There are several examples of three-colour work printed from the offset press, and a set of stages showing how the Bromoil process can be adapted to photo-lithography. There is also a frame showing the use which can be made of the Norwich Shading Film. There is some magnificent colour collotype by F. Hollyer, and a frame showing how "Redcol" may be applied to photo-lithography, by G. C. Laws.

Among other exhibits of interest to the photo-engraver are the frames of spectrum photographs, showing transmission of ultra violet by various gelatine filters, by Dr. C. E. K. Mees, and curves showing absorption of various colours (including those used in three-colour printing) by the L.C.C. School of Photo-engraving, who also show results with a new lens-testing camera designed to test lenses for their suitability for three-colour work.

Among the trade exhibits, Messrs. A. E. Dent and Co. have a representative exhibit of three-colour half-tones, and the Anglo Engraving Company show a capital variety of work in monochrome and colour half-tone, also examples of their new Rotary photogravure, which looks excellent, and shows the success attending British work in this craft.

## COLOUR PHOTOGRAPHY.

The arrangements for showing the colour transparencies being somewhat incomplete at the time of our visit, we cannot fairly deal with this section in detail, but we could see enough of it to feel convinced that this year it is exceptionally good. A medal has been awarded to H. Essenhigh Corke for 341, a figure study, and this is an excellent specimen of an Autochrome from all points of view. It is, however, run very close by some very fine specimens by H. Robertson, two of which, 339 and 340, are quite exceptional. Special attention may be directed to the figure in 340. If it were not for the unsuitable character of the background of distant mountains, which, though good in itself, does not fit the figure, we should consider this one of the very best Autochromes we have seen. A rather striking effect of sunlight has been secured by W. H. Hillier in 348, an Autochrome of Beechy Head, while a second medal has been awarded to A. J. Leeson for 368, "Early Spring." Among the exhibits we noted many well-known names, but careful study being impossible, excepting where the transparencies were more easily visible, we must refrain from detailed criticism. A large number of the transparencies are devoted to polariscope subjects, and in these cases the Dioptichrome and the Thames plates both show to advantage, though only a few of either are to be seen, and, as we have said, it was difficult to view the exhibits at their best.

## NATURAL HISTORY.

This section may be described as a strong one this year, being good both in numbers and in quality. Henry Irving shows some very fine examples of animal photography in his "Jaguar" (528) and "Polar Bear" (530), while his botanical studies (603 and 606) are also very successful efforts. "A Cat Study" (531), by Charles F. Hayward, is also a very excellent animal study of a somewhat unusual nature. F. Pitt scores a great success with his "Fox Cubs" (533), which could not have been an easy photograph to secure. Miss E. L. Turner as usual submits some excellent work, "Young Willow Wrens" (561) being perhaps her best frame. Oliver Pike again shows some striking results in 555, "Gannet Going Down Wind," and his "Carrion Crow" (573). Among the frames showing series of studies, "The Life of a Tadpole," illustrated in 575 to 581, by J. T. Roberts, deserves special mention, as does also the work of C. W. Colthrup in 583 and 585, and of A. H. Hamm in 584, 586, and 587, all of which prints are devoted to the study of the resting attitudes of moths. Carefully classified studies such as those mentioned are of very distinct scientific value, and show also very distinct scientific intent on the part of the worker. J. J. Ward's contributions deserve special notice, his series illustrating the long-eared bat (525) and his frame 597 showing how a water spider conveys air to its nest being specially interesting. Among the other exhibitors, A. J. Fuller, H. C. Knowles, C. J. King, W. Farren, F. B. Kirkman, Alfred Taylor, W. Bickerton, Hugh Main, and Carl Edwards are perhaps the most noticeable. All their work is excellent in quality and of scientific value, but the section contains no bad work, all in it being well worth attention.

## SCIENTIFIC PHOTOGRAPHY.

This section of the exhibition shows a very marked improvement on former years. Previous to 1910, natural history was included in and formed the bulk of the work shown, and it appeared as if the purely scientific photographs would eventually disappear. The section was then divided into two, with the result that last year the scientific exhibits were very few in number. This year they are not only numerous, but of very high quality, and they serve to illustrate both the value of photography to science and the degree of perfection to which technical photography has attained.

Of the three medals that have been awarded by the judges in this section, one goes to Dr. T. W. Butcher for a series of high-power "Photomicrographs of Diatoms" (626). The initial magnification of these is 764, and the results are perfect triumphs of photomicrography. The example of Amphipleura Lindheimeri should be specially noted. Dr. Butcher has other examples of extremely fine work in frames 622, 623, and 625, but the difficulties he has surmounted in these examples are perhaps not so great as those which he must have met with in the work medalled. An interesting subject is shown by A. E. Smith in frame 627, where a genuine and a counterfeit florin are illustrated magnified five times. The difference between the stamped original and the cast counterfeit is demonstrated in a very striking fashion. Photomicrography is again well exemplified by Dr. Duncan J. Reid in frames 630 to 632, in which various bacilli are shown at high magnifications. G. Ardaseer shows some excellent examples of the same branch of photography applied to "Mollusca" (637), and an especially fine specimen of the proboscis of a blow-fly in 643. Photomicrography is a very strong feature in this section, and many good examples are to be seen, Martin Duncan, W. Bagshaw, J. T. Holder, H. G. Bailey, Richard Muir, Percy Dallinger, and others contributing specimens, each well worth special study. One frame of distinct popular interest is 646, by Ernest Marriage, illustrating the adulteration of black-currant jam. An interesting frame is 650, by Charles R. Darling. This contains photographs of forming drops secured under somewhat novel conditions, which permitted exposures of one-tenth of a second. The drops in this case are drops of aniline slowly formed in water, and the drops pass through the various stages of forming and falling at such a slow rate that photography becomes comparatively easy. 653, by Henry Nelson Newton, shows what is one of the finest technical photographs in the exhibition. This is a dissected human heart, showing both ventricles and the valves with cords. This photograph is worth study as an example of technique alone, quite apart from its scientific value. Osmotic growths (657-660) are illustrated in an interesting series of photographs by Dr. Stephane Leduc, and also by Dr. Gray Duncanson (661). The forms are curious and well worth study. We next come to some extremely fine radiographs by Dr. C. Thurstan Holland, whose two frames, 663 and 664, have secured a well-deserved medal. The same exhibitor has some other fine specimens (669-673) of radiography as applied to surgical purposes, and his work is closely rivalled by that of Drs. Robert Knox, G. T. Haenisch, and G. H. Rodman. The last-mentioned exhibitor has also a frame (674-676) illustrating the value of an intensifying Sunic screen in radiographic work. This is a flexible screen coated with calcium tungstate, which fluoresces brightly under the X-rays, and thus helps to increase the photographic effect. Some other radiographs are to be found among the transparencies shown in the Western side gallery. These were made by Dr. Haenisch with a Roentgen cinematographic apparatus constructed by himself, and they illustrate the peristaltic wave. Astronomy also is represented by both photographs and transparencies, Cambridge University and also J. M. Offord contributing prints, while Dr. Max Wolf and the Lowell Observatory show a fine series of transparencies. Among these last should be especially noticed the photographs of Saturn and Jupiter, 942 to 946, and those of the comet of 1910. All of these are in the transparency section.

The third medal in the Science section has been awarded to Professor P. Zeeman for the work shown in frames 687-688, which illustrate the Zeeman effect in the absorption lines $D_1$ and $D_2$ of sodium. To the general public this exhibit may be incomprehensible, but it represents high-water mark among the scientific work shown, and probably nothing in the exhibition more richly deserves an award. Spectrographic work is well illustrated by Dr. C. E. Kenneth Mees and by Frank Stanley, the former's iron arc spectrum, 695, which shows the standard lines, forming a very useful complementary exhibit to the latter's very fine enlargements (690,692) of portions of the same spectrum. D. and L. J. Berlin have an interesting exhibit in the form of a sunshine index (696), with which instrument the time of day at which the sun will shine in any direction and in any month can be foretold with accuracy. Geology is not very strongly represented this year, but atmospheric and marine denudation is well illustrated by F. Martin Duncan in 700 and 701, while Dr. Tempest Anderson shows some examples of volcanic effects in New Zealand in Nos. 708, 709, and 710. Much attention will no doubt be attracted by the sepia-red photographs (703-707) by Prof. R. W. Wood, which illustrate nature as it would appear to eyes sensitive to ultra-red light alone. The effects are very striking, and in some cases even picturesque. A. E. Bawtree in 702 shows photographic records made by a machine designed to analyse sound, and while the records are themselves interesting, the machine itself, which is to be seen on the opposite side of the gallery, is equally so, as it shows some remarkable ingenious devices.

## STEREOGRAPHS AND TRANSPARENCIES.

Though these were classed in the entry forms in Section II., which is devoted to general photography, many of the exhibits are of a strictly scientific nature, and properly belong to Section V. A medal has been awarded to Dr. G. H. Rodman for a set of fifty (716-765) very fine stereo-photomicrographs illustrating natural history and botanical subjects. The slides well illustrate the value of the stereoscope in such work, and form a valuable set that well deserve the medal. The other stereoscopic subjects are very good specimens, but call for no special comment. In the transparencies, however, attention should be directed to the lantern slides of night studies by R. Williamson (794-808), and to the set of four slides (815-818) by W. Archer Clark, which latter must be classed as very fine specimens. Other transparencies have already been dealt with among the scientific exhibits.

## TRADE EXHIBITS.

The firms who have been usually represented at the R.P.S. exhibition will be found this year at the Prince's Skating Club in company with several new-comers, the chief of which are Messrs. Ross, Ltd., Messrs. James A. Sinclair and Co., Ltd., and Messrs. Newton and Co.

The stall of the Ilford Company is that which is first encountered on entering the Trade Section. Here will be found examples both of negatives and prints made on the Ilford products, as well as transparencies and lantern slides on Ilford "Alpha," "Special," and gaslight lantern plates. Other accessories for use with Ilford photographic materials, such as dark-room safe-lights, isochromatic screens, and developers also find a place in the Ilford exhibit. The visitor should not omit to obtain a small presentation album of prints on Ilford papers, which will give him a useful idea of the range of colours and effects producible on P.O.P., self-toning, and bromide and gaslight papers. Copies of the concise handbooks for the use of their materials may be obtained at the stall, as may also the current issue of "Photographic Scraps" describing the latest introduction of the Company, "Therma" printing paper.

Messrs. Ross, Ltd., show a large variety of their optical manufactures, chiefly of the extensive series of "Homocentric" lenses, Ross telephoto objectives, and the Ross-Zeiss modern anastigmats. The "Multi-Speed" shutter is here shown by Messrs. Ross for the first time at a public exhibition, and those interested in hand camera photography should not fail to examine the "Panros" folding focal-plane camera, the Ross reflex and "Twin-lens." Messrs. Ross also show their manufactures in the way of enlargers, projection lanterns, and studio and field cameras.

Messrs. Johnson and Sons exhibit a full range of their photographic chemicals and re-agents, among which will be found specimens of the convenient packet chemicals prepared by themselves under the name of "Scales Brand," in addition to tablet toners, etc. The convenient Johnson "Crushmeter" should be seen by those who have not made the acquaintance of this useful appliance. Messrs. Johnson also demonstrate the properties of their one-solution "Azol" developer.

Messrs. Adams and Co. put forward a very large exhibit of their special designs in reflex and other cameras, and in many other items of photographic equipment. The latest pattern of the "Minex" reflex camera, and of the still later model of it, in which a diaphragm shutter is used, may here be seen. Also the latest models of the tiny "Vesta" pocket camera, of the "Idento," and of the Adams hand-stand and field patterns of cameras. One useful accessory to which we may draw special attention is the Adams ball-and-socket tripod head, excellently made in aluminium, and allowing the camera to be tilted while the tripod legs remain fixed, and yet without sacrificing rigidity, as is so often the case with ball heads.

The Adams enlarger, in its latest model, is one which is deserving of special notice. Fully provided with all movements of the negative, it affords ample swing or tilting adjustment, whilst the negative stage can be turned from upright to horizontal position by a touch, and intermediate positions obtained to a nicety by rack and pinion. The enlarger is made with screw heads, pinions, etc., on both sides of the apparatus, and is thoroughly equipped for lasting wear in other respects, such as asbestos lining of the rear bellows.

Messrs. James A. Sinclair and Co., Ltd., show a large variety of their own special models in hand and stand cameras. Among these will be found the "Una" camera, in patterns at a wide range of prices, the heavier build of field camera sold as the "Sinclair Technical" and a lighter pattern supplied as the "Sinclair Rex." Then we should not omit to mention the Newman and Sinclair reflex instrument recently noticed in these columns, as well as such useful specialties of Messrs. Sinclair as their dark-room blind and dark-room lamp. Materials for the oil and Bromoil process and examples of the N.S. cinematograph apparatus are included in a most comprehensive exhibit of high-class appliances. A number of prints illustrating the use of the Sinclair cameras and Sinclair materials for the oil and Bromoil processes will be found on the left-hand wall immediately on entering the Trade Section.

Light-filters for orthochromatic photography and safe-lights for the development for all varieties of plate receive a prominent place at the stall of Messrs. Wratten and Wainwright, Ltd., where also is shown a new pattern of candle tourist lamp made so as to take a gelatine safe-light and to keep the latter cool while the lamp is in use. Messrs. Wratten include in their exhibit specimens of their various publications, and take the opportunity of publishing a new one, "Orthochromatic Filters," at the exhibition.

As in previous years, the stall of the Platinotype Company contains a large selection of prints showing the sterling qualities which have earned world-wide recognition for these papers for so many years past. These include examples both of black and sepia platinotype, and of the later introduction, "Japine." The platinotype stall is fully equipped for demonstrating the process, and visitors are requested to ask that the simplicity of platinotype may be shown to them in actual practice.

Messrs. Sanger-Shepherd's exhibit is practically identical with that at the Horticultural Hall, and the visitor to the Royal need, therefore, only consult the paragraph on another page in which mention is made of the leading items of interest shown by this specialist firm in colour photography. The same remark applies to the exhibit of Messrs. J. H. Dallmeyer, Ltd., and that of Messrs. Newman and Guardia and the Paget Prize Plate Co., all of which firms are likewise represented at the Arts and Crafts Exhibition.

Messrs. Newton and Co., the old-established firm of 3, Fleet Street, this year present at the Royal a large exhibit of all descriptions of projection and science lanterns, together with accessories for these latter in the form of lime jets, arc lamps, etc. Messrs. Newton likewise demonstrate their world-wide connection with the lantern-slide supply and hire trade by including in their exhibit one of their slide screens containing 2,000 slides of various subjects.

Messrs. W. Watson and Sons, Ltd., show their well-known models of "Acme," "Alpha," and other cameras, in addition to folding focal-plane and reflex instruments. Among cameras of this last-named class they exhibit a new introduction in the form of a new pattern folding reflex. "Holostigmat" lenses, the application of the "Antinous" release to all varieties of shutter, and other special accessories for photography, will be found at this stall.

The Kodak Company, which at the Horticultural Hall confines its exhibit to appliances for professional work, at the Royal shows its latest introductions in hand cameras, including the No. 3A Special Kodak and the No. 0 "Graphic," recently noticed in our columns. The Eastman appliances for mechanical development of both films and plates, Kodak enlargers, and examples of the results obtainable on the various brands of Kodak printing paper make up an exhibit which is arranged in a most tastefully designed stall.

The C. P. Goerz Optical Works, as in previous years, makes up its exhibit largely from high-scale enlargements showing the remarkable results obtainable with Goerz lenses and cameras. The new model of folding pocket "Tenax," which we review upon another page, will be found in the exhibit, as also examples of the most efficient vest pocket "Tenax," and of the various patterns and sizes of the Goerz-Anschutz folding focal-plane.

Among other trade exhibits must be mentioned that of the Autotype Company, which shows chiefly enlargements and prints from amateurs' negatives prepared by themselves on Autotype tissue. These are exceedingly fine specimens of the capabilities of carbon printing in competent hands and with due regard paid to the selection of the final support.

Messrs. Ozobrome, Ltd., in their exhibit, show carbon work by the Ozobrome process, prepared from bromide and gaslight prints and transferred to wood, canvas, and other supports.

## THE EVENING LECTURES.

The following is the programme of the lectures to be delivered during the period of the exhibitions:—

Tuesday, May 9.—"A Wayfarer in Rural Japan." By Harold E. Young.

Wednesday, May 10.—"English Wild Flowers in Colour." (Slides by the Autochrome Process.) By H. Essenhigh Corke.

Thursday, May 11.—"Aerial Photography; Views from Cloud Land." By Miss Gertrude Bacon.

Friday, May 12.—Red Book Night. "The Swiss Alps." By R. Gorbold.

Saturday, May 13.—"A Loon in London." By W. L. F. Wastell.

Monday, May 15.—"Summer, the Pageant of Nature." By F. Martin-Duncan.

Tuesday, May 16.—"Further Bird Studies by Land and Sea." By W. Bickerton.

Wednesday, May 17.—"How Flying is Done." By John Henry Knight.

Thursday, May 18.—"Lordly Lincoln." By E. W. Harvey Piper.

Friday, May 19.—"Joan of Arc." By the Rev. T. T. Norgate.

Saturday, May 20.—"The Home Life of Wild Birds." By Alfred Taylor.

Monday, May 22.—"The Practical Side of Alpine Photography." By C. Atkin Swan, M.D.

Tuesday, May 23.—"A Miniature Alpine Garden." Made and Photographed by H. T. Malby, F.R.P.S., and R. A. Malby.

Wednesday, May 24.—"The High Alps with a Camera: Climbing the Peaks of Monte Rosa." By H. Speyer.

Thursday, May 25.—"From Arctic Snow to Tropic Sun." By H. M. Lomas.

Friday, May 26.—"Rothenburg, o/d. Tauber and its Festival Play." By James Shaw.

Saturday, May 27.—"History in Caricature and Satire." By A. H. Blake.

Monday, May 29.—"Seen with the Eye of a Fish." By Dr. Francis Ward.

Tuesday, May 30.—"Curiosities of Clothing." By Wilfrid Mark Webb.

Wednesday, May 31.—"Days in Merrie Sherwood, with Glimpses of Ivanhoe Land." By Dr. J. W. Ellis.

# THE LONDON SECESSION.

AT the Newman Art Gallery in Newman Street, W., a small body of amateur pictorial photographers who call themselves The London Secession are holding their first exhibition of pictures. Their catalogue is prefaced by an apologia in which, whilst tracing their lineal descent from the old Linked Ring, they accuse that society of championing the mediocre and commonplace in its latter days. They therefore have come together with the object of "holding periodical displays of only the most original, interesting, and progressive work available." From this it is evident that the fine old fighting spirit is still heaving the breasts of at least ten of the old "Links," and it is also apparent that the weapons are to be not so much superiority of technique or excellence on traditional lines as those same old salonistic qualities here nicely paraphrased as "original, interesting, and progressive."

The public, at any rate, will not quarrel with such an arrangement. We are all on the look-out for new sensations in art, as in other things, and if the London Secession can supply these in unfailing demand and at the same time give us good photography and unexceptionable art, then they will have substantiated their *raison d'être*. It is only, perhaps, a little hard on their old comrades whose work, though good and admirable, stops short of what "original" and "progressive" stands for, and further, it may hold out unholy temptations to these old Links and others to be untrue to themselves for the sake of profiting by the shorter cut to fame.

The first exhibition must unhesitatingly be pronounced a success from the point of view of photographic art. It marks more distinctly than ever the generic difference between that art and the art of painting. In this respect it may be said to take a long step in a proper direction. Two or three things shown are perfectly good examples of the kind of thing that comes naturally and acceptably from the camera, but would be an unfortunate development in the graphic arts. This widening of the little rift between the two points of view is, we assert, a healthy sign. Unfortunately there exist other examples which show the movement in an opposite direction, such, for instance, as the allegorical efforts of Mrs. Brigman, which stand confessed as laborious and unfit for their medium. Photographic art, if it has a future, will find it in such frank and unsophisticated expressions as Walter Benington's "Thames Embankment," and A. L. Coburn's New York views. It would be hard to find more romantic subject matter than the latter's "Thirty-fourth Street," with its fine forms and luscious tones of white and dark buildings; or more "progressive" ideas than his "Coal Cart and the Tower," where a great trolley with a tilting arrangement occupies the immediate foreground and blocks out a great arc lamp, the rays from which give it a dazzling halo, causing a fine display of gradation in light—a thing we who dwell in modern towns are faced with every day. This, after all, is modern art of the truest sort. Mr. Coburn has yet to learn, nevertheless, that such a blatant note supplied in his illuminated clock and windows in the tower, is wrong from a more sensitive and subtle point of view. This wrongness is a fact which an artist of the old school would recognise intuitively. Such spots on the sun of photographic art must inevitably occur for all time where photographers are not art-trained; for it is one thing to be struck by an effect and have a laudable longing to reproduce it, but it is another thing to be able to do so in that language of which only artists born and bred have perfect mastery of grammar and idiom. Alfred Stieglitz follows the same fruitful line of work in his "City of Ambitions," a first-rate subject, showing in the distance the scaffolding of an immense building, airy, light, and yet imposing. His "Aeroplane" is certainly "up-to-date," but has little more to recommend it. Scaffolding has become a sort of stock-in-trade since Muirhead Bone set the fashion. Frank H. Read has it in his "Repairing Winchester Cathedral," where, however, he departs from the Bone theme by showing a play of sunshine upon the poles and planks, instead of letting them tell as so many dark touches. Mr. Read has also made a great success with a mere hole in a fence serving as an egress for fowls. The quality and greatness of style in the boards of the fence and the dark of the hole have been sufficient, strange as it may seem, to make a fine rich subject that can even boast of a touch of romantic feeling. It is called "The Barnyard." Malcolm Arbuthnot rises also to the pitch of romance in "Lulworth Cove," where a single tiny figure emphasises the vastness of the rocks and the overwhelmingness of his subject. It is a good essay in light tones by which the strength of the theme loses nothing in being without the more usual blackness. Eustace Calland's prints are unusually good, especially the sunny "Country House," set in a fine landscape with a stream in the foreground. The white house and the dark tree against it form a jewel-like centre of a tender setting. All the three contributions of George Davison are highly interesting. Two are views of Harlech, each with a fine mood, and the third, called "Towards Snowdonia," shows a desolate shore under an oppressive sky. Clarence H. White sends something in the same spirit which he calls "Carita's Island." This is a doleful view of a dark bay reflecting a black sky. In the foreground lies a feminine form, prone and contemplating the crystal globe which means so much and is worked so hard by the American poetic school of photographers. There are several here. One, an immense one, lies at the feet of the limelight-lit "Richard Strauss," by E. J. Steichen, who has overweighted his sitter with mystical portent and made him look like Dr. Nikola. His "President Taft" and "George Bernard Shaw" are better works, both somewhat discounted by aggressive light accents occurring where they are not wanted. Nevertheless, all three works are strongly conceived and powerfully handled. Baron A. De Meyer sets himself gratuitously difficult tasks. His Oriental figure studies do not gain much by their complex lighting, and in power and general interest are much behind his inimitable apple-women series. J. Dudley Johnston is simpler and more unsophisticated. His "Lake of Lecco" is unsurpassed for freshness and simple downrightness of treatment, although it is a trifle hard.

The members of the London Secession are Messrs. Annan, Arbuthnot, Benington, Calland, Coburn, Cochrane Davison, Dudley Johnston, De Meyer and Read, and the invited exhibitors are Messrs. Eugene, Kühn, Steichen, Stieglitz, White, and Mrs. Brigman and Mrs. Käsebier. Each of these exhibit three pictures. Thus it follows that the show smacks greatly of the American Secession also.

The exhibition remains open until June 3.

# THE ARTS AND CRAFTS EXHIBITION AT THE HORTICULTURAL HALL.

[This exhibition at the Horticultural Hall, which is organised by Mr. Arthur C. Brookes, of the "Photographic Dealer," opens its doors to-day, Friday, and closes to-morrow week, May 20. As our issue of the 19th inst. would be so near the closing of the exhibition as to make any review in it useless to the greater majority of visitors, we have preferred to obtain from the exhibiting firms particulars of notable goods which they are showing, many of which we have had the opportunity of inspecting. The following notes will, therefore, enable our readers to select from the large display of photographic apparatus and materials those which are of the most recent introduction, and others which particularly appeal to them as professional photographers.—Eds. "B.J."]

On entering the exhibition and turning immediately to the left, stand No. 1 is that of the Kodak Company, where will be found an exhibition of portraits by leading professional photographers printed on the various Kodak papers from negatives made on "Royal Standard" and "Seed" plates.

Messrs. Kodak devote the large space at their disposal to a very complete exhibition of the requisites for professional photography. They show a number of full-size backgrounds and of studio camera stands, in addition to all descriptions of screens and other studio accessories. Artificial light in its varous forms, both for studio portraiture and printing, are represented by electric arc, mercury-vapour, and gas installations. The collection of mounts representing the latest productions of the Kodak professional department is particularly worthy of examination, whilst professionals will find many other of the latest aids to their art in the form of border negatives, register systems, and a variety of sundry goods.

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Messrs. Dawbarn and Ward, at Stand No. 2, show a full range of photographic and other technical literature.

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A large variety of photographic metal accessories is shown by Messrs. David Allan, at stand No. 3. Washers for negatives and prints, dark-room lamps, developing racks, drying cupboards, etc., will be found at this stall in various patterns and at a wide range of prices.

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The Autotype Co., of 74, New Oxford Street, London, W.C. (stand No. 5), confine their exhibit strictly to a selection of their productions of interest to the professional photographer. They show a variety of styles of portrait produced in their works from photographers' negatives, among which will be found a number of distinctive forms of enlarged portrait. The "Alexander" is a framed portrait produced with a tasteful surround of lines, which goes well both with the portrait in the centre and with the Sheraton frame. This is a most stylish production, unlike the common run of trade work, and should be particularly noted by professionals.

Another specialty of the Autotype Co. which will be seen is an imitation silver-point portrait, entirely hand work, and framed in a passe-partout. This should appeal to photographers whose clientèle is of a high-class order.

A further very effective style of framed portrait, designed by the Autotype Co., is that which they call their "1911 border," a portrait in carbon on a pyramid grain transfer paper placed in a cut-out mount, which carries a very decorative border, the frame in matt gold of tasteful and unobtrusive pattern being in keeping with the whole production. These portraits are supplied complete at 30s.

A further exhibit is a coloured portrait with engraved border supplied complete in a distinctive frame at 35s., and lastly, we must mention the miniatures—not only those on a photographic base, but others entirely the work of a Royal Academy exhibitor. In thus showing the professional photographer quite novel and distinctive styles of portrait the Autotype Co. may well lay stress upon the fact that though possibly many photographers could not sell such high-class work regularly to their customers, yet it would be a good investment for them to order one or two portraits produced in these styles for exhibition in their windows. Such a slight expenditure would be fully returned to them in the increased interest taken in their showcase or window displays, and the additional business coming as the result of it. Every customer may not require a portrait in what he conceives to be an ultra-artistic style, but he will, nevertheless, prefer to go to a photographer who shows himself capable in a variety of directions.

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Colour photography by the approved scientific methods, which have been worked out by Mr. Sanger Shepherd, occupies the stand (No. 6) of Messrs. Sanger Shepherd and Co., Ltd. There is shown apparatus and materials for the production of natural-colour lantern transparencies and prints on paper. The Sanger Shepherd one-exposure camera for three-colour photography will be exhibited, as well as new patterns of the quick-change repeating-back for three-colour exposures with ordinary cameras. Appliances for the development and display of Autochromes form part of the exhibit.

Among other apparatus should be noticed the very ingenious plate whirler for quickly drying or varnishing negatives or plates.

Messrs. Sanger Shepherd also show their graduated light-filter and examples of its use in landscape work. Amateurs in particular will be interested in the "Myrioscope" camera, a high-class instrument for stereoscopic and panoramic work, both on ordinary plates and on Autochromes. Large apparatus for the scientific testing of plates and light-filters, as also for photo-surveying and photo-telegraphic work, form a part of the Sanger Shepherd exhibit.

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The Paget Prize Plate Co., at stand No. 7, have their most recent introduction, namely, the "Invisible Backing," which they are now introducing in conjunction with all the brands of Paget plates. The backing is one which dissolves out completely in the developer, leaving no trace of its existence on the plate, and, being perfectly transparent, offers no obstacle to the judging of density.

The Paget Co. also show spectrum tests and a new "panchromatic" plate, which they are just placing upon the market; also a "process panchromatic," especially issued for three-colour work. They show light-filters for use with these new plates, also a suitable dark-room lamp fitted with green or red safelight for development.

Naturally, prints on the well-known Paget self-toning papers also form part of the exhibit, and there will also be noticed prints on the bromide "cream linen" paper, a printing medium with a new and distinctive texture.

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Messrs. Houghtons, at stand No. 8, will have a large professional exhibit under the superintendence of Mr. Loveday, manager of their professional show rooms at High Holborn. Among other minor novelties for the professional are a most substantial teak fixing trough, and a draining rack of similar heavy build, and convenient provision of a gutter into which negatives may drain so that the racks may be placed anywhere without the nuisance of water running from them. Messrs. Houghtons exhibit their arc studio lamp fitted with the Jobson reflector, and they also show the recently introduced "Photo-Lumen" studio lamp. Studio furniture in great and tasteful variety is also a feature of their exhibit, this portion including an example of a Louis XVI. armchair, and other chairs and stools of light design and appearance.

In mounts, Messrs. Houghtons show an immense variety, one of their latest patterns being a series of mounts with lines surrounding the print, or otherwise forming a portion of the decoration. Among these is a mount with a square line-space suitable for a head and shoulders. Certain of the folders are made with a stiff back, which grips the mount proper, and mounts and folders are supplied separately, so that photographers can readily suit themselves as to the exact type of portrait they may offer to the customer.

Of amateur goods, in the way of cameras, both hand and stand, and numberless other accessories, Messrs. Houghtons show a large exhibit, the product of their own factories at Walthamstow.

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A number of the very latest novelties for professional photographers will be shown at Messrs. Marion's stand, No. 9. Among these is the Davis retouching pencil, a mechanical aid to retouching, in which the pencil is caused to rotate by means of an electric motor. It is claimed for the method that retouching may be done in from one-third to one-half the time required by the ordinary hand system. Photographers will have the opportunity of making personal trial of the new apparatus.

Another new appliance for the professional is the Marion "Northlight" studio arc lamp, printing lamp, and apparatus for copying, enlarging, and for the duplication of Autochromes. This consists of two arc lamps mounted in a chamber, the back wall of which thus forms a powerful and even reflector. It allows of all kinds of copying, even of the largest-size negatives, being done without the aid of daylight, in addition to its use for printing.

Messrs. Marion likewise exhibit their specialties in apparatus for the professional, including a new model of the "Excelsior" studio camera, the highly convenient Hana studio camera-stand, and improved models of rapid bromide printing machines.

Professionals should make inquiries, too, of the recent extension of the Marion business into the field of the design and construction of studio furniture and accessories and the supply of studio decorations. The stand itself has been designed and entirely constructed by the firm, and will be found to contain a number of specimens of work interesting to professionals contemplating redecoration of their studios.

Those interested in the reflex camera should not miss the "Soho" reflex, which maintains its place as a most reliable and efficient instrument, whilst lantern-slide workers should examine the "Soho" science lantern and the firm's lantern-slide making apparatus.

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The Leto Photo Materials Co. will present a display of prints on "Seltona" and other Leto papers, arranged on an imposing stall (No. 10) in imitation of Roman stone. Amateur workers should notice the pleasing effects obtainable by masking and plate-marking prints on the Leto papers; demonstrations of this class of work will be given at frequent intervals.

The Leto Company likewise make a display of negatives on Edwards' "Isochromatic" plates, as well as of lantern slides on "Kristal" and "Special Transparency" plates; also of window transparencies on the "Matte-Ground" plates.

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Messrs. Sichel, at stand No. 11, offer the professional a demonstration of the comprehensive way in which they supply all varieties of leading professional goods. Their exhibit of mounts is probably as wide in range as any in the show, since it includes the very latest designs of the A. M. Collins Manufacturing Company and of mount makers in this country. Professionals should ask to see the most tasteful "Paragon" border negatives, and all the latest designs in backgrounds and arras cloths suitable for studio decoration supplied by Messrs. Sichel. The latest types of the Meyer lenses for studio and outdoor work are shown, as also the elaborate "Forward" studio camera, and cheaper models of studio cameras for those of short purses. The Morgan dry-mounting method of photography is shown in its latest development by Mr. J. Morgan, from whom photographers will be able to learn the possibilities of producing distinctive styles in mounts by the use of the Morgan patented metal embossing folder, in conjunction with a convenient plate-marking device, which is now made in transparent celluloid so that the operator can see exactly what he is doing.

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The recently introduced studio gas lamp, designed by Messrs. Howellite, Ltd., is shown at their stand No. 12, where also will be shown specimens of the single "Howellite" incandescent burners, and of the latest pattern of these latter for enlarging and projection, which we review in another column.

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At stand No. 13, of Messrs. F. E. Jones and Co., the "Freckelton" background cabinet will be demonstrated during the week by the inventor.

Messrs. Jones will also display a collection of ordinary and coloured backgrounds, a variety of the studio furniture which is a specialty of theirs, in addition to apparatus, mounts, and prints on the various photographic papers which they supply. Among the specimens they will show a number of portraits by Herr R. Dührkoop.

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Messrs. R. and J. Beck, at stand No. 15, exhibit a full display of all descriptions of photographic apparatus, but in particular of the lenses, shutters, and cameras of their own manufacture. These include the series of "Isostigmars" and the more recently introduced "Neostigmars."

Telephoto lenses and hoods for them are also shown, as well as models of "Frena" and other cameras manufactured by Messrs. Beck, and, in addition, photographic apparatus by other makers which can be fitted with Beck "Isostigmar" and "Neostigmar" lenses.

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Cameras of the reflex, folding focal-plane, and other types form the staple of Messrs. J. Lancaster and Son's exhibit at stand No. 17, but the amateur, in particular, should not omit to examine the very practical patterns of enlarging chambers, the "Ellipsoid," sold for enlarging with artificial light without a condenser.

Messrs. Lancaster also show a new enlarging lantern, a novelty in which is an adjustable mask for the easy selection of the best part of the negative to form the enlarged picture.

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Specimens of the results on "Cellofix" self-toning collodion paper and on "Puck" gaslight paper are shown on a screen (No. 18) by Mr. F. G. Neddermeyer, the British agent of Messrs. Kraft and Steudel.

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Demonstrations of dry-mounting will be given during the whole period of the exhibition at stand No. 19 of the Adhesive Dry-Mounting Co., Ltd., who are showing all the latest types of dry-mounting machines, in addition to their latest designs in artistic mounts suitable for their process, border tints for placing a surround of suitable colour round prints—in short, the latest methods in the mounting of photographs.

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At the stall (No. 20) of Messrs. Illingworth and Co. professionals should notice the carbon and bromide enlargements, which work for the trade is a large and highly appreciated department of Messrs. Illingworth's business, and one which they, as manufacturers both of bromide papers and carbon tissues, have great facilities for carrying out.

The wholesale toning of bromide by the Illingworth hypo-alum boiling-pan method will also be demonstrated.

Professionals should exchange their business cards for a trade booklet on enlargements in black and white, and in all grades of working up and colouring.

Amateur visitors will notice particularly the Illingworth "Enitone" paper (which will be demonstrated), and dealers should obtain information of all advertising literature, show cards, etc., to which Messrs. Illingworth devote special attention.

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Several accessories and novelties for the use of photographers and enlargers are shown at the stall of Van Neck and Co., No. 22.

This firm also shows its very compact and self-contained "Petrolite" enlarging lamp.

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Messrs. A. E. Staley and Co. (stand No. 25) show the very latest thing in reflex cameras in a new instrument which they are just introducing under licence from the patentee, Mr. L. Cator. It is a reflex camera of the ordinary size and shape, but made in three parts, the front and back fitting together so as to form a camera of the folding focal-plane type, whilst it also provides all the movements, such as rising front, long extension, etc., of the modern hand-stand type of camera. The price, without lens, is £18.

Messrs. Staley will show a full line of their very well-designed and made "Britisher" reflex, and will, of course, give prominence to the manufactures of the Nettel factory, makers of most efficient focal-plane cameras, the novel features of which should not be missed.

The mechanism of the efficient "Compound" shutter will be shown in several models made with glass fronts, while Messrs. Staley will also exhibit their latest "Aeroplan" $f/4.8$ cemented anastigmat, in addition to the "Euryplan," "Phaos," "Sutor," "Steinheil," and other lenses.

Automatic arc lamps, the Staley-Wheeler telephoto set, and numerous optical accessories make up a very comprehensive exhibit.

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The very efficient "Balopticon" lanterns of the Bausch and Lomb Company will be shown at stand No. 25, where, also, the well-known photographic shutters and microscopes of the Bausch and Lomb firm will be on view.

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Our contemporary, "Photography," will be found at Stand No. 26.

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The Thornton-Pickard Co., at stand No. 27, very completely represent the products of their Altrincham factory in the various classes of camera, and in enlargers, shutters, and accessories. Visitors should not omit to notice the folding cameras, such as the "Royal" and "Special Ruby," in addition to the very moderately priced camera sets.

The folding "Ruby" is shown in a variety of patterns, whilst among other hand-cameras the "Unit" folding focal-plane and the tiny "Minim" focal-plane camera should be noticed.

The Thornton-Pickard reflex instruments fitted with the "Unit" shutter will also be shown in their two models and in various sizes, whilst the latest introduction of the company, the "Imperial" pocket camera, recently reviewed in our columns, may be examined.

The Thornton-Pickard enlargers have many distinctive features which should appeal to practical workers, whilst the folding "Merito" optical lantern is a piece of apparatus which lanternists ought not to miss.

The various patterns of the time-honoured "T.-P." roller-blind shutter and the more modern "Unit" focal-plane naturally form part of the exhibit.

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Professional photographers in particular will be interested in the full display of all varieties of mounts shown by Messrs. Butcher at stand No. 28. Mounts and albums are a specialty with Messrs. Butcher, and the selection shown includes a number of most tasteful designs.

The "Primus" mounting press and appliance for fixing prints on these mounts without cockling, by means of shellac solution, should also be noted.

A new "Primus" dark-room clock, with simple adjustment for timing development and other operations, is also exhibited.

Hand and stand cameras in great variety, as well as enlarging and projection lanterns, naturally occupy a considerable portion of Messrs. Butcher's space, as representing a large branch of their trade.

One novelty among the cameras is the "Dandycam," an automatic camera for taking photo-buttons of one-inch diameter, development being done in the instrument itself.

* * * *

Messrs. Elliott and Sons, Ltd., at Stand No. 29, exhibit some very choice examples of pictorial photography produced on Barnet plates and printed on the Barnet papers.

They also show some specimens of night photography produced on Barnet "Super Speed," together with examples of orthochromatic work done on this description of Barnet plates.

Enlargements on Barnet carbon tissues and some specimens of Bromoil printing, in which the bromide paper used was the Barnet "Smooth Ordinary," will also be noticed.

Other specimen prints exhibited will be found to illustrate the qualities of the Barnet bromide and gaslight papers, with and without sulphide toning.

* * * *

At the imposing stand (No. 31) of Messrs. Wellington and Ward, specimen negatives and prints on the well-known standard Wellington products will be shown, and a representative will be in attendance, whom professionals should address in regard to materials specially made for studio use—*e.g.*, the Wellington "Special Xtra Speedy" plate and the Wellington "Speedy Portrait," in addition to "Chamois" and other bromide papers.

* * * *

Messrs. Hazell, Watson, and Viney, at Stand No. 32, show copies of the "Amateur Photographer," and of photographic handbooks published by themselves.

* * * *

Messrs. A. W. Gamage, Ltd., at stall No. 33, make a special show of the reflex camera and of a small folding camera. They also will be demonstrating a small ferrotype camera yielding direct photographs, which are developed and fixed within a few minutes.

Another novel line is an inexpensive cinematograph camera, the mechanism of which can be taken out and attached to an optical lantern for purposes of projection.

* * * *

Messrs. Griffin, at stand No. 34, have much to interest the professional. They show their own productions in extremely well executed sketch backgrounds, together with light furniture in gilt, specially designed for use with grounds prepared for the all-popular sketch portrait. They also show their "Arcadia" grounds in colours.

One interesting novelty is the "Imperial" embosser, a simple device costing 5s., which allows of mounts being given a variety of artistic plate-marks by very simple means.

Another novelty is a glass measure which can be dropped on the floor and filled with boiling water without sustaining damage.

Messrs. Griffin will also have on view their "Jupiter" studio arc lamp, together with many accessories for the studio, in particular the "Baby" window, recently noticed in these columns, and a "baby holder," a mechanical aid to the photography of small children.

* * * *

No visitor to a photographic exhibition can afford to neglect the opportunity of making a first-hand acquaintance with the cameras of Messrs. Newman and Guardia, particularly the "N. and G." reflexes and the "Sibyl" pocket camera.

Among the latest models which are shown at stand No. 35 will be found the "N. and G." square reflex camera, fitted with a lens-shutter in addition to the focal-plane, also three new models of the folding "Sibyl," one for postcard pictures, another for stereoscopic work, in addition to a "de luxe" pattern—the "Coronation."

* * * *

Messrs. A. and M. Zimmermann, at stand No. 36, make a show of standard chemicals, such as Schering's pyro and other chemical goods of photographic chemical purity. Their specialties of more recent introduction in the way of packet chemicals—the "Satrap" brand—made up ready for use will likewise be found at their stand.

* * * *

The opaque projector, known as the "Mirroscope" and serving for the projection upon the screen of postcards, prints, and flat solid objects, is shown by Messrs. Carr Bros. (stand No. 38), and should be noted by those wishing to give parlour entertainments of pictures made on their travels, without the trouble of preparing lantern-slides.

* * * *

The Westminster Engineering Co., at stand No. 40, show the latest models of their well-known studio arcs, including the "Top-light" pattern, specially designed for low studios and allowing of the light being placed within a few inches of the ceiling.

They likewise exhibit two models of the enclosed right-angle projection lamp, the smaller taking current up to 5 ampères and the larger (a quite new model) taking a larger quantity of current and specially suitable for projection upon a fairly large scale. Both these lamps are extremely moderate in price.

* * * *

Tabloid chemicals of all kinds, including the popular and economical "Rytol," used by Mr. Ponting as photographer to the South Pole expedition, and by Mr. Ernest Brooks on his recent tour in South Africa with the Duke of Connaught, occupy the stand, No. 41, of Messrs. Burroughs, Wellcome and Co.

* * * *

The A-kla system of daylight loading of plates and cut films—so difficult to describe in print, but so readily demonstrated personally in a few moments—will be found at stand No. 42, and amateurs, in particular, should make a note of this most recent system of dispensing with the dark-room.

* * * *

Messrs. J. H. Dallmeyer, Ltd. (stand No. 44), have a number of quite recent novelties of interest to all classes of workers. The new large-aperture models of the "Adon" fixed-focus telephoto lens should appeal both to professionals and amateurs, whilst professionals should not omit to note the very neat mounting of the Dallmeyer patent portrait lens, by which a given degree of diffusion of focus may be obtained and repeated with certainty. The new "Auto-Catches" for the prevention of double-exposure when using wooden dark-slides, are also a new idea with Messrs. Dallmeyer which are worthy of note.

Studio cameras, reflex instruments, colour screens, and a variety of optical apparatus form the remainder of the exhibit.

* * * *

The various outfits for colouring, tinting, spotting, and retouching, prepared by Günther Wagner, are shown at stall No. 46, where visitors should take the opportunity of obtaining a catalogue and specimens of the effects obtainable with these standard materials.

* * * *

Packet developers and other photographic chemicals form the exhibit of Mr. J. E. Lockyer at stand No. 47. Mr. Lockyer supplies altogether about forty different preparations of his manufacture, and during the exhibition will give demonstrations of the use of tints for P.O.P. and lantern-slides and transparencies. Two of the latest introductions by this well-known firm for chemical preparations are the red-leather reviver and a cinematograph-film cement for joining up broken films.

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## THE PROFESSIONAL PHOTOGRAPHERS' CONGRESS.

The following is the diary of the week of the second Congress arranged by the Professional Photographers' Association, and to be held at the Photographic Arts and Crafts Exhibition at the Royal Horticultural Hall, Vincent Square, Westminster. As we have already announced, admission to the Congress and to the trade visits held in connection with it are limited strictly to members, and those who at the last moment may feel the force of this inducement to join the Professional Photographers' Association should communicate with the secretary, Mr. A. Mackie, by letter, at 89, Albany Street, London, N.W., at once. No new members will be admitted during the Congress.

Monday, May 15, 8 p.m.—Reception by the President, Mr. F. P. Moffat, F.R.P.S.

The Presidential Address.

Mr. W. Crooke, of Edinburgh, will give a short account of his recent tour in America.

Tuesday, May 16, morning.—Special train, 10.50, from Euston, L. and N.W. station, to Kodak Works, at Harrow.

Evening.—Lecture by Mr. T. C. Turner, of Hull, on "Artificial Light in Photography."

Wednesday, May 17, afternoon.—Special train at 2 from Liverpool Street, Great Eastern station, to the Ensign Works of Messrs. Houghtons, Ltd.

Evening.—Lecture by Mr. Drinkwater Butt on "The Studio: Its Construction and Decoration."

Thursday, May 18, afternoon, at 2.—Discussion of miscellaneous subjects connected with the business side of photography. Mr. Drummond Young will read a short paper suggesting the adoption of a standard size in cabinet mounts.

6.30 for 7 p.m.—The Congress dinner at the Criterion Restaurant.

Friday, May 19, afternoon.—By train from Victoria at 2 to the works of the Platinotype Company at Penge.

Evening.—Paper by Mr. Pirie Macdonald, of New York, on "The Photography of Men."

Also lecture by Mr. Edgar Clifton, on "The Lens in the Studio."

The membership Pass to the Congress and to the Arts and Crafts Exhibition will take the form of a numbered badge worn in the buttonhole. The numbers will allow of members identifying each other by reference to a list which will be displayed in the Congress-room. The following list of members taking part in the Congress is complete up to the time of going to press, and will doubtless be of service to many of those attending the Congress, who are anxious to make the acquaintance of particular members of the Association.

1. The President.
2. W. Gill, F.R.P.S., Past Pres.
3. Lang Sims, Hon. Treas.
4. P. E. Marshall, Hon. Solicitor.
5. The Hon. Secretary.
6. H. Gordon Chase.
7. Alex. Corbett.
8. C. F. Dickinson.
9. Alfred Ellis.
10. S. Herbert Fry, F.R.P.S.
11. W. E. Gray, F.R.P.S.
12. George Hana.
13. E. O. Hoppé.
14. C. H. Skillman.
15. Richd. N. Speaight.
16. D. Knights Whittome.
17. T. Birtles, F.R.P.S., Warrington.
18. H. A. Chapman, J.P., Swansea.
19. H. J. Comley, Stroud.
20. W. H. Hawkings, Plymouth.
21. W. Illingworth, Northampton.
22. N. S. Kay, Manchester.
23. P. Lankester, Tunbridge Wells.
24. L. R. Protheroe, Bristol.
25. R. W. Robinson, Redhill.
26. H. C. Spink, Brighton.
27. T. C. Turner, Hull.
28. H. J. Whittock, Birmingham.
29. Mrs. Gordon Chase.
30.
31. S. H. Greenway, Northampton.
32. H. C. Messer, Salisbury.
33. A. Barratt, Fleet Street.
34. B. Matthews, Bradford.
35. J. S. Simnett, Burton o/T.
36. W. Suter, Oxted.
37. W. E. Welchman, Retford.
38. Mark E. Mitchell, Harrogate.
39. G. L. Shotter, Plaistow.
40. W. E. Sorrell, Crouch End.
41. E. W. Dyer, Gravesend.
42. Miss C. Osborne, B'ham.
43. H. Arnaud, London.
44. C. R. Olley, London.
45. Mrs. C. R. Olley.
46. J. Norval, Dunfermline.
47. J. E. Beehan, Dublin.
48. J. Muller, Halifax.
49. H. Essenhigh Corke, Sevenoaks.
50. T. Bruxby, Bishops Stortford.
51. H. Vandyk, London.
52. T. Illingworth, Willesden.
53. J. P. Walder, Haslemere.
54. Graystone Bird, Bath.
55. Mrs. Graystone Bird.
56. Miss Lena Connell, St. John's Wood.
57. Reg. Haines, London.
58. F. Wiedhofft, Highgate.
59. Allen Foster.
60. G. A. Hale, Farnham.
61. S. A. Davey, Islington.
62. A. Hands, Wanstead.
63. J. J. Payne, Hull.
64. Oscar Owers, Southsea.
65. B. Killick, Bray.
66. A. E. Smith, London.
67. J. Speight, Sutton Coldfield.
68. J. W. Freckleton, Nottingham.
69. A. J. Bailey, Pimlico.
70. A. G. Bolwell, Bath.
71. H. Mansell, Saffron Walden.
72. L. A. Franklin, Brentwood.
73. Hugh West, Cobham.
74. F. C. Clarkson, Colchester.
75. W. J. Eagle, Fulham.
76. R. Burnie, Glasgow.
77. C. R. Watson, Sydenham.
78. F. G. Paget, Ilford.
79. J. Drummond Shields, Edinburgh.
80. J. H. Coath, Liskeard.
81. C. E. Willis, Bolton.
82. E. Sweetland, High Wycombe.
83. W. Davey, jun., Harrogate.
84. W. Foster Brigham, Scarboro'.
85. F. Gegg, Evesham.
86. C. Speight, Kettering.
87. A. Swan Watson, Edinburgh.

88. J. W. Hicks, Fulham.
89. F. Thurston, Luton.
90. H. F. W. Thurston, Luton.
91. H. St. George, London.
92. W. H. Cox, Luton.
93. W. W. Dowty, Pershore.
94. E. J. Sander, Stoke Newington.
95. C. Speight, Nuneaton.
96. J. A. Woodhead, Bradford.
97. W. Fisk-Moore, Canterbury.
98. W. H. Tuck, Cheltenham.
99. W. J. Stocks, Uppingham.
100. H. Hall, Wakefield.
101. T. R. Hammond, Conway.
102. M. Reichert, Norbury.
103. T. Lee Syms, Tyldesley.
104. D. Osborne, Treharris.
105. A. E. Parkin, Hull.
106. Mrs. Suter, Oxted.
107. W. A. Jeanes, S. Africa.
108. R. H. Greenwell, Southport.
109. A. Debenham, Southsea.
110. A. Hayward, Lavender Hill.
111. Mrs. W. E. Gray, Bayswater.
112. A. O. Forrest, Pontypridd.
113. H. Browning Hogg, Dewsbury.
114. H. H. Davies, Aberystwyth.
115. Mrs. H. H. Davies, Aberystwyth.
116. W. Chalklin, Newport.
117. E. Wilkinson, Norwich.
118. H. E. Cooper, Northampton.
119. C. W. Cole, Feltham.
120. R. W. Berry, Hull.
121. D. Prodger, Brixton.
122. J. C. H. Balmain, Edinb'gh.
123. W. Bartier, Poplar, E.
124. A. G. Couper, Watford.
125. G. E. Houghton, Margate.
126. H. J. Kempsell, Wallington.
127. E. Drummond Young, Edinburgh.
128. A. W. Lee, Muswell Hill.
129. W. T. Keable, Guildford.
130. J. Keable, Guildford.
131. J. Mills, Northampton.
132. J. S. Catford, Kingston-on-Thames.
133. C. F. Emeny, Sudbury.
134. H. J. Whitlock, B'ham.
135. W. H. Blacker, Sutton.
136. J. S. Bullen, Grimsby.
137. H. M. Cooper, Taunton.
138. J. A. Burrows, Strabane.
139. Mrs. Burrows, Strabane.
140. T. H. Bolland, Hanwell.
141. A. Priestley, Egremont.
142. A. F. Sergeant, Halifax.
143. J. R. Pearson, Camberwell.
144. F. J. Garrison, Doncaster.
145. G. Chaplin Jones, Kingston-on-Thames.
146. F. Mills, Epsom.
147. F. A. Bourne, Eastbourne.
148. A. McCann, Uttoxeter.
149. F. Birch, Spalding.
150. A. W. De'ath, Leominster.
151. C. St. J. Vaughan, Muswell Hill.
152. G. P. Bamber, Blackpool.
153. Norman Moody, Southsea.
154. A. Basil, Tottenham Court Road.
155. J. G. Davies, Port Sunlight.
156. A. H. Pitcher, Gloucester.
157. J. Herbert Wilson, Leicester.
158. H. J. Rigden, Bowes Park, N.
159. J. Osguthorpe, Spennymoor.
160. Neil Powell, Northampton.
161. F. W. Clark, Forest Gate.
162. S. A. Chandler, Southampton.
163. F. Spalding, Chelmsford.
164. R. Starr, Cambridge.
165. J. W. Rignall, Cambridge.

## Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between April 24 to 29:—

Printing Frames.—No. 10,251. Photographic contact-printing frames. Spiridioni Grossi.

Mounting.—No. 10,357. Mounting for photographs, picture postcards, and the like. George John Stevens.

Plates.—No. 10,390. Photographic printing paper, plates, and films. Arthur Caleb Johnson and Herbert Holt.

Arc-Lamps.—No. 10,086. Open type arc-lamps for use with cinematograph lanterns. Herbert Smithson and Edgar Ravenhill Sharpe.

Combination Negatives.—No. 9,977. Method of and means for producing combination negatives. Jean Baptiste Feilner.

Apparatus.—No. 10,437. Photographic apparatus. Marthe Carême.

Cinematograph.—No. 10,158. Dramatic, operatic, episodic, and descriptive cinematograph with visible words and actually spoken text. Jean Joseph Mouis.

Cinematograph Book.—No. 10,265. Cinematographic picture book. Rudolf Schulze.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Non-Inflammable Cellulose.—No. 8,647, 1910 (April 13, 1909). The applicants proposed a short time ago, as a substitute for the common celluloid films, a non-inflammable substance, manufactured by the combination of cellulose-acetate, with esters or thioesters of phenols, cresols or naphthols, or their derivatives substituted in the nucleus.

The non-inflammable transparent film forming the subject of the present invention consists, on the one hand, of a double ester of cellulose, instead of a pure cellulose acetate; or, in other words, of a cellulose ester with acid radicals of different kinds, namely, of a chemical combination in which a part of the acetate radical is replaced by the radical of another acid, such as, for instance, cellulose—acetic acid—sulphuric acid—ester or cellulose—acetic acid—phosphoric acid—ester (sulphacetates or phosphacetates of cellulose); and, on the other hand, of esters of the phenols or cresols or naphthols or their derivatives substituted in the nucleus.

The manufacture of cellulose sulphacetate is described in the "Moniteur Scientifique," 1908, page 659. The phosphacetate may be prepared in the following manner:—

One kilo of cellulose is mixed with 2 litres of pure anhydrous acetic acid, to which 50 ccs. of sulphuric acid monohydrate and the same quantity of phosphorus oxychloride are added. As soon as a thin paste is produced, about 3 kilos of acetic acid anhydride are slowly added while the paste is being cooled. As soon as all the cellulose has dissolved, one-fifth litre of 10 per cent. phosphoric acid (900 parts water and 100 parts syrupy phosphoric acid) is added. This is allowed to stand for 10 to 12 hours and is then precipitated with water.

The solubility of the double esters mentioned is very great, so that in solvents, as, for instance, acetone, solutions of 50-75 per cent. are obtained with ease. Consequently the production of the films described is inexpensive and extremely simple, and this is especially the case for films in endless bands. In other respects the method of manufacture is known. Dr. Waldemar Merckens, 59, Austrasse, Basle, and Haigasun Barsam Manissadjian, 3, Palmenstrasse, Basle, Switzerland.

## New Trade Names.

Miniphoto.—No. 331,055. Photographic reproductions included in Class 39. Walter Hugh Keep, Knüd Larsen, and August Wilhelm Sjöholm, trading as Electrophot Co., 352-354, Gray's Inn Road, London, W.C., photographic enlargers and reproducers. February 15, 1911.

Muralpha.—No. 332,082. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Colthurst and Harding, Mansion House Chambers, 11, Queen Victoria Street, and Alpha Works, Millwall, London, and Phœnix Wharf and Temple Gate, Bristol. White lead, paint, colour, and varnish manufacturers. March 21, 1911.

## New Materials, &c.

**Gevaert Platinum Paper. Made by Gevaert, Ltd., 26 and 27, Farringdon Street, London, E.C.**

Of the photographic materials which week by week reach us for review in these columns the great majority consist of gelatine plates or printing papers of various descriptions, but all following more or less closely upon others already on the market. The introduction of gelatine printing papers of the P.O.P., bromide, or gaslight class has been followed in each of these instances by the adoption, at the hands of almost every manufacturer, of a product which bears close resemblance to the original article, yet is possessed of certain points of individuality either in the degree of contrast obtained in the prints, or in the texture or hardness of the surface. New departures in methods of photographic printing have been extremely few and far between during the past fifteen or twenty years, and, indeed, it cannot be said of papers which have been radical departures that they have attained any great degree of popularity.

Platinum papers, as our readers know, have figured scarcely at all among such new introductions. Even the most non-technical person is probably aware that the manufacture of such papers calls for a degree of practice and experience far beyond that required for the production of gelatine emulsion papers. In the platinum process the sensitiser is taken up by the substance of the paper instead of being applied to the surface as a thin layer of jelly, and, therefore, the operations of coating present entirely different and at the same time greater technical problems than those of the gelatine paper or plate. Nevertheless, these difficulties have not deterred the well-known firm of Gevaert from producing, in their factories at Antwerp, a platinum printing paper now appearing upon the British market. In issuing it they offer it to the photographer in a series of varieties fulfilling the requirements which workers, both professional and amateur, demand in a paper of this class, that is to say, it is supplied in grades for obtaining cold black tones, those of warm black and those of sepia tone, whilst in addition to being thus coated upon raw papers of the ordinary kind, thick or thin, white or cream, it is also issued on hand-made Japanese paper. For the cold black tone a cold developer is used, whilst for warm black and sepia prints the developer is used hot. The whole series of grades includes ten distinct varieties of paper, Nos. I. and II. being a smooth white and rough white for black prints. These are developed in a bath consisting of 10½ oz. of potass oxalate and 1 oz. of potass phosphate in 34 ozs. of water. Grades III. and IV. are thick cream papers for warm black tones, III. a smooth and IV. a rough. These are developed at a temperature of about 100 degrees, or more, in a solution containing 10½ ozs. of potass oxalate, 154 grs. of citric acid, and 15 grs. of mercury bichloride in 35 ozs. of water.

In the case of the sepia paper two grades are made in thick cream paper, V. smooth and VI. rough, whilst VII. and VIII. are white papers of medium weight, VII. smooth and VIII. rough. The developer for these papers is as follows:—

| | |
|---|---|
| Potass oxalate | 3½ ozs. |
| Potass phosphate | 1¾ ozs. |
| Citric acid | 310 grs. |
| Potass chloride | 154 grs. |
| Water | 35 ozs. |

In all cases the treatment of the print is exactly that familiar in the platinum process. Development takes place in a second or two, and the prints are then immediately passed through a series of three acid baths. With all the developing formulæ the addition of a little 2 per cent. potass bichromate solution will give brilliancy to negatives with insufficient contrast, printing in this case being taken a little deeper.

It is difficult to describe in words the appearance of the prints. But we must specially emphasise the attractive tone of the warm black papers, III. and IV. on the cream support. The richness of these prints is of a kind which professional portraitists in particular will highly appreciate. Next, perhaps, in distinctive quality come the sensitised Japanese papers, obtainable both in warm black and sepia. The transparent nature of the paper causes the prints, when held up in the ordinary way, to have a feeble and somewhat washed-out appearance, but on laying them upon a white surface the full beauty and luminosity of the result will show the observer at once the effective use which may be made of this new material, particularly in portrait work. The paper support, of course, need not necessarily be white, and a great variety in effects is thus obtainable by the use of an underlying tinted support, much in the same way that the use of a tinted transfer paper is employed in carbon printing. In order to preserve the natural texture of the surface a hot-pressing or dry-mounting is a method to be avoided; instead the prints are given a final bath of spirit containing a little glycerine, after which, on drying, they will be found to lie flat and may then be attached to the mount with a touch of paste at the two top corners.

Our own trials of the papers have shown us that they are most amenable to the ordinary manipulation. As regards their keeping powers, the makers state that rigorous tests have shown that the sensitive material will retain its properties unimpaired for a year or more in the original tins, which latter, it may be noted, are supplied with a screw-down lid, allowing of the receptacle being employed by the user as an ordinary calcium chloride tube.

So far as we are in a position to judge, the prints, both warm black and sepia, are perfectly permanent. We are informed by the makers that no trace of mercury is used in the manufacture of the papers, and it will be noted that a mercury compound figures only in the developer for the warm black papers. A useful test for possible impermanence in such cases is to immerse the finished print in a solution of potassium cyanide, when, if part of the tone be due to mercury, a corresponding reduction of intensity will be produced. On applying this test to prints developed in the warm black developer we could obtain only the merest trace of any action, and, it should be said, that not the faintest sign of any double toning due to the presence of mercury could be discerned.

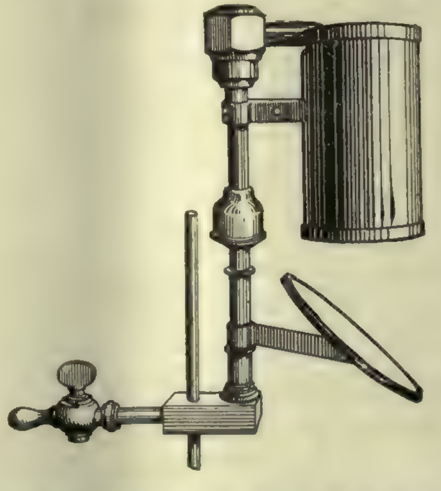
Professional photographers have thus offered to them a material which is fully capable of responding to their demands, or rather to those of customers of taste to whom a platinum print is superior to any other. Full directions for the working of the papers are contained in a booklet just issued by Messrs. Gevaert, from whom also a circular of prices of the papers and sizes in which the various grades are made may be obtained on application.

THE "HOPETOUN" ALBUM.—This is a new style of album supplied by Messrs. W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London, E.C. It is bound in black flexible leather with crocodile grain, and contains black thin flexible mounts of art paper. For certain classes of prints this affords a very striking setting, and the album is of handsome appearance. It is sold in four sizes—the smallest, with leaf 7 by 5⅝ in., price 3s., and the largest, with leaf 10 by 14 in., price 8s.

A SET OF "CROWN" MOUNTS.—The Crown Photographic Depôt, Rotherham, send us a set of 24 mounts of all descriptions—solid, folder, slip-in, etc.—which set they will be pleased to send, post free, to any bona-fide professional photographer for the sum of 1s. The set includes a number of very tasteful mounts, which are most moderately priced, and no photographer can fail to find in the selection something suited to his requirements.

# New Apparatus, &c.

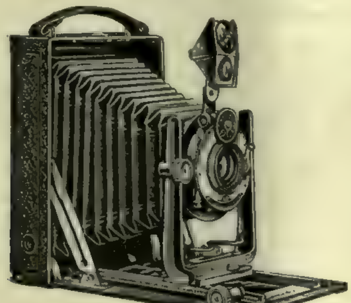
MESSRS. "HOWELLITE," LTD., have just issued a new pattern of their inverted incandescent mantle burner. The mantle itself is mounted in the ordinary way, but is fitted with a thin metal screen, the light being reflected horizontally forwards to the condenser by means of a circular mirror placed at an angle of 45 degrees. This device is used by the company so as to take advantage of the highly luminous tip of the mantle, and at the same time it allows of the light being brought as low as convenient in the lantern without moving the mantle itself. The whole apparatus is supplied ready



for fixing in an ordinary lime tray at the price of 11s. 6d. small size, 12s. 6d. large size.

THE neatest travelling lamp for the tourist photographer which we have seen is this latest introduction of Messrs. Butcher. It consists of a small metal filament glow lamp worked by a dry battery, and the whole enclosed in a case of black polished wood which measures 5 by 4½ by 2 in., and is provided, on the front, with a pair of light-filters each 1½ in. square and sliding in front of the lamp. The light can thus be changed in an instant from orange to ruby, whilst a touch upon the milled head on the top of the lamp extinguishes the light. The battery is supplied to give a light sufficient for 30 hours' use, and can be renewed at the price of 3s. per pair. The price of the complete lamp is 12s. 6d.

THE FOLDING POCKET "TENAX," NEW MODEL.—Messrs. C. P. Goerz have just issued a new model of the folding pocket "Tenax" camera, in which they dispense with the steel spring, which in the previous pattern automatically drew out the lens-front into the position of focus. In the present pattern the worker is left to pull the camera forward himself, an operation which lengthens the time of opening only by a second or two, and obviates any possible inconvenience due to breakage of the spring. In other respects the camera largely follows the previous model. It is provided with stout U-form front, rack, and pinion rise and fall, sliding cross-front movement, reversible finder, and level and "Compound" shutter. On being pulled out the front snaps into the position of focus on infinity, and is then racked forward to a total extension of 10 in. from lens to plate. Extremely well made throughout and fitted with a Goerz "Dagor," f/6.8 aperture, the camera is sold at the same price as hitherto.



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A PHOTOGRAPHIC SECTION will be one of the features of the forthcoming Coronation Exhibition, to be held at Ashford from June 19 to 24. The secretary is Mr. A. W. Busbridge, 6, Canterbury Road, Ashford, and the latest date for receiving entry forms is May 31.

CELLULOID.—A correspondent writes:—"I notice in your issue of April 28, in reply to Mr. H. S. Ash's enquiry for celluloid, that you give the name of the representatives of an American celluloid manufacturing concern, whereas there is a large home manufacturing firm, namely, The British Xylonite Co., Ltd., Hale End, who could supply Mr. Ash with celluloid."

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### SATURDAY, MAY 13.

Hackney Photographic Society. Excursion to Wake Valley.
Bradford Photographic Society. Excursion to Burley Wood Head.
Handsworth Photographic Society. Excursion to Streetly for Sutton Park.
Derby Photographic Society. Outing to Wingfield Manor.
Halifax Camera Club. Ramble to Shibden Hall.
Liverpool Amateur Photographic Association. Excursion to Ludlow.
Balham Camera Club. Field Instruction Outing—The Wandle.
United Stereoscopic Society. Affiliation Outing.
Manchester Amateur Photographic Society. Ramble to Alderley Edge.

### MONDAY, MAY 15.

Bradford Photographic Society. "Early Photographic Difficulties."
Bournemouth and District Camera Club. "Stereoscopic Photography." R. Y. Banks.

### TUESDAY, MAY 16.

Hackney Photographic Society. "Some Useful Hints." S. Woodhouse.
Manchester Amateur Photographic Society. "Photomicrography." F. W. Parrott.

### WEDNESDAY, MAY 17.

Croydon Camera Club. "Stereoscopy," A. F. Catharine; "Display of Autochromes," J. Noaks; "Photography for Profit," S. J. Tayler; "A Brief History of the Croydon Camera Club," S. H. Wratten.
North Middlesex Photographic Society. "Carbon." M. Fraser Black.
West Surrey Photographic Society. Final Selection of Slides for Affiliation.
Balham Camera Club. "The Chemistry of Development and Toning." A. Kirkland.
Manchester Amateur Photographic Society. Ramble to Moreton Hall.

### THURSDAY, MAY 18.

London and Provincial Photographic Association. "Bosina." C. Dalgarno.
Hackney Photographic Society. Excursion to Newland's Corner.
Midlothian Photographic Association. "Gum Bi-Chromate Printing." G. D. M'Dougald.
Handsworth Photographic Society. "The General Improvement of Negatives." F. H. Welshman.
Chelsea and District Photographic Society. Dark Room.

EDINBURGH PHOTOGRAPHIC SOCIETY.—At the last meeting of the Edinburgh Society office bearers were nominated for next season as follows:—President, Mr. J. C. McKechnie; vice-presidents, Messrs. Berry and J. W. Brown; secretary, Mr. Gibb, solicitor. As there are no more nominations than vacancies, there will be no election for these. For the four vacancies on the committee there are five nominations—Messrs. Massie, R. C. Malcolm, J. S. McCulloch, W.S., James Hay, and Illingworth. A lecture was given by Mr. A. Eddington on "Control in Printing Methods," with special reference to bromide and bromoil.

# Commercial & Legal Intelligence.

LEGAL NOTICES.—A receiving order has been made in the case of Thomas Page Swaine, photographer, 41, High Street, Broadstairs.

THE FIRST MEETING of creditors in the failure of Andrea Balestra, a photographer, carrying on business at 95, Wigmore Street, W., was held at the London Bankruptcy Court on May 8. No statement of accounts had been filed by the debtor, but the Senior Official Receiver (Mr. Hough) said the liabilities were roughly estimated at £750, and there were no assets. Proceeding to give a summary of debtor's trading history, the Official Receiver said debtor commenced business on his own account in March, 1908, at the "Portman Studios," 95, Wigmore Street, W. Debtor then had capital to the amount of £1,200, and he spent £400 in fittings and apparatus. In July, 1909, debtor's mother advanced him £200, for which he gave a bill of sale on the furniture and trade effects at Wigmore Street. Debtor continued the business until April 1, 1910, when he appeared to have exhausted his capital, and was threatened with an action by the petitioning creditor, Mr. La Rose, who had previously been in his employ. Debtor's mother guaranteed his solicitor's costs, so that he might fight the action, and also guaranteed to pay £100, which debtor had previously borrowed from his solicitors. On these terms the business was made over to her, and debtor had since continued to act as her manager at a nominal salary of 10s. a week, although, in addition, he and his family lived with the mother at her expense at a private house. The action threatened by the petitioning creditor was brought into court, Mr. La Rose claiming to have been a partner in the business. This claim was refused by the Court, but judgment was given against debtor in regard to money advanced to him by the petitioning creditor, who was now a creditor for £149. The other chief liability was a claim for £300 by solicitors who had acted for debtor's father on debtor's guarantee. Debtor ascribed his failure to bad trade and heavy expenses, and said he was aware of his insolvency in April, 1909, and had contracted about £100 of debts since that time, his justification being that he thought trade would improve. The business had never showed a profit, but up to April, 1910, debtor had drawn £150 a year for household and personal expenses. Debtor was asked several questions by creditors, and the appointment of an outside trustee was proposed, but ultimately it was decided to leave the matter in the hands of the Official Receiver.

## NEW COMPANIES.

Luxol Safety Light Company, Ltd.—This company was registered with a capital of £1,000 in 10s. shares. Objects: To carry on the business of manufacturers of photographic dark-room lamps, etc., as formerly carried on by W. C. Haggett, at 3 and 4, Great Winchester Street, E.C., as the Luxol Safety Light Company, also to acquire the benefit of certain existing inventions relating to the said lamps. Permanent managing director, W. C. Haggett, subject to holding 100 ordinary shares. Remuneration of ordinary directors, 50 shares. Registered office, 3 and 4, Great Winchester Street, E.C. Private company.

# News and Notes.

Her Majesty the Queen has quite recently given Mrs. R. N. Speaight a sitting at Buckingham Palace for a miniature of herself.

Kodak, Ltd.—Mr. F. C. Mattison has been elected a member of the Board of Kodak, Limited, in the place of Sir G. W. Des Voeux, G.C.M.G., deceased. Mr. W. J. Williams has been appointed secretary.

Memorial to a Scottish Photographer.—In Greenock Cemetery a monumental cross has been erected in memory of the Rev. J. B. Thomson, Greenock, and a memorial tablet has been unveiled in the Greenbank U.F. Church. Rev. Mr. Thomson, who was a brother of Dr. Joseph Thomson, the celebrated African traveller, was an "expert" of the Scottish Federation on pinhole photography, author of a handbook on that subject, and an effective lecturer.

Royal Institution.—A general meeting of the members of the Royal Institution was held on Monday afternoon last, Sir James Crichton Browne, treasurer and vice-president, in the chair. Mr. C. W. Ansdell, Lady Bell, Mr. S. Z. de Ferranti, Mr. H. Kahn, Mr. G. Manuel, Mr. C. E. Moulton, and Mr. A. Perks were elected members. It was announced from the chair that the following gentlemen had been nominated as vice-presidents for the ensuing year:—The Right Hon. Sir Henry Burton Buckley, P.C., Right Hon. Earl Cathcart, Dr. Donald W. C. Hood, Mr. H. F. Makins, Sir Francis Laking, Bart., Mr. Alexander Siemens, Sir James Crichton Browne (treasurer), and Sir William Crookes (honorary secretary).

Scala Kinemacolor.—Mr. Charles Urban, keenly alive to the almost limitless possibilities of "Kinemacolor" during the pomp and ceremony of the brilliant Coronation season, has already made the most exhaustive arrangements for securing for the Scala Theatre exclusive scenes in life-motion of all the forthcoming Royal and Imperial ceremonials—and all in the actual colours of nature as the eye sees them. Thus, while tens of thousands of patriotic Britons will on Tuesday next be unable to get a view of His Majesty the King unveiling, in the presence of the German Emperor and Empress, the stately and beautiful Memorial to Queen Victoria, opposite Buckingham Palace, Mr. Urban has secured such privileges as will enable him to reproduce a most close and intimate pictorial enactment of the entire proceedings, and these historic pictures will be shown at the Scala on the following afternoon, Wednesday, May 17, and subsequently twice daily.

Messrs. Raines at Turin.—The makers of a well-known tooth powder once advertised: "We couldn't improve the powder so we improved the box." A somewhat similar principle seems to have prompted Messrs. Raines and Co., of Ealing, in the arrangement of their exhibit at the Turin Exhibition; they have prepared so many enlargements for exhibition that when they wished to arrange a striking exhibit for themselves they could only do so by exhibiting unusual subjects.

This they have done by obtaining the loan of negatives from their customers representing such widely different subjects as astronomy —"The Moon" and "Orion," W. Shackleton; natural history—"The Arctic Tern," W. Bickerton; engineering, Beyer, Peacock and Co., Ltd.; gardening, "Types of English Gardens," R. Lincoln Cocks; motor manufacturing, the Daimler Co., Ltd.; railway and steamship advertising, the Canadian Pacific and Canadian Northern Railways; battleships, Lieut. Barton, R.N.; medicinal plants, Stafford, Allen and Sons, Ltd., and Alpine climbing, Dr. C. Atkin Swan.

That the workmanship displayed in these enlargements, alike in respect of enlarging, mounting, and framing, is faultless, it is almost unnecessary to say, but it is especially noteworthy that the titling of the frames is done in English, French, and Italian. One frame struck us as being the model of what a camera manufacturer's advertisement should be: it contained two enlargements of difficult climbs in the Alps, the inscription heading, "Alpine climbing. A small camera, easily carried, gives negatives that may subsequently be enlarged in this form." It would appear from work of this description that the Raines Service might be as helpful to the photographic manufacturer as it has long been to the professional photographer in the preparation of his enlargements.

The Scottish Photo-Pictorial Circle. — This is the new name of the Glasgow Photographic Art Circle, and not a few will be dubious as to whether it is an improvement The constitution has undergone drastic changes. The original idea of the Circle was a limited membership of thirty (proof of artistic ability being the only passport to membership), and under that constitution it has, during the four years of its existence, done much good work The members were a compact body, animated with one ambition, and all working together. Now it is decided to admit honorary members and associates. This may increase the membership, but it may be questioned if it will increase the beneficial influence of the Circle. However, no doubt the matter has been well considered by the members before the change was made.

Mr. W. C. A. Fergusson, the well-known "oil" worker, was appointed president, and Mr. W. S. Crocket re-elected secretary and treasurer. In his annual report, Mr. Crocket, while admitting the steady progress of the members individually, regretted that the attendance at the meetings had been unsatisfactory. The best attendance had been at the excursion to Alva, when an enjoyable afternoon was spent under the guidance of Mr. J. M. Whitehead. The travelling panel had not been in so great request during the past season, probably owing to the Scottish Salon being in the West. The one-man show was by the president, Mr. Dan Dunlop. An innovation was that a formal meeting was held, when the secretary of the Federation performed the opening ceremony in the presence of a large audience.

The exhibition record of the members was particularly good, the Circle being creditably represented at the Scottish Salon, the R.P.S., the Northern, and all the principal Scottish exhibitions.

The Circle is particularly fortunate in their secretary (who was the originator of this movement), and no doubt under his guidance, and the enthusiastic president, it will go on and prosper.

## FORTHCOMING EXHIBITIONS.

May 8 to 31.—Royal Photographic Society. Sec., J. McIntosh, 35, Russell Square, London, W.C.

May 12 to 20.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

### AN EVIL PRACTICE.

To the Editors.

Gentlemen,—If you think the following facts of interest or use to professionals, perhaps you would care to print them. I made twenty small negatives of a very difficult child brought to me from some distance in the country, because the two ladies who came with her were kind enough to think I was considered good with children. One lady was to paint a miniature of the child, and wanted rough, untouched prints to work from. I sent about twenty rough proofs, and four of them were toned, so that the miniature painter could draw from them. In response to an account for £1 11s. 6d., which I considered, taking into account that to make a number of good portrait negatives of a difficult child requires a certain amount of skill, time, and material, was a very moderate charge, I received the following postcard from the lady miniature painter:—

"DEAR SIR,—There must be a mistake in the account you have sent me. A well-known Bond Street photographer always does what I want, and does not charge me more than 5s. 6d, while I can always get it done in the provinces for 2s. 6d. or thereabout."

One cannot help thinking that the time is not far distant when professional photographers, both in Bond Street and many other streets in London, and also in the provinces, might find it profitable to give a thought to the fact that each time they do anything of this kind (and I am told this doing something for nothing on the off chance of getting an order is becoming very common, even among men of ability) that they not only stop themselves from getting a fee in the future, but also stop every other fellow professional from being able to charge one, for doing the same kind of work. Do you think the matter worth a little attention? Personally, I don't think the profession can afford to overlook it. I have written the miniature painter a polite note pointing out the amount of work done, and I am going to do my best to get that £1 11s. 6d.—I am, yours faithfully,

MEMBER OF THE P.P.A.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

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*** *Communications relating to advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPHS REGISTERED:

A. Freke, 28, Queen Street, Cardiff. *Photograph of the Lady Mayoress of Cardiff in Chain of Office, and photograph of the Lord Mayor of Cardiff, Alderman Charles Hoyward Bird, in Mayoral Robes.*

G. L. Hoffman, Westcliff Studio, Clacton-on-Sea. *Six photographs:—"Evening," West Point; "Storm Splash"; "Storm," West Parade; "Storm," East Parade;. "Sou. East Storm"; "Stormy Weather"—all at Clacton-on-Sea.*

H. Henry, 72, Southfield Square, Bradford, Yorkshire. *Photograph of dinner party taken by flashlight at G. N. Hotel, Bradford, May* 2, 1911.

F. A. H., H. R., and others.—In our next.

SOUTH AFRICA.—We have no means of judging, but our general belief is that conditions are very much as here.

L. M. (Dolgelly).—We are unable to say. We advise you to get a local directory, from which you should be able to form some opinion.

RED TONES.—1. No; they are not as permanent as straightforward sulphide toned prints. 2. It is well known. See "B.J. Almanac," 1909, p. 609. 3. It is well to fix.

HYPO.—Chiefly in the "country" periodicals and in books on nature study, of which Messrs. Cassell, Witherby, and Methuen have of late published several.

H. (Salary).—It is not easy for us to say, but we should think £1 a week would be reasonable, in view of the fact that the young lady cannot very well undertake other regular work.

J. STUBBS.—1. Practically none. 2. Optical glass and raw paper, chiefly gelatine, to a considerable extent. 3. Very few; collodio-chloride paper is about the only one, and British makers are now equally good.

HAMBURGER PROCESS.—Could you kindly give me the number of Mr. A. Hamburger's (of the Dover Street Studio) patent for colour photography?—ENTHUSIASTIC.

We do not know it. The complete specification has not yet been published.

C. F. E. (Rema, New Zealand).—It is contrary to our custom to recommend a particular article under such circumstances. If you choose a wide-angle anastigmat by a leading maker you will be quite safe in getting what you want, but we should advise you to select one not faster than *f*/6.3. We would say, too, that you are ill-advised to use such a short focus as 5 inches on a half-plate for this class of work. Better one of 8 or 9 inches focus, on account of the more distant view point which you can then take.

THE CONVENTION.—Will you please tell me the conditions of membership of the Photographic Convention, which I see is to be held at Exeter in July next. I have been an amateur photographer for many years, but having just returned from abroad should like to take this opportunity of seeing the latest things in photography. But perhaps the Convention is only for professionals?—CHINA STATION.

The Convention is open to all interested in photography in any way. Better write to the hon. secretary, Mr. F. A. Bridge, Downshire House, Barry Road, London, S.E.

TELEPHOTO LENS.—Would you kindly give a simple formula to find the focus of a double concave lens? I have an 8 x 6 Cooke lens, 11.18 focus, also a Dallmeyer 12 x 10 triple achromatic 15in. back focus. Do you think I could take a telephoto if I took the centre lens from the 12 x 10 and attached it to the back of the Cooke lens?—TELEPHOTO.

The simplest way is to take it into an optician's (spectacle maker), and ask him to tell you the focus. He can do it in a moment by comparison, whereas any method we can give you will take some considerable time to use. The lens will probably be too long in focus for the purpose.

FERROTYPES.—I enclose a couple of pictures and some undeveloped plates as used in an automatic machine in my possession. The exposure is about the same as a wet plate, using a Victoria portrait lens. Could you inform me whether the plates, in your opinion, are made by the collodion emulsion process, or by the bath process? And could you give me a formula that would answer for making them?—C. B. CLIFFORD.

Such plates are usually prepared by collodion emulsion, though it is quite possible a bath method may be used by commercial makers. For an emulsion formula which has been recommended see p. 753 of the "B.J. Almanac," 1911.

RIGHT TO PHOTOGRAPH.—There is to be a large pageant held in a gentleman's palace here, and the committee wish to know if they can give a professional photographer the sole right to take photographs of same for publication, and if they can have the power to debar amateurs or any other person from taking photographs of same. There is to be 1s. charged for admission.—W. KING.

Certainly, the committee can make what conditions of entry they like. They can say photography is not allowed in the grounds, but it will be very difficult to enforce the rule, and any photographer purchasing the sole right to reproduce is very likely to find that in practice other negatives are taken.

**Recovering Residues.**—Would you be so kind as to answer the following questions? I wish to recover the waste silver from the first two washing waters before toning. There is no space available out of doors, but I have two large barrels in a passage beside the toning-room. Potassium sulphide is, I believe, the chemical used for precipitation, but I am not sure if the fumes would affect the paper being used so near the toning-room. I also wish to know if the fumes would be detrimental to the health of the assistants working near.—Inquirer.

On no account must the fumes reach sensitive plates or papers. These should not be indoors. The fumes, much diluted with air, are not poisonous, but are not conducive to health.

**Three-Colour Inks.**—In the Colour Supplement of the "B.J." for May 5, 1911, it is stated by L. P. Clerc that Valenta has "shown the possibility of producing, by means of aniline dyes, greasy inks, which are infinitely more stable to light than the madder lac, which is usually considered as one of the most stable of colours." ("B.J." Colour Supplement, p. 37.) Would you kindly state: 1. Where an account of Valenta's experiments can be found? 2. Can an English translation be obtained? If not, 3. What are the dyes? By whom are they made? What mordants are to be used?—D. Kidd.

You will find Valenta's paper in full in the "Colour Photography" Supplement for December 3, 1909, p. 92.

**Schools.**—I am at present employed in a photographic studio, but am desirous of attending classes held during the evenings, at which I may improve my knowledge of the subject. I have an idea that a school such as I want is located in one of the courts off Fleet Street, but I am not certain. I wonder if you would be kind enough to let me know the name and address of a school to which I might go. Then, again, if I may, I will yet trouble you a little further. Do you know of a place where I could learn how to make photographic blocks for general illustrations?—E. Haselden.

You refer to the L.C.C. School of Photo-Engraving and Lithography, which now occupies temporary premises in Fleet Lane, Farringdon Street. There you could learn photo-block making.

**Sulphide Toning.**—With reference to the interesting letter of Professor Namias in your last issue, I should like to know if fixing in hypo is necessary after intensifying Autochromes. He also mentions in his reducer, ammonia, 2 drachms. Is it liquid ammonia or the solid form? With reference to his developer to equal metoquinone, I would point out that the active part of metoquinone is two parts of metol, combined with one part of hydroquinone, and having only one base. Professor Namias has a proportion of one of metol to three hydroquinone. In any case, he has two bases in his mixture for his two developers, so chemical reaction will be different from metoquinone that has only one base.—Thos. Browning, Major.

Fixing is advisable to clear the image. The ammonia is liquid ammonia, of about s.g. .92.

**Green Tones.**—I have been trying to obtain green tones on bromide paper and lantern slides (grass green), and have tried the vanadium chloride formula on page 563, "B.J. Almanac," 1910. I cannot get the vanadium chloride to dissolve properly; it leaves a black deposit at the bottom, also the solution bleaches the photograph to almost nothing. Can you help me or give me a better formula? I have seen some beautiful films toned by Pathé. Would like to get that result. 2. Are the green tones reasonably permanent?—Any Green In My Eye.

1. It is best to use hydrochloric acid in dissolving the vanadium. See formula in your "Almanac," p. 768. But green tones are rather ticklish preparations to compound, and our advice to you is to purchase ready made, say, from the Leto Co. 2. The tones are not absolutely permanent. If you want that (as well as certainty of tone in a lot of prints) you had better use the carbon process.

**Enlarging.**—Having picked a room in upper storey, I intend enlarging with half-plate camera, taking out lower sash of window, which faces north, and boarding same up, leaving in centre a square aperture, same size as focussing screen of camera, and up against this aperture placing camera on a bracket, of course, inside the room, which would be in total darkness, having a bit of board painted white, placed at bottom of aperture outside window, at an angle of 45 degrees, to reflect light on to negative, which takes the place of focussing screen. Do you think enlarging by this method would give equal, if not better, results than an enlarging lantern, testing light before each exposure on bromide paper (enlarging size) by Watkins' standard exposure meter? The lens used would be a Ross homocentric. There is no skylight in room referred to. Would you kindly point out the advantages and disadvantages of the two methods referred to? 2. Is there any book referring to the two methods (of enlarging) in question, author's name, where obtainable, and cost of same? 3. Would a spirit vapour lamp used in an enlarger excel incandescent coal gas, or is there any other illuminant superior to either of the two mentioned other than electric?—Irishman.

1. Your method should work quite well. The only material disadvantage in daylight enlarging is the fluctuation of the light, and the meter will help in this respect. 2. "Practical Enlarging," by R. Child Bayley (Iliffe), 2s. 3. The spirit vapour lamp is a little more powerful, but a Howellite gas mantle will give as much light as is really required.

**Studio Lighting.**—Would you kindly give me your advice about a small studio I am having built, the dimensions of which are 18ft. long, 10ft. wide, and 8ft. to the eaves? My difficulty is about the pitch of the roof, for in Robinson's book, "The Studio," he says: "To avoid the sun shining into the studio and being troublesome, the slope of the roof should be 62 deg. 30 min., or still more upright." But the builder tells me that if I have the roof to slope at 62 deg. it will make it look rather ugly in so small a studio, and that 62 deg. will make it 9ft. above the eaves, making the building 17ft. high, that is, 8ft. from ground to eaves, and 9ft. from eaves to the top of roof, which we think will look rather odd. What angle would you advise? Would 50 deg. do? Also, I should like your advice upon protecting the glass of roof from being broken (as I am in an exposed position) with boys throwing stones. Would ½in. wire netting, say, nailed a little way from the glass on the roof, be any hindrance to the light, or would it make any difference if it was nailed close to it? Where could I procure the papier-maché, the same material which is used for covering studio accessories? I should be glad of your advice in the next week's issue of "B.J."—Studio Roof.

If you will refer to the diagram on page 21 of Robinson's book you will see that the angle of 62 deg. 30 min. is only adapted for a "single slant" light, the side wall being solid, but only 4ft. 6in. high. The angle shown on page 17 with the outside shade would answer your purpose much better; 45 deg. or 50 deg. would be quite steep enough. The wire netting will not make any appreciable difference to the light. Fix it three or four inches from the glass, or a fairly large stone would spring it enough to allow the glass to be broken. The papier-maché used by accessory makers is not an article of commerce. We believe it is made by boiling old newspapers into a pulp and then mixing in enough good flour paste to bind it into a hard mass when dry. The wood support should be well sized and allowed to dry before applying the papier-maché.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2663. Vol. LVIII. FRIDAY, MAY 19, 1911. Price Twopence.

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## SUMMARY.

The Professional Congress.—The success of last year's P.P.A. Congress even has been exceeded this year under the presidency of Mr. F. P. Moffat, of Edinburgh. Mr. Moffat, in a highly practical address, dealt with methods of securing business and of increasing orders; with invitation sittings; and with price-cutting, offering his photographic brethren much shrewd advice. (P. 375.)

On Tuesday, at the Kodak Works at Harrow, the Congress was royally entertained by the Kodak Company. (P. 377.)

We present as a supplement to this issue the group taken on the Harrow visit, and shall next week publish a key to those figuring in it.

The distinction which is being made between photography and other graphic methods in the Copyright Bill at present before Parliament is the subject of a protest from Mr. George Davison in a letter which we publish on page 389.

The conclusion of the notice of the exhibition of the Royal Photographic Society will be found on page 379.

The Royal Photographic Society announces that the trade section of its exhibition now remains open until 10 p.m. each evening. (P. 385.)

Photography is accorded a prominent place in the Scottish National Exhibition. (P. 385.)

Some portraits by Mr. E. O. Hoppé may now be seen at the Camera Club. (P. 386.)

Many of the minor precautions which the old-time photographer took as a matter of course would appear to be falling into desuetude. We refer to some of them in an article on page 374.

Some striking examples of the practical advantages of light-filters used in conjunction with orthochromatic plates will be found on page 384.

The Congress of Applied Chemistry will be held next year at Washington, U.S.A. The secretary of the photo-chemical section is Mr. E. J. Wall. (P. 389.)

In a note on page 374 we refer to some of the discrepancies in fittings of photographic apparatus, pointing out the convenience which would result from standardisation.

Colour screen-plates, dark-slides, and focal-plane shutters figure among "Patent News." (P. 386.)

## EX CATHEDRA.

**Status of Photographs in the New Copyright Bill.** In a letter, which we publish on another page, Mr. George Davison voices a protest against Clause 22 in the Copyright Bill now before Parliament, which we are sure will be re-echoed by large numbers of photographers, and particularly by those who set special store on the status of photography as a form of graphic art. Clause 22, it will be remembered, sets photography in an inferior class, as compared with other graphic arts, in the matter of the period for which copyright is obtained. It grants to photographs a fixed term of fifty years, while in the case of other artistic works the period granted is for the life of the author and fifty years after his death. Apart from the legal stigma which may thus be said to be cast over the works of photographers, a longer period of protection would, in certain cases, be a commercial advantage, though, speaking generally, we believe that photographers will be content, from the strictly commercial standpoint, with the fixed period of fifty years. In view, therefore, of the increasing importance and value of photographs for all descriptions of purposes, it is certainly only reasonable and fair that they, good or bad, should be accorded the same degree of protection which is accorded to drawings or paintings, likewise good or bad. And, further, it should be borne in mind that such was the intention of the Commission which issued its report last year. We understand that the leading photographic bodies, such as the Royal Photographic Society, the Professional Photographers' Association, and others, are making strong representations on this point to those in charge of the Bill, and we would impress upon all photographic Societies, large or small, in the United Kingdom to strengthen the protest by addressing themselves in a similar strain to their local member of Parliament, and to the member of the Government, Mr. Sydney Buxton, principally responsible for the Bill.

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**The Horticultural Hall Exhibition.** Our "review" last week of the Arts and Crafts Exhibition, organised by Mr. Arthur C. Brookes, was necessarily in the nature of an anticipatory notice, and we must now supplement it by some few words recording the success which, among both exhibitors and visitors, the exhibition has been declared to be. Tuesday evening saw the arrival of professional photographers in their numbers on their return from the visit to the Kodak Works, but we learnt from a number of firms, appealing chiefly to professional photographers, that they had been busy during the day and had had satisfactory results in the way of business. The arrangement of the Hall is an improvement on last year's show, and all classes of those in the photographic world may reasonably believe that the exhibition and the Congress are destined to be annual events which will be looked forward to each year with increasing interest.

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**Standardisation of Apparatus.** The question of the standardisation of mounts, which is coming before the Professional Photographers' Association, suggests the desirability of endeavouring to obtain some sort of uniformity in the sizes of many pieces of photographic apparatus. For some reason, which is not easy to find, there seems to be a great difficulty in doing this. A good many years ago the R.P.S. devoted a considerable amount of time to establishing standard sizes for lens-flanges. These sizes were adopted by a number of opticians, but by no means universally, and with the advent of the between-lens shutter further complications arose, each of the makers adopting a different diameter and pitch of thread. But the confusion is worse confounded when we come to such articles as dark-slides, lens-panels, and the various screws used on the rising fronts and swing-backs of cameras. We have at hand at the present time half a dozen cameras by various makers, and not one screw is available to replace another in case of emergency. Taking the case of dark-slides alone, it will at once be seen how advantageous it would be if every slide for a certain sized plate were interchangeable with every other slide, and, more than that, with every changing-box, roll-holder, and film-pack adapter. Metal slides would naturally have their own standard gauge, but standard adapters, allowing of their use in other cameras, should be readily obtainable. With lens-panels the photographer has an easier task, but it does not always seem to occur to him when ordering a camera to give one of his existing lens-boards as a pattern for the new ones. In cases of great disparity in the size, intermediate frames like plate-carriers may be used. By so doing we can, in a moment, transfer the little anastigmat normally used on a postcard camera to a 10 by 8 for wide angle or enlarging work, without the use of a heavy and costly metal adapter. The tripod screw is now usually of the ¼in. Whitworth thread, but it is the only one in the whole apparatus in which such a standard is observed, every other screw being different from its neighbour. A camera by a first-class maker which we recently examined had different threads for the rising and cross fronts, while yet another thread was used for clamping the swing back. In the past photographers have been too complacent in the matter of accepting these inconveniences; but in these days of competition there are surely manufacturers who would be willing, if desired, to do what is so eminently desirable. The individual photographer may do much for his own comfort by adopting a standard size of slide for each size of plate, a standard series of lens-panels and adapters, and also a series of adapters to allow smaller slides to be used in large cameras. On an outdoor job, when using a 12 by 10 camera, it is very convenient to be able to use half plate or whole plate slides on any chance for portrait work which may present itself.

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**Pictorial Composition.** We are continually hearing discussions at societies and reading articles in photographic papers on pictorial composition, and yet in no single case that we know has the discussion or the article come to any conclusion that could be described as in the least helpful. On the one side we have heard much about "laws" of composition to the effect that lines must lead in certain directions and not in others, that one may not do this and should do that, while on the other side there have been declamations to the effect that no laws exist, and consequently everyone may do as he likes. The fact seems to be that photographers generally either look at the matter from much the same academic point of view as the schoolmaster considers grammar, or else from the point of view of the schoolboy who despises grammar and schoolmasters equally. We choose this simile because there is a close analogy between grammar and pictorial composition. If a man writes in such a fashion that his meaning is absolutely definite and clear, his statements perfectly free from any ambiguity, and fully emphasised in the more important parts, it follows of necessity that his words must be perfectly chosen, his punctuation and his phrasing also perfect; in other words, his grammar must be perfect. In this case good grammar comes as the necessary accompaniment of perfect expression, and in pictures good composition must result if the artist has expressed his ideas as clearly and definitely as possible. In neither case is it a matter of consciously obeying certain formal rules and regulations; it is simply a matter, first of possessing an idea, and then of striving to express it as definitely and as perfectly as possible, in obedience to the great fundamental laws, not of composition, but of art. From the results other people may deduce laws governing details, but if they try to work to them they are then working backwards.

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**Principles and the Ideal.** The only use that such deduced laws, or rather principles, fulfil is that occasionally they are helpful when a worker has gone wrong, and yet does not know where or how. Momentary carelessness, or a temporary loss of grip of his fundamental idea, often leads to such results, and then the so-called laws are of service in finding the error, but so long as he has his idea or his ideal fully in view, and works to that alone, all such laws are as unnecessary as a book of grammar is to the careful writer. In photography the trouble is that the worker is too often void of an idea, while, when he has one, he cannot reproduce it by a process of building up, only by one of selection and correction He has to begin with something that is already imperfect, and must try to improve on it, hence the perfect expression of any idea at all is next to impossible excepting when the subject is one of the simplest possible character. Hence also the triumphs of the pictorial photographer are nearly all in the realm of portraiture, and his most ghastly failures in that of landscape work.

## AVOIDABLE TROUBLES.

In photography, as in most other ordinary occupations of life, the greater proportion of our troubles is either of our own making or at least due to a want of care and foresight. When we see the condition into which many photographers allow their apparatus to get, we cannot help feeling that they have better luck than they deserve. The camera is the photographer's best friend, but, unfortunately, it is not always treated with due respect and consideration. American business men are fond of displaying a card which in bold type bids you to "Do it Now." and the wise photographer obeys the mandate, and adjusts, repairs, and refits his camera as soon as occasion for doing so arises. Many plates are lost both in the studio and the field through worn-out or missing screws, swing backs which will not clamp, racks which allow the pull of the bellows to shift the back, badly fitting reversing frames, and leaky slides, singly or in combination, may cause the loss of a valuable negative, which would have been easily obtained if the camera had been kept in perfect working order. How often does one see a lens properly hooded or shaded either for indoor or outdoor use? and how often does one see flatness and fog on negatives which can be definitely attributed to this cause. A formula which can be relied upon to produce poor negatives is to use an imperfectly cleaned lens minus a shade and to give a short exposure because the plates "fog so easily if the exposure is a bit full!" Forty years ago, when plates were slow and lenses had small apertures, every care was taken to prevent any extraneous light from reaching the lens or plate; now with ultra rapid plates and lenses of high intensity no such precautions are thought of. Why not?

Another avoidable trouble is the flatness caused by too high a temperature during development. Many photographers spoil their negatives by altering their formula as soon as warm weather starts causing a noticeable difference in quality. This is the wrong way to set to work; use the normal developer and cool to the normal temperature with ice.

Carelessness in weighing and measuring chemicals, or, worse still, guessing at quantities, is a fruitful source of trouble, needing only to be mentioned to be avoided. Not long ago we saw an operator dipping out sulphite with a cardboard box which he believed to hold four ounces; on a doubt being expressed, he weighed a box-full and was surprised to find that he had just double that quantity.

"Matter in the wrong place," otherwise dirt, is at the bottom of many mysterious worries, and we would commend to the present generation of photographers the warning common enough years ago, "Always consider that the dust of a dark room is hypo." Many spots and streaks will be avoided if this caution is borne in mind, for not only is there hypo in the dust, but possibly ferricyanide, persulphate and half a dozen other re-agents. A practice which was almost universal a few years back seems to be falling into disuse; this is the "swabbing" of negatives with a pad of cottonwool or piece of soft wash leather under the tap after washing and before placing in the drying rack. Some water leaves quite a perceptible precipitate upon the film either during washing or more often in developing. This cannot be removed by any amount of spraying, but gentle rubbing fetches it away at once. Much annoyance may be saved by preventing the movement of prints in the frames by providing a soft yet firm felt pad for each of the latter, at the same time better contacts being secured.

All this seems very trivial and perfectly obvious to the old hand; but there are now many hundreds of workers in photography who have picked up their knowledge under conditions which are far from perfect, and it is upon them we wish to impress a few of the trifles which help to make up perfection.

# THE PROFESSIONAL PHOTOGRAPHERS' CONGRESS.

The second annual Congress of the Professional Photographers' Association opened on Monday evening last, May 15, at the Arts and Crafts Exhibition, held at the Horticultural Hall, Westminster. By the evening of the opening day close upon 250 members of the Association had enrolled themselves as members of the Congress, and the meeting room was crowded to overflowing with those attending the President's reception, by which the formal proceedings were opened. The business of the evening consisted in the President's address, and in a subsequent talk by Mr. W. Crooke, of Edinburgh, on his impressions during a recent tour in America. The past President, Mr. William Gill, initiated a brief discussion on the presidential address with a few words of hearty appreciation, and was followed by Mr. H. A. Chapman, J.P., of Swansea, with a characteristic speech. Mr. J. Birtles, of Warrington, and Mr. S. H. Greenway, Northampton, followed on similar congratulatory lines. Mr. William Crooke, of Edinburgh, was very warmly received on rising to speak of his experiences in America.

His talk was mainly concerned with the personalities of some of the leading American professionals rather than with their work. Mr. Crooke was specially struck with their freedom from what we are accustomed to regard as ordinary conventional restraints and the stiffness which is apt to characterise the ordinary Englishman in first coming into contact with people to whom he has not been formally introduced, and instanced Mr. Goldensky, of Philadelphia, who meets his customers in the morning in shirt and trousers. He was much impressed by the immense vitality and forc of such men as Strauss, Pirie Macdonald, and others, as well as with their splendid hospitality and openhanded friendliness.

On the motion of Mr. Lang Sims a hearty vote of thanks to Mr. Crooke was carried by acclamation and suitably acknowledged.

The meeting closed with a similar hearty token of appreciation accorded to the President on the motion of the past President.

## THE PRESIDENTIAL ADDRESS.

The chief object of the Congress, I understand, is to give photographers an opportunity of meeting each other and fostering feelings of good fellowship, enabling them to interchange views on business subjects and thereby help one another. I trust we have all come here with the intention of adding some small quota of knowledge to the general fund: if anyone gives a wrinkle away, well, he gets back a dozen or more in exchange. I am sure no one has come here with the idea of taking everything and giving nothing. There may be, however, some humble-minded individuals, who are in a small way of business, perhaps in some country town, doing the principal part of the work themselves; they may think, what wrinkle can I give these London men? they must know a great deal more than I do—but they are wrong, these are often the very men who can give wrinkles.

I have seen and heard it frequently stated that a combination of the artistic and business mind is very rare. Now, Gentlemen, I don't believe anything of the sort. Certain people seem to be under the impression that a business man must be a kind of clever scoundrel, quite unscrupulous in his ways of making money, as long as he makes it without going outside the pale of the law. This is a mistake. A business man cannot afford to be unscrupulous; he must be honest, upright, and straightforward in all his dealings, for if he is not he is very soon found out, and people fight shy of him. I would never dream of having a second transaction with a man who "did" me the first time. Now, how much of the business man do we photographers require to be? Well, in my opinion, what we want is tact in dealing with our customers, and the faculty of being able to look a little ahead. Now, an artistic mind is quite able to grasp these facts, and, in fact, he does so, because I could point out dozens of men who are extremely artistic photographers and at the same time are clever business men. The reason that a number of artistic men are not also business men is from no want of ability, but merely that they won't take the trouble to become so—laziness pure and simple.

A photographer, to be successful, requires first to induce the customer to enter his studio, next to make a fine photograph of him or her, and last, but not least, to secure a good order. First we shall consider how to catch our customer. Well, the secret of this is, "Advertise"—not necessarily in the columns of a newspaper; there are other and better ways of advertising. Begin with your show-cases. You can't put too much thought and care into them. You should not only have the finest specimens of your work, but also the most attractive subjects; not too many, and change them frequently. If you do so, people will get into the habit of looking at your cases with the expectation of finding something new, and when the time comes it will bring them inside. One of the most effective ways of advertising, and the pleasantest, to my mind, is to get yourself known through taking an interest in the affairs of the town you live in. Make friends and acquaintances, and you will soon get customers, if you are tactful. This, of course, all depends on yourself. If you are liked, all these acquaintances will pay your studio a visit, and bring their friends in their train: you must not, however, simply take, or pretend to take, an interest in order to get customers. You must take a real interest in the other affairs. Of course, our best advertisement is fine work. There are other ways of advertising, by sending circulars, Christmas cards, and things of that sort; they have their uses, but you all know about them as well as I do.

In regard to the second item, how to take an artistic photograph, I shall not attempt to teach you, as you also know as much about that, or more, perhaps, than I do.

We now come to the third, the art of securing a good order. There is a great deal of business tact required in the way you manage your customers; as most of us know, it is not good policy to rush them for orders and press them to buy. What we have got to do is to gently suggest things to them and show them a few really good specimens, say, of miniatures, enlargements, etc. It is astonishing how you can increase your orders in this way. I remember a short time ago a gentleman called at my studio to order some cabinet photographs of himself, which came to 30s. He was a high dignitary of the church in Scotland. After booking the order I had a chat with him, and casually drew his attention to a carbon enlargement which I had just finished. He said, "by the bye, that is the very thing I want, I have been asked for one to hang in the vestry of my old church," so I booked the order. I then remarked a second copy would only be half price, if he thought of one for his study as well, so he ordered two framed 24 x 18 carbons. It began to dawn upon me that I had met this gentleman just at the right time he was in a buying mood, so I showed him some oil paintings and mentioned what a splendid painting we could make from the photograph, with perhaps only a couple of sittings from him. He was not sure of a painting, did not know where he could put it, until he remembered that his daughter was to be married in about two months, and he thought it would be a capital present for her, and I thought so, too. Before leaving the studio his orders amounted to thirty-five guineas instead of 30s. If I had booked his first order and let him go I should have only got 30s., but merely by chatting to him and showing him one or two good specimens I got thirty-five guineas. Of course, one can't always be interviewing all the customers, although I believe it would pay to do so, because people are flattered if you attend to them personally, and are more likely to give good orders, but in default of interviewing the customers yourself, have a good clever lady receptionist to do it for you. A good receptionist can easily double a business—she is almost worth her weight in gold. If possible, she should have nothing to do but receive customers and book the orders. If the receptionist retouches, say, as well as receiving the customers, she will most likely consider retouching her principal work, and will get rid of the customers as soon as possible in order to get back to it.

On one occasion I visited a photographer's studio. On opening the door a bell rang and the receptionist jumped out from a curtained-off place. I asked to see the proprietor, and was informed he was engaged, so I said I would wait. Now the receptionist did not know who I was, I might have been a very promising customer, but she took no further notice of me, and back she went to her hidey-hole. In about three minutes the bell rang again and a lady and gentleman walked in; they had evidently been having their child photographed and were much pleased with the results. They ordered two dozen cabinet photographs, which the receptionist booked without a smile and bowed them out. If that girl had been my receptionist I would have sacked her on the spot. She could have got anything out of these people, she had only to show them a specimen or two and they would have ordered, but, after all, was it her fault? I don't think so; it was the fault of her employer, and he paid for it.

A receptionist must have time to talk to people, and if she only sells a 2s. 6d. frame extra to each customer it pays you.

One of my photographer friends in Edinburgh told me he had lately given his receptionist a small percentage on the frames she sold; the difference he said on his frame account was most astonishing. I do not quite agree with this method, however; they are very apt to rush customers for frames to such an extent as to disgust them. It is not only frames you want orders for; these will follow if you secure orders for miniatures, paintings, and enlargements; these are easily picked up, if your receptionist knows her business. I can assure you it is quite an every-day occurrence in my business, and in others I know of, for a customer to call with the intention of spending, say, 20s. or 30s., and to leave orders to the extent of £4 or £5 instead. Of course, this is no new idea. I have no doubt most of you work in the same way. I think Sarony of Scarborough was the pioneer in this line, and was very successful in booking large orders. He was the first to utilise the lantern for inducing orders; at all events, we got the wrinkle from him over thirty years ago, and we have used it with fair success ever since. I find the lantern very useful in helping customers to make up their minds what size of enlargement they want. If you show them different sizes on the screen they almost invariably order the largest.

I have not said anything about business methods of keeping books as I do not think it necessary; every one has his own way, and thinks it the best; besides, one or two good methods have been described quite lately in the "British Journal of Photography." Of course, one must keep books, and keep them correctly, too, if you wish to know where you are at the end of your financial year. We photographers can't do like a certain farmer of my acquaintance, who gave up keeping books because they always showed a debit balance. After giving them up, he lived happily ever after and ultimately retired. I never could find out, however, whether it was on the proceeds of his farm, or his wife's fortune, that he did so.

Now I want to touch lightly on that vexed question of invitation sittings. In my opinion it is quite legitimate to invite public men, such as members of parliament, clergymen, actors and actresses, etc. Their photographs sell and the copyright is worth something, but what I object to is where a man goes travelling all over the country, or sends operators, to invite all and sundry to sit for their photographs, just on the chance of getting an order. That is what I call illegitimate trading, and makes photography pretty cheap. Of course there is no law against it, but I think we should endeavour to find some means of putting a stop to it, if possible. I always make a point of exposing their ways in my own town, as far as I can. Spreading abroad their designs and explaining their little methods is the only way to counteract them that I know of at present.

Next I come to cutting prices. This is a most insane way of trying to do business. Does any photographer think for a moment that customers will come to him simply because he is a little cheaper than his neighbour. I don't believe it; in fact, it often acts the other way, and if one perseveres in this game it is the sure road to bankruptcy. I never knew a photographer yet who began this price-cutting business who didn't ultimately come to grief.

I was referred to some years ago in a price-cutting contest in Edinburgh between two photographers. Although there are some 60 or 70 photographers in Edinburgh and Leith, these two men seemed to look upon each other as their own special rival. They both at one time charged 6s. 6d. per dozen for cabinets. One reduced his to 5s. 6d. and the other did the same. Then No. 1 made his 4s. 6d., and No. 2 followed suit. No. 1 then came down to 3s. 6d., and No. 2 wrote to me, I being secretary of the P.P.A. branch of which both were members, asking me to remonstrate with the 3s. 6d. man.

I wrote to him and pointed out the fact that they were merely giving away their photographs to the public, not benefiting themselves in the very least. I suggested that they should rather compete in the quality of their work. I received a long reply from the 3s. 6d. man, but the gist of it was that if the other man reduced his to 3s. 6d. he would make his half-a-crown. I need hardly say that this man, who had been fairly prosperous previously, failed about 18 months afterwards, and let his creditors in for £900. I have another story to tell about prices. I happened to overhear a conversation in a tramway car between a man and his wife, who were evidently going to be photographed with their family. They were debating to which of two photographers they should go, and mentioned the names. I knew as far as the quality of their work was concerned there was nothing to choose between them. At last the wife said, "Weel, John, it's no every day we get our 'pictures' taken; we'll just gang to the best man"—the best man, mark you, being the one who charged the most, his price being 6s. 6d. per dozen, the other charged 5s. 6d. Now, there was a case in point, where the cheap man lost the order through being cheaper than his neighbour. I think this happens very much oftener than we imagine. The ordinary public, at least the public for that class of work, know very little about good or bad photographs; they take the photographer at his own valuation.

A fatal mistake many photographers make is in thinking too much of what their rivals in business are doing, and too little of what they are doing themselves. Their eyes are so busy looking at their neighbours' business that they neglect their own Don't worry about rivals, treat them as if they were not; be friendly and courteous, of course, but take your own way in business. Strive to turn out as fine work as possible, and please your customers; if you do that your trade will increase.

Now a word about the different prices obtained by photographers. One man sells his photographs at 6s. 6d. per dozen, while others get from 20s. to £3 10s. per dozen. Wherein lies the difference? No doubt a great deal depends on the class to which your customers belong. If, for instance, you happen to be placed, say, in a mining district, it is impossible to get high prices from the miners and their families, although I daresay some of them could afford it well enough. Apart from the customer, however, a man who charges a big price must give the very finest work; he must supply something that is worth the money, something out of the common, or he will very soon find he gets no work to do. People won't pay large prices for indifferent work. Whatever price you charge try your utmost to give the full value, and over, if possible.

The difference, I take it, between good and indifferent work, apart from the actual taking of the negative, is the difference between skilled and unskilled labour. In the one case you have a number of well-paid assistants, who are constantly employed, each of them in one particular branch; by constant practice they become experts in that particular line, and turn out the very finest work possible. Now, in the case of cheaper photographs, the employees may be good workers, and get as good a wage, but they are expected to turn out at least five times the quantity of work, and, under these circumstances, it is impossible to get the finest results. In many businesses the employees are mere boy and girl learners at a very small wage; these represent the unskilled labour. There are many photographers who do no printing themselves; send it all out to a trade firm. This, in many cases, is quite a necessity, owing to want of space for printing purposes. I have never tried this method, so I cannot speak about it. It must, I am afraid, have a tendency to the commonplace style of photograph. It certainly, however, gets rid of the question, what to do with your employees when trade is bad.

When trade is slack in portraiture, say, we should look about to see if there is nothing else we can go in for. I remember, some twelve years ago, I went in for Autotype reproductions. I also enlarged some of my own outside work, made pictures out of them, which sold very readily. For some years I did quite a good business in this line, until these cheap foreign prints came in and spoilt the trade. I then, of course, dropped it. but I had four or five years' very good business. I also had a try at picture dealing, and did fairly well. That, however, is a trade that requires some knowing, and a very considerable knowledge of pictures; you must also devote a good deal of time to it.

There are many other ways we can add to our business, if we only think them out; all we require is to use our brains a little. Photography enters so largely into everything, that I am quite sure there are endless ways and means for further business. Of course, what kind of business depends greatly on the town you are in. If you can bring out something novel in photographs, or even in the mount, it will pay you.

I saw the other day a nicely got up souvenir book with a dozen views of Cheltenham; it would be a capital advertisement for any photographer, even if he did not make very much out of it. But, who published it? A bookseller, not a photographer, although it should have been the latter.

I am afraid there is very little which I have said in this address that you did not know before, but my object is to induce a discussion on these subjects, from which we shall probably get a good deal of profitable information, useful to us all.

F. P. Moffat.

## A VISIT TO THE KODAK WORKS AT HARROW.

On Tuesday almost the entire body of the Congress journeyed by special train, provided by Messrs. Kodak, Ltd., from Euston to Harrow, where they were received by Mr. W. S. Gifford, head of the Kodak Company in England; Mr. S. V. Haus, manager of the Harrow Works; and Mr. A. Catford, head of the professional department at Clerkenwell Road. Luncheon was served in the large recreation hall in the works, and after loyal toasts and that of the hosts the company divided into some eight sections, each of twenty-five persons, and were conducted through portions of the Company's manufactory. They had an opportunity here of witnessing the enormous scale upon which the manufacture of photographic products is conducted. Over 700 hands are employed in the Kodak works, which stand on an area of seven acres, in conjunction to which a further site of twenty acres has just been acquired in view of the rapid development of the company's business. The visitors were shown the sorting and packing of bromide and "Velox" paper and were conducted through many of the special departments of the company's works, including the printing and development galleries, in which some 5,000 to 7,000 prints from customers' negatives are turned out per day. The company in a separate department makes its own envelopes for sensitive paper, etc., and does the printing of its own labels and leaflets of instructions. The mechanical installations for the motive power required for the manufacturing processes and for the air-cooling and filtering plant were visited and the visitors were afforded the opportunity of judging of the thoroughness with which all departments of the factory are supervised by visiting the chemical laboratory where all raw materials are tested before use, and the final products likewise passed before leaving the factory. Messrs. Kodak have recently taken up the manufacture of packet chemicals for photographic work and their series of boxed products of this kind, issued under the trade mark of K.T.C. (Kodak Tested Chemicals) are supplied to the public with the guarantee of an authoritative test of their chemical and photographic purity. After tea on the picturesque lawns which front the Kodak factories the party reassembled for return to London by special train, expressing universal delight and satisfaction at the cordial hospitality shown them by the company and, without exception, impressed by the technical skill and organising powers which have reared the immense factories of the Kodak firm.

The group, which we present as a supplement to this issue, was taken immediately after luncheon, and in presenting it to our readers this week we have to thank the Kodak authorities, by whom prints of the main group and of the small inset of those who arrived later were placed in our hands within an hour or two of the exposure being made.

At the meeting held on Tuesday evening Mr. T. C. Turner, of Turner and Drinkwater, Hull, read a paper on "Artificial Light in Photography," in which he dealt most exhaustively with the most modern developments of artificial lighting in the photographer's studio and printing room. The audience filled every inch of space in the lecture hall of the Arts and Crafts exhibition and the many points of practice brought up by Mr. Turner, who is one of the oldest and most experienced users of artificial lighting, were keenly appreciated by his hearers. We are compelled to defer publication of Mr. Turner's paper and of the discussion which followed it until next week's issue, when we shall deal also with the subsequent proceedings of the Congress, including the papers by Mr. Drinkwater Butt, Mr. Edgar Clifton, and Mr. E. Drummond Young.

## THE EXHIBITION OF PROFESSIONAL PHOTOGRAPHY

In the gallery on the same floor as the Congress meeting room there is arranged a series of panels containing the work of well-known professional photographers in London and the provinces. On entering the doorway five examples will be seen on the left by Mr. W. Crooke. All are of large size and in the grand and dignified style which Mr. Crooke has made peculiarly his own and which emphasise in every way the magnificent technique of his work.

Continuing along the right-hand wall of the gallery the first exhibit is by Mr. F. P. Moffat, whose work, in carbon, is represented by four examples. One of these is a group of children grouped on a staircase, and close inspection is required to show that it is a composite print. The portrait of a little girl, seated, also shown by Mr. Moffat, is a beautiful example of perfect printing in carbon, as is also the photograph of a sculptor at work, in which great advantage has been taken of a lighting which largely faces the camera.

Mr. Pirie MacDonald, of New York, is represented by seven examples of his work, all of men, and large heads. Mr. MacDonald adopts a degree of diffusion of focus which becomes perhaps a little distracting if the print is examined at a short distance, but viewed, as the portraits are evidently intended to be, whilst hung on a wall the effect is a wonderful combination of strength and softness. The best we should judge to be that of an oldish man with one hand shading one eye. One cannot but believe that it is an intensely characteristic portrait.

Messrs. Ellis and Walery show a number of examples of the current vogue portraits in light tones against a very light ground. In these they obtain results which are beautifully soft and sweet, and particularly well suited to the portraiture of children and young and pretty women. It may be doubted, however, whether the light background sketch portrait, which now is evidently "all the rage," will retain its hold upon the public much longer. Already there are signs of its degradation in unexperienced and unskilful hands, and as soon as shop windows begin to be filled with cheap, or mediocre work it will be time for those who have already done well out of the light sketch portrait to be thinking of something else.

Mr. Richard N. Speaight (Speaight, Ltd.) has two prints which are particularly worth study in this connection, for though in each case a perfectly white, or only slightly tinted, ground is used, yet the portraits are somewhat stronger, and free from the sensation of feebleness which does attach itself to a certain degree to much of this light background work. We refer to the head of a girl wearing a big hat and another portrait on the opposite side of the panel of a lady with earrings. Other portraits exhibited by Mr. Speaight are evidently of noble sitters, who are shown in every print with becoming dignity. We must add a word here, too, on the perfect mounting and framing which can be seen in the case of Mr. Speaight's work.

Miss Lena Connell shows a number of examples of portraiture, both in the studio and at home, including two of Mr. Bernard Shaw and one of Miss Ellen Terry. She evidently realises that the sketch portrait is too much by way of a passing fad to induce her to adopt it, and one cannot doubt the wisdom of such policy when one turns to the next exhibits by Miss Caswall Smith. None of these portraits are of comparatively recent date, yet all of them—and they include portraits of Mr. Forbes-Robertson and some delightful studies of children—command the admiration of the observer for their solid virtues of lighting and rendering of tone and texture. No one can believe that in a few years' time the same store would be set by many of the present-day light background portraits.

Upon screens placed across the room we come first to twelve examples of the work of Herr R. Dührkoop, many of whose sitters are almost unattractive in appearance, but are none the less made to yield impressive and, as we must believe, characteristic portraits, through Herr Dührkoop's art. One cannot say that Dührkoop follows any particular style. Part of his negatives are evidently taken in ordinary indoor surroundings and others in the studio, and in some cases one may see some good examples of his fondness for putting in a very soft and sketchy background on the negative itself.

Mr. William Gill shows examples of the prevailing fashion in light backgrounds, and we must confess that this vogue does not allow him to do justice to his reputation as a portraitist.

Mr. H. C. Spink, among a number of portraits of children done in the style which has been characteristic of his studio for many years past, shows a first-rate photograph of the late King's dog, Cæsar.

The portraits shown by Mr. T. C. Turner (Turner and Drinkwater) include a whole series of notabilities—Mr. H. G. B. Selfridge, the Archbishop of York, Archbishop Bourne, Lord Roberts, H.M. King George V., Mr. Lewis Waller, and Mr. Forbes-Robertson. In every one of these instances, as well as in those of several portraits of ladies which are also shown, photographers may see as good an example as one can have of the portrait, which, though it has undergone a certain amount of retouching, has nevertheless retained the likeness of the sitter. It may be said that such a result represents the ideal at which most photographers who cannot pick and choose their sitters must aim. To exceed the permissible limits one way or the other is the easiest thing to do, and photographers may therefore learn much from these portraits of Mr. Turner, which in all respects of posing and lighting are characteristic of the best sound work free from mannerism or eccentricity.

Mr. Gordon Chase exhibits quite a number of very dainty studies of children, presumably made in the studio with a reflex camera, and well instancing the many admirable variants from the customary pose which can be obtained by this means.

Messrs. H. J. Whitlock and Sons confine their exhibit to two large composite photographs of a dancing class, produced by photographing the members individually and pasting up the individual prints. The results are as successful as those by such a method can well be.

In the photographs shown by Messrs. E. H. Robinson and Son we see the sketch portrait taken to what we think is the permissible extreme of lightness and delicacy. In such work as this the extreme purity of the backgrounds becomes of the highest importance, otherwise the photographic impression and the surrounding pencil drawing can easily become feeble and weak.

Mr. W. Illingworth, in a panel containing a considerable number of prints, shows his continued preference for the old-fashioned styles of portrait. His sitters include a variety of types, and we must especially commend one portrait of an old man holding an umbrella and wearing a tall hat, and another of a man holding a pipe.

One print, which immediately attracted us among those shown by Mr. A. Corbett for its exquisite daintiness and life, is of two people at a piano. There is something irresistibly French and chic about this result; whilst other prints, for example, one of a girl seated alone at a piano, show that Mr. Corbett has great powers of adaptation. His portrait of Mr. Mackie must have been taken at a moment when the secretary of the P.P.A. had cause to feel peculiarly dismal.

# THE EXHIBITION OF THE ROYAL PHOTOGRAPHIC SOCIETY.

## II.

[The following concludes the review of the pictorial section of the exhibition now open at Prince's Rink, Knightsbridge. The first portion of the review appeared in our issue of last week, wherein we dealt with the other sections—technical, scientific, trade, etc.—in the exhibition.]

Hanging together are three charming baby subjects, the first by Rev. C. F. Metcalf, called "Forbidden Fruit" (47), a first-rate bromoil of a youngster surreptitiously taking an energetic bite into an apple. His eyes are as busy as his jaws. Another fine unconscious piece of acting is Grete Back's "Soap Bubbles" (50), in which a boy's head shows a most lucky exposure. There is no doubt about the boy's blowing. Winifred H. Prout sends two of her pretty works in the style which Mr. Cadby ought to have patented. One is "A Study of a Child" (48) reading a book, and the other a "Portrait of a Little Girl" (60) seated and posed exactly in the Cadby manner. These prints are dainty and pleasing, but the "arty" motive of the whole business is betrayed in Miss Prout's signature or monogram. The puzzle monogram is rather a stale sort of trick in these days. Mr. Cadby himself, curiously enough, is represented in the same group of works with a head portrait of "Lady Sybil Grant" (53), a platinum print not at all in the style that Miss Prout emulates. The head is stately and fine, but the print has a grubby look. In "The Doll's Tea-Party" (146) Will Cadby is himself again. The party is held on a long stool much like an art-school "donkey." The serious expressions of the host and hostess were well worth the catching. There are two or three snow scenes also which push delicacy to the point of annihilation. Snow becomes clean paper in "A Winter's Tide of Shrouded Hills" (148), and "When all the Snowy Hills and the Bare Trees are Still" (150), by Carine Cadby. The marvel print is "The Egertenthal Ski-Jump, Mürren" (151), which shows snow upon the mountain sides at an apparently impossible angle, and a little figure in mid-air who looks as though he must slide to certain destruction when he alights. Still there *are* vertical figures in the scene which perhaps disarms a charge of tilting the print. Artistically it is very charming, and photographically very praiseworthy.

A reticent person using the name of "Basil" in inverted commas sends a delightfully fresh-looking little print of a girl in Greek draperies, prettily posed on a sort of stone bench or step. The work is on a paper with a Japanese texture, the markings of which run right through the whole print, margin, and work alike. The definition is sharp, the tones are clear, and the effect is something like a precise pencil-drawing in line. J. Portway, junr., has not quite fulfilled the promise of his earlier work. "The Morning Walk" (52) is rather a hard bromoil, and the ozobrome, "To the Choir, Beverley," by J. B. Portway, senr. (75), whilst it is a good and sound piece of work, calls for no remark as to its treatment artistically. Miss Kate Smith has again shown her skill in turning a mere view into a picture by the introduction of a nymph in "The Streamlet" (55), from the banks of which she is picking flowers. This is one of the quietly pleasant and very agreeable pictures in the show. Miss Smith understands well how to make her pictures part of their environment; they never look like forcible importations.

A quite taking little subject is sent by Herbert E. Galloway, who calls it "Brer Rabbit" (61). A young lady and a little child stand in profile before a white wall in strong sunlight, whilst the little one locks its fingers so as to cast the shadow of a rabbit upon the wall. The accuracy of the shadowed image is remarkable, and we have heard on good authority that it is not due to any retouching. We think we have seen better versions of "St. Paul's —June" (62) than the one here by Dr. A. R. F. Evershed. We remember that we admired his print of this subject, with its foreground piles and silvery distance, when it was at Liverpool, but if the prints are actually identical we must attribute our fickleness to the mood of the moment. A good bromide comes from John Currie called "The Firs" (63), but it suffers a little from the "over-correction" effect of too much contrast between clear sky and clouds. Mrs. Minna Keene sends a pretty child called "Marion" (64). A bromoil which stands out from many by reason of its importance is C. H. Hewitt's "Path by the Shore" (65). This has the quality of largeness of style, singularly rare in this exhibition. The simplicity of the treatment in this should be a good lesson to aspiring bromoilers, and its mere size is at once a valuable asset and an evidence of the courage and mastery involved in its making. Flower groups are rare, if not new, in bromoil, and therefore Mrs. Helen Parsons is to be congratulated upon showing how well the process lends itself to such subjects. Her "Emblems of Summer" (66) is very successful. As a gum print James Batkin's view of Edinburgh, with its old gun, "A Silent Watcher" (67), elicits our interest in a process which has suffered from the vicissitudes of fashion. The tones of this view are too variable for the best effect. It is a good and impressive subject. Mr. Batkin should be on his guard against arbitrary unsteadiness of tone. His otherwise first-rate sea view, "Beating for Shelter" (74), shares this unfortunate tendency, which is less noticeable in the admirable "Storm, Steam, and Smoke" (86), a quay-side view of great strength and pictorial merit. W. J. Sayer, another unfamiliar name to us, will prove perhaps to be an important one in the future, for "Aylesford" (68) is an uncommonly promising bromide print, with a good scheme of light and shade. The selection is pretty, with the light-toned bridge seen across the water, over a foreground of dark rushes and under a darker tree. Curiously enough, the same style of composition, but for the bridge, exists in Wm. C. S. Fergusson's "Across the River" (127), only here the trees are lighter and the rushes darker.

The portraits of Miss Lena Connell do not quite shake off the professional touch. "A Sweet Lady" (70) is ordinary, in spite of its evident merit, and a nicer effect could have been secured for "Nance Oldfield" (87) with a softer negative and softer treatment. F. Collins's excellent study of sunlight in London is good, as such, but in these days it is a little ordinary. Still, "A City Gateway" (72) should not be passed by.

There is always a look of distinction in the works of Alexander Keighley, but the two he has here are almost better than usual, because they do not rely for their effect upon any very fine or romantic subject matter, but solely upon their art. "Ripples and Light" (78) is a picture of women washing clothes in a river; but it is a magnificently managed affair. The women make a line, or rather, a curved mass, of great importance in the composition, and they are backed by the distant houses across the river, seen at rather a high point of view. We are only unhappy about the clouds, which are somehow unconvincing at the sky-line. This sky-line has rather evidently been "faked," to use the technical term; but we do not mind that in the least in Mr. Keighley's case. We know him to be superior to servile retouching which avoids detection. We take exception only to the clouds, which we think are too low in tone. His other work, "A Village Street" (82), is even a greater success, apart from its subject, which is quite ordinary. A thin shaft of sunlight illumines the houses in a narrow street, above which a tower is seen, and through which some oxen come towards us. The sky is exactly right. When the visitor places himself at the proper distance and quietly allows this work to grow, as it must, upon the sight, then the perfection of the tone values are seen, its diffusion strengthens into firmness, and its artistic worth proclaims itself.

We are at the very antithesis in method before Miss Agnes B. Warburg's "Les Béguines" (79). Here we see photography doing its best without the dominating influence of the photographer. The result is that in spite of a very interesting subject, namely, four nuns or sisters seated at needlework in a large room, lit by two windows, and in spite of the evident skill in choosing the point of view and the lie of the lighting (the brightest window comes exactly in the right place), yet the whole thing is cold and searching—only too fitting a condition for the subject in hand. We should have liked some less ascetic treatment, less vigorous, less disciplined. Miss Warburg causes us to shudder as we see these poor humans turned into automata by the survival of mediævalism that enslaves their lives. We look back at the licence of Mr. Keighley and feel that art is warm and yielding; and that without some such licence as he takes photography is mere asceticism. In "Mauderscheid" (139) Miss Warburg gives us the same searching truthful record. It would appear that the tones are about as right as they could possibly be. Owing to the fact that here we have not human creatures, but inanimate things made beautiful by the light of Nature, the inexorable righteousness of Miss Warburg's rendering is more acceptable than in the larger work. It is a happy selection of a village street of a German town; but in both works we feel that Miss Warburg is too well behaved to indulge in the poetry of art, and puritanically confines herself to the science of it. As a set-off to this argument two bromoils by Harold A. Crawford are a warning against taking too much licence. In "The Mill, Hythe" (89), all sorts of artistic principles have been pressed into service, but at the too obvious expense of natural fact. The ground, for example, is unaccountably absurdly dark. No pictorial principles can justify such violations of natural fact, which are, indeed, displeasing to the observant mind. "The Mosque of Hassan" (90) is better in this respect. Mr. Crawford's third bromoil, "Portrait of a Lady" (97), is probably just as much controlled as "The Mill," but as the lighting of a portrait is indeed a controllable thing the treatment is acceptable. This is a different thing to controlling the light of Heaven upon a pavement to the extent of the blackness in No. 89. G. J. T. Walford shows two architectural views, one of a Norman church, which he calls "Sunshine in the Nave" (84), and the other "A Sunlit Cloister" (85). In the first we have a good selection and a fine play of light, direct and reflected, around the massive rotundity of the columns, which makes a very impressive picture. In the second the point of view is perhaps necessarily unpictorial, and the light has no chance to make itself precious by its play around objects standing free, as do the pillars of a nave. No. 85 is therefore far below the pictorial level of No. 84.

Reginald Craigie's portrait of "James, Earl of Crawford, K.T., F.R.S." (88), is already well known. We saw and admired it at Liverpool, and we are glad to see it permanently in a place of honour at the Camera Club. Nevertheless, we think Mr. Craigie might have managed the lighting on the face so as to avoid so many spots of equal tone. "Bei Grossmutter" (91) is the only print by Hermann Ziesemer that is hung in the pictorial section; it is also the least satisfactory from an art point of view. The figures are self-conscious and the posing very obvious. Truly Section I. and Section II. of this exhibition should be shuffled and redealt. "The Old Campaigner" (93), by R. Dixey, is an excellent piece of modelling, character and expression, and Philip Oyler has contrived to get a nice decorative motive in the simple material of his "Bulrushes" (98), but here again we would point out that more original truth would have proved a charm rather than a blemish. One asks oneself why the sun and its effulgence is lower in tone than the broad streak of reflection in the water. Reflections in water should be fainter in their contrasts, not fiercer, than the things which cause them. "Bruges Canal" (99), with a chestnut tree in the foreground, has proved a nice little subject in the hands of Nethercott Brealey. But for the rather aggressive striped waistcoat of "Robert Cooper, Esq." (101), Harold Moore's portrait of that gentleman would be unexceptionable. It has a nice, easy pose, and is very rich in its tones. Another good portrait is "George Parkinson, Esq." (103), by George Porter Higgins. F. C. Boyes scores with two bromides which show skilfully the heaviness of atmosphere that is not fog or mist, but the turgid air of hot weather. "The Lighthouse" (105) gives well the glow of evening light, and in the more comprehensive view of the same locality, where the lighthouse is reduced to a distant item, the characteristics are somewhat the same. This is called "A Silver Morning" (117), and is a happy selection. A tiny child in the throws of balancing itself is the sunny subject of Miss Sybil Cox's "Portrait" (107), and "Double Portrait" (108) is G. C. Rogers's presentment of two damsels whose heads are all dark and whose busts are all bright. Of Hy. Wild's contributions to this section "Arundel" (111) has the interest of realism, and "Mystic Domes, etc." (149) the interest of romance. The first is all sun and air, though only a trifle in its size; the second is all gloom and awfulness. It is not quite so impressive as some of his recent studies in the impossible in topography, but it will not damage his reputation. Judging by some light streaks on the snow of C. F. Clarke's "Dreary Road" (113), it appears to have been a moderately sunny day when the exposure was made. The whole thing is needlessly dark and flat in tone, therefore, but the sky, we should have thought, would have been relatively darker. The composition is a good one. Practically the same criticism applies to "The Refuge" (158), another snow scene, by Louis J. Steele. Here again the streaks of sunlight belie the sombre flatness of the print. There is no objection to sombre snow scenes, but it is a fault to permit anomalies.

When we have said that the light which relieves the back of the head of "M. André Mangoet" (123) is a trifle overdone, we have made our only possible adverse criticism of Oscar Hardee's fine portrait of this young and strenuous violinist. It is finer than his other work, "The Washing-place, San Remo" (126), which has really better tonality than the portrait, but the cavernous subject is not greatly interesting. Simplicity and a grand style are the characteristics of "Adrienne" (124), by Thos. Petty, which was an ornament to the Liverpool show. Herbert Mills shows two bromide prints of great merit. The first, "Lina" (128), is a head and bust, and the second is three singing girls called "The Trio" (129). This is a well-posed group, and a taking subject, but we doubt the advantage in making it look like a much-faded albumen print. Fine composition and an effective chiaroscuro distinguish R. G. Lynam's "Bottle Washer" (130). Amongst the many night subjects that are now fashionable, "Piccadilly Circus" (135) is rather remarkable for the absence of those upper lights—advertising signs and arc lights—that usually appear in this subject. Has Montague Wickham eliminated them, or was his view taken on a Sabbath or other "off" night? A first-rate, bright, and interesting picture of a quay or harbour is by R. Harvey Wyatt, who calls it "The Fisherman's Boy" (136). "A Happy Family" (141) depicts swans and cygnets, with the usual dark background. It is by Thos. Wright. When are we to see swans in a light and bright setting? John Keane had good material in "Coaxing the Florentine Boar" (142), where a girl concerns herself with the bronze effigy of the animal; but he has not sacrificed enough to it. His group is rather lost in unimportant and distracting matters that should have been suppressed. He does better with his "Rainy Evening in the Strand" (154). The sky "sticks," as painters say, in C. Borup's otherwise pleasing study, called "The Breeze" (145), of a young lady whose clothes and tresses are blown before her. "Old Dagort" (147) is a clean and expansive view by F. H. Taylor. We think J. C. Warburg's "On the Chalk Downs" (152) one of the best things he has given us. It is a very fine composition of a wide chalk road, a windmill, and massive bright clouds behind it. The tones are admirable; the design is good, the treatment broad and masterly. The two boats in W. A. I. Henster's "On the Thames" (159) do not compose very happily; they hold between them, in a sort of bracket shape, a light passage which occurs exactly in the middle third of the picture. The effect in itself is good, but the symmetry is damaging. Allan Bowie's "Fresh Breeze" (161) is a very lively little picture. A simple and rather decorative scheme of trees and mountains comes from J. W. Pallon, and is called "From Beatenburg" (165). We are pleased to see in this gallery the fine "Brothers of the Brush" (166), three painters in a swinging "cradle" at work on the stern of a boat. It is by Bertram Cox, and we described it when reviewing the Liverpool exhibition. With the gum print by Walter J. Clutterbuck, called "The Tiff" (173), we come to the last of the monochrome subjects of which we can speak. This shows a pair of young people on a road, who are turning away from each other, "more in sorrow than in anger," apparently. The poses are good, particularly that of the man.

What remains for the visitor to see in this section are a few attempts at colour in gum and oil. We cannot recommend any of them very highly, though we might say that, perhaps on account of its more easy subject, George Hidderley's "Sunshine and Shadow" (182) is the most satisfactory. All attempts at realism seem to fail utterly in these colour essays. Whether that be due to the process or to the pigmenter we are unable to say. So far, the multi-gum trials have least against them, and when that method is employed as a means of enrichment to what is practically a monochrome, as in S. W. Shore's admirable portrait of "Hy Summonds" (177) it may be said to succeed; but the more elaborate and ambitious experiments are but daws in jays' plumage.

Before concluding this review, we may be permitted to revert to one or two pictures in the General section, which was dealt with in our last issue. If the reader will look at "London's River" (318), he will see an excellent example of how beautiful straight photography can be when it deals fairly and properly with a thoroughly good subject. As a picture this is all that could be wished of it, and no amount of treatment or control could better it. Much the same might be said of the thoroughly artistic London night pieces of Harry Wild. Mention must also be made of an arrestingly fine subject by Louis J. Steele, called "The Foothills of the Alps" (308). This is quite a beautiful picture—a valley between two hills that are bathed in the sunshine which shoots in rays from great masses of shining cloud. A little figure, admirably posed and placed, stoops to gather flowers. The whole thing is large and simple in style. The pictorial section, proper, is distinctly at a loss in having to forgo this and other fine pictures, amongst which might also be included Louis Dick's "Portico Steps" (208). The lines of this are so good as to form a fine object-lesson in the composition of a picture by selection.

# ON THE RELATIONSHIP BETWEEN THE SIZE OF THE PARTICLE AND THE COLOUR OF THE IMAGE.

II.

### The Quantitative Results.

TABLE 1 includes all my results up to particles of a diameter of .3 micron. The first column gives the plate number. The first number indicates the plate and the second number the treatment. For example, 21 means plate number 2 in its first or original condition; 22 is plate 2 in its second stage, or with one enlargement of its particles; 86 is plate 8 in its sixth stage—that is, its particles enlarged five times. Plates 0, 1, 2, are Wratten's bromide lantern plates, 3, 4, 5, 6, are Paget phosphate plates, 8 and 9 are Paget ordinary slow lantern plates, and all these were exposed and developed in a way similar to the usual method for getting a coloured image. No. 7 is a Paget phosphate plate exposed, but not developed—printed out. The exposure and development were arranged so as to get results useful for the purpose and at the same time differences in the number of particles present. The colour of the transmitted light (third column) is given in common language, and would doubtless be differently described by other persons in some cases. I might perhaps by working at them get more uniformity, but I preferred to leave them as, in nearly every case, my first and unbiassed impression of the tint. The colour of the scattered light is confirmatory of the colour of the transmitted light, and is added only for this purpose. The uneven surface of the gelatine in some cases modified the colour of the light scattered by the particles, probably degrading it by the addition of grey. I did not push this detail further, as the confirmation is on the whole satisfactory.

The visibility of the particles is confirmatory of their sizes. The conditions are: direct transmitted light by a dry condenser of as nearly as possible N.A. 1, an apple-green screen, 1-12-in. immersion objective, and a × 12 eyepiece. "Just visible" means a minute defraction disc that is so little darker than the bright ground that surrounds it that it is only just possible to detect its presence.

The last column, the "Distance apart," is expressed as diameters of the particles. These figures are obtained after the enlargement of the particles, when the ratio between the particle diameter (taken as the unit) and its distance from the next particle will generally range from nothing to five, rarely going up to ten, and in only one plate up to twenty. These proportions are eye estimations made by the aid of a scale in the eyepiece, and the figures for the smaller particles are calculated from the direct observation. As the distances vary so much in any plate that figures cannot do more than give a rough idea of them, the figures given are the simple numbers nearest to those actually obtained.

Some idea of the smallness of the number of particles that are sufficient to give an obvious colour may be obtained by supposing that one starts with a single layer in which the particles are packed close to each other like the starch grains in an Autochrome plate. To get the condition shown in plate 82 it would be necessary to remove more than eight thousand particles and leave only one in the place of them. Taking into consideration the depth of the film. the number to be removed would of course be greatly increased.

This is a convenient place to examine the suggestion that the colour is due, not to the size of the particles, but to the distance between them. If we consider only those plates that transmit yellow light, we find that the diameters of the particles range from .10 to .14 micron, and that if the particles are enlarged to from .14 to .18 micron the transmitted light becomes of an orange, brownish, or reddish colour. If, now, we calculate the distances between the particles, taking the average distance in each case, we get Table 2. The lower section of this table gives a larger range of distances than the upper section, only because a greater number of plates is included. But the range in both cases is considerable, to a large extent identical, and would, I think, puzzle anyone to trace any relationship whatever between it and the colour effects.

TABLE 1.

| Plate Number. | Diameter of Particles. microns. | Colour of transmitted. light. | Colour of scattered light. | Visibility of particles. | Distances apart as diams. of particles. |
|---|---|---|---|---|---|
| 11 | ·075 | none | bright blue but | none | 30 -150 |
| 81 | ·085 | none | very little indeed | none | 50—200 |
| 12 | ·100 | yellow | good blue | none | 25—125 |
| 82 | ·113 | yellow | good blue | none | 36—144 |
| 21 | ·114 | yellow | blue | a few, just visible | 8—32 |
| 01 | ·125 | yellow | bluish grey | do. | 10—50 |
| 13 | ·13 | yellow | do. | do. | 18—90 |
| 61 | 13 | yellow | greenish grey | do. | 8—16 |
| 41 | ·13 | orange | dirty brown | do. | 4—8 |
| 91 | ·14 | yellow | greenish blue | just visible | 10—50 |
| 31 | ·14 | orange | bluish | a few, feebly visible | 8 - 32 |
| 71 | ·14 | pink | bluish grey | do. | 12—60 |
| 83 | ·15 | brownish yellow | bluish | do. | 27—108 |
| 22 | ·15 | yellowish red | dirty blue | just visible | 5 - 20 |
| 51 | ·17 | orange | bluish | some visible | 5 - 10 |
| 42 | ·17 | brownish orange | dirty yellow | feebly visible | 3 - 6 |
| 14 | ·17 | purplish grey | do. | do. | 14—70 |
| 02 | ·17 | pink | blue | do. | 8 - 40 |
| 92 | ·18 | brownish pink | greenish grey | do. | 8 - 40 |
| 62 | ·18 | brownish purple | grey | do. | 6 - 12 |
| 72 | ·18 | brownish red | bluish grey | do. | 8—40 |
| 32 | ·19 | brownish orange | grey | do. | 6—24 |
| 84 | ·19 | grey | do. | do. | 20 - 80 |
| 23 | ·20 | do. | do. | fairly visible | 4 - 16 |
| 15 | ·21 | do. | do. | do. | 10 55 |
| 03 | ·22 | do. | do. | do. | 6—30 |
| 43 | ·22 | purplish grey | do. | do. | 2 - 4 |
| 52 | ·23 | do. | do. | do. | 4 8 |
| 63 | ·23 | do. | do. | do. | 4—8 |
| 73 | ·24 | do. | do. | do. | 6 - 30 |
| 93 | ·24 | do. | do. | fairly dark | 6—50 |
| 33 | ·24 | do. | do. | do. | 4 - 16 |
| 85 | ·24 | grey |  | do. | 15 - 60 |
| 24 | ·26 | do. |  | do. | 3—12 |
| 04 | ·28 | do. | do. | do. | 4 - 20 |
| 86 | ·28 | do. |  | do. | 13—50 |
| 44 | ·29 | do. |  | do. | 1—2 |
| 64 | ·30 | do. |  | do. | 3—6 |
| 53 | ·30 | purplish grey | do. | do. | 2—4 |
| 74 | ·30 | grey | do. | do. | 5—25 |
| 94 | ·30 | do. |  | do. | 4 - 20 |
| ETC. | getting larger. | all grey |  |  |  |

The change in the distance apart caused by enlargement is, of course, equal to the change in the diameter of the particles. Comparing plates 82 and 83, the actual change of distance by the one enlargement is equal to .04 micron, or .4 per cent. of the average distance in this case. It is out of the question to suppose that this minute change can be the cause of the alteration in the colour, in the face of the fact that we can get, as my figures show, the same colour with distances varying over a range up to two hundred times as great.

In order to show more clearly the relationship between the size of the particle and the colour of the image (or transmitted light), I have arranged my results on a "normal" spectrum basis in Table 3. The top line shows the approximate positions of the Fraunhofer lines, then follow wave lengths in air and in gelatine, and the fourth line is half wave lengths in gelatine. The crosses below indicate the diameters of the particles measured as described, on the half wave length scale.

Due allowance must be made for experimental error, but it is clear at a glance that there appears to be some intimate relationship between the size of the particle and the scattered or lost light. The yellow deposit means a loss of the blue, the orange a loss of the blue and a part of the green, the reds a loss of the blue and approximately the whole of the green, and grey the loss of all colour; and as set forth on this scale the colours lost correspond fairly well with the spectrum as indicated by the Fraunhofer lines, but they are shifted somewhat towards the shorter wave lengths. I suppose that the purplish tint in the little group of purplish greys is due to the presence of a comparatively large proportion of particles smaller than indicated, and of a size suitable for scattering the green.

The relationship between the size of the particle and the light lost (scattered and perhaps partly absorbed), is shown even more clearly in Table 4. This gives diameters and wave lengths drawn to the scale indicated. The wave lengths in air and gelatine are given for the Fraunhofer lines B,* D, and H. This shows that particles that have a diameter equal to about a quarter of a wave length produce very little, if any, effect on that wave, but that as soon as they bear a substantial proportion to the half wave length the effect becomes considerable.

TABLE 2.

| Plate Number. | Diameter of Particles. | Distance between. | Distance between. | Colour of Transmitted Light. |
|---|---|---|---|---|
|  | Microns. | Microns. | The Range. |  |
| 12 | ·10 | 7·5 | 1·6 to 9·9<br>or<br>1 to 6 2 | Yellow. |
| 82 | ·11 | 9 9 |  |  |
| 21 | ·11 | 2·2 |  |  |
| 01 | · 2 | 3·6 |  |  |
| 13 | ·13 | 7·5 |  |  |
| 61 | ·13 | 1·6 |  |  |
| 91 | ·14 | 4·2 |  |  |
| 41 | ·13 | 0·8 | ·8 to 9 9<br>or<br>1 to 12 | Orange, red or brownish colours. |
| 31 | ·14 | 2·8 |  |  |
| 71 | · 4 | 5·0 |  |  |
| 83 | ·15 | 9·9 |  |  |
| 22 | ·15 | 2·2 |  |  |
| 51 | ·17 | 1·4 |  |  |
| 42 | ·17 | 0·8 |  |  |
| 14 | ·17 | 7·5 |  |  |
| 02 | ·17 | 3·6 |  |  |
| 92 | ·17 | 4·2 |  |  |
| 62 | ·18 | 1·6 |  |  |
| 72 | ·18 | 5 0 |  |  |
| 32 | ·19 | 2·8 |  |  |

As a wave progresses, the movement of the portions of ether involved is transverse to the line of progression, and of such a kind that the movement in every half wave is in the opposite direction to the movement in the half wave before it and the half wave behind it. Here we get, perhaps, a simple explanation why an opaque body or obstruction of a diameter equal to half a wave length should vitally interfere with the progress of that wave. But further than that the movement of the ether at the extremes of each half wave is nil; the ether having there arrived at the limit of its excursion its direction of motion is about to be reversed. Near to these extremes the movement must be very slight; it seems, therefore, that the obstruction need not have a diameter quite so great as the half wave length in order to be effective. I have endeavoured to represent this diagrammatically in Table 4. The drawing represents Fraunhofer line H in gelatine and the smallest particle that I have proof of affecting it. It might have been better to show a

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* In copying this diagram for reproduction, the line that represents the wave length of B in gelatine has accidentally been made too long. It should be about five millimeters shorter than shown in the figure.

MEMBERS OF THE CONGRESS OF THE PROFESSION

PHOTOGRAPH TAKEN BY MESSRS. KODAK, LTD., ON THE VISIT OF THE CONGRESS TO THE COMPA

*Henry Greenwood & Co., Publishers,*
*24, Wellington Street, Strand, London.*

PHOTOGRAPHERS' ASSOCIATION, HELD MAY 15-19.

'S FACTORIES AT HARROW. INSET IS A GROUP OF SEVERAL MEMBERS WHO ARRIVED LATER.

wave of slightly greater length, that is, in the more visible part of the blue.

In this table there are represented the diameter of the smallest particle that I have measured, and also of the smallest particle of the existence of which there is indirect evidence. This last, after enlargement to the full extent that I have so far carried it, is on the verge of visibility under the conditions stated above. It is, of course, immeasurable, but the relationship between the smallest visible and the smallest measurable particle gives an indication of its approximate size. These smallest particles are equal in diameter to about the distance covered by a close row of from thirty-five to forty molecules of average size. To get this forty times further enlargement, so as to get evidence of the existence of detached molecules (if they exist), would require about sixteen times more treatments than I have so far carried out, or altogether about twenty-four treatments with mercuric chloride and ferrous oxalate, and then the particle would only just be visible as a diffraction disc by ordinary microscopic methods (that is, excluding the methods of ultra-microscopy). To get it measurable further enlargement would be necessary. I have certainly not yet reached the practical limit of enlargement by this method, and may, perhaps, try to get further, though I would not for a moment wish to prevent anyone else from making the attempt.

If the relationship between the size of the particle and the colour effect that I have found is valid, we should be able from the colour of an image to tell within certain limits the size of the particles of which it consists. To test this I treated a few lantern slides made before this work was begun, and without any reference to it. This was practicable, though more troublesome than when dealing with plates bearing a uniform deposit. A slide on a Wratten's bromide lantern plate prepared as usual for a black image, being black should have particles of a diameter of at the very least .2 micron. But this would be verging on the browns. To escape the browns and the chance of a purplish tint, the diameter should be at least .25 micron, or better .3. It might be practically anything above this. The diameter found was .38 micron. A slide many years old made on a Thomas's lantern plate with the minimum of exposure and metol development, had a pure grey image. Its particles should be at least about .3 micron in diameter. The diameter found was .41. These plates, therefore, are in agreement with the results of my investigation.

I have examined also two slides of peculiar appearance. An old one on a Thomas's plate had an image of a nondescript kind of purplish black. A black image should have particles of about .3 micron in diameter or larger, while a purplish tint is likely to be produced by particles from about .16 to .19 micron in diameter. The diameter found was .33 micron, but there was also a remarkable number of particles rather smaller than this, and these will account for the purplish tint. There was also a very small proportion of larger particles, about .45 micron in diameter, and these would help to give blackness.

A still more peculiar slide made on a Paget phosphate plate had

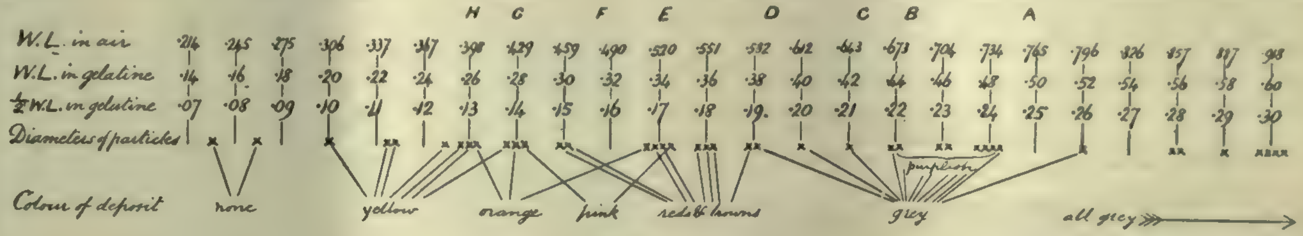

TABLE 3.

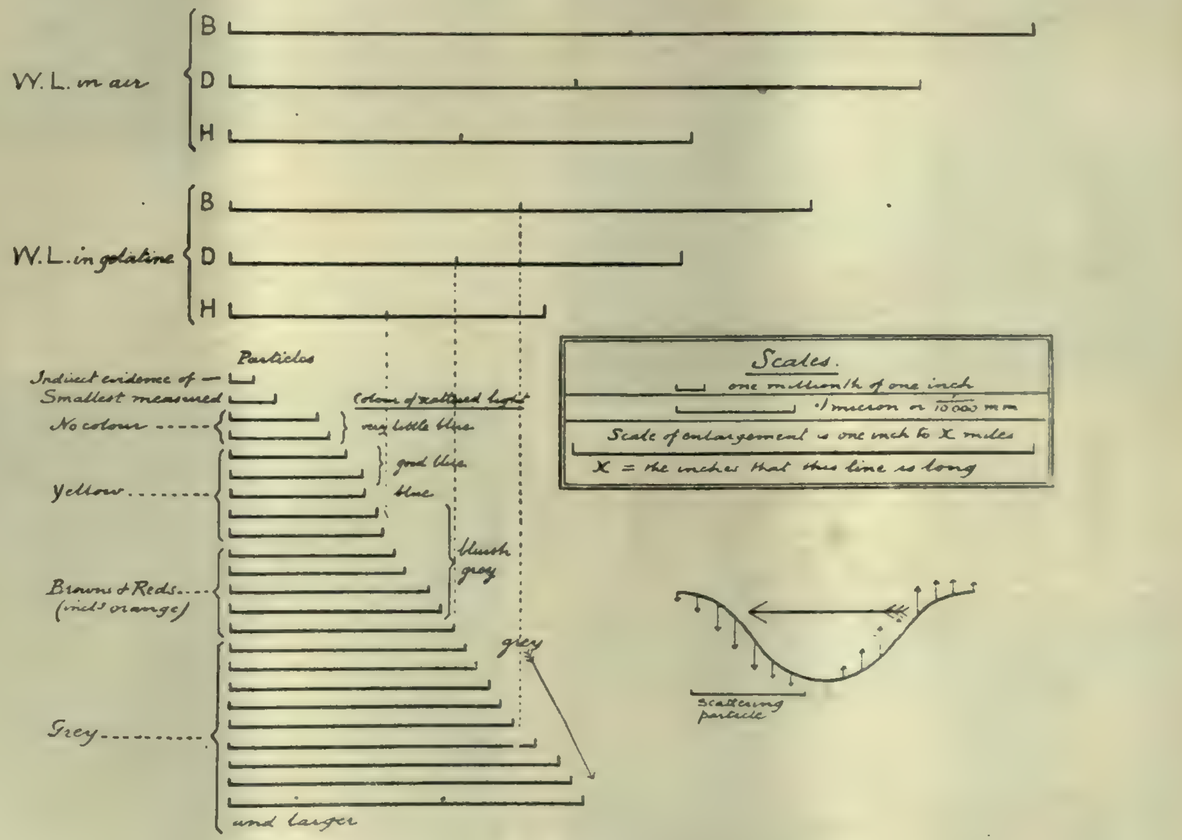

TABLE 4.

a steel blue-black image. We might expect comparatively large particles to account for the blackness, with smaller particles of about .18 or .21 micron to produce the blueness. The chief constituent of the image was large particles or aggregates about from 1.7 to 3.7 microns in diameter, with many smaller of about .4 micron. In addition there was a very notable proportion measuring from .18 to .28 micron. These smaller particles range from a size that might be expected to give a blue colour to those giving purely grey deposits. This mixture of sizes seems to account for the peculiar colour.

Thus all my results point to the conclusion that it is the size of the particle that is the determining factor in selective scattering, and that light is scattered by particles that approximate in diameter to half a wave length of the scattered light.

Chapman Jones.

## ORTHOCHROMATIC LIGHT-FILTERS.

Of the many text-books which make their appearance for the information of the really serious worker none perhaps is more needed than that which deals in a precise way with the practice of orthochromatic photography. Though photographers of late years have more and more given definiteness to the processes which they work, it must be admitted that, as regards the use of orthochromatic plates and light-filters, their ideas are still very largely in a state comparable to that of the old-time workers who were accustomed to speak of a stop being "medium" or "large," with a cheerful disregard of the focal-length of the lens used with it. On this account it is very satisfactory to call attention to a new manual,* just published by Messrs. Wratten and Wainwright, in which the subject of light-filters is treated in a most definite way. The volume is not in any sense an academic treatise setting forth the general properties of orthochromatic plates and filters, but it is a manual which, after a few pages of extremely lucid introduction to the subject, deals very clearly with the practical advantages of ortho. plates and filters, and places the reader in a position to form a numerical comparison of the relative merits of this combination or that of plate and filter. Messrs. Wratten naturally, in what they have to say, speak a good deal of their own productions in plates and filters, but readers, and particularly those who have occasion to make practical use of orthochromatic facilities, will not take exception to this quite legitimate procedure.

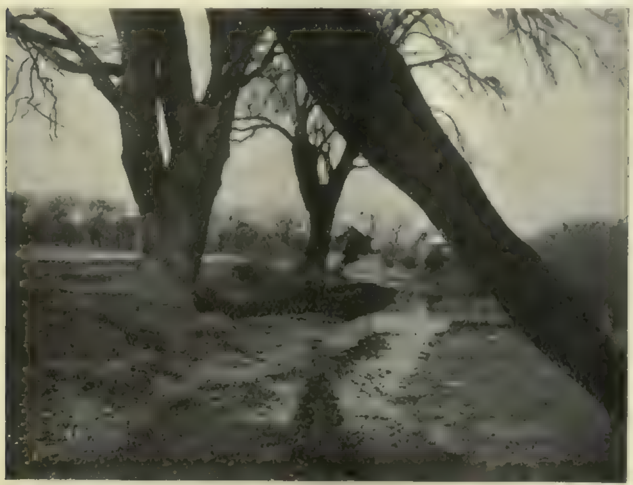

Fig. 1.
Yellow stained platinotype print on ordinary plate.

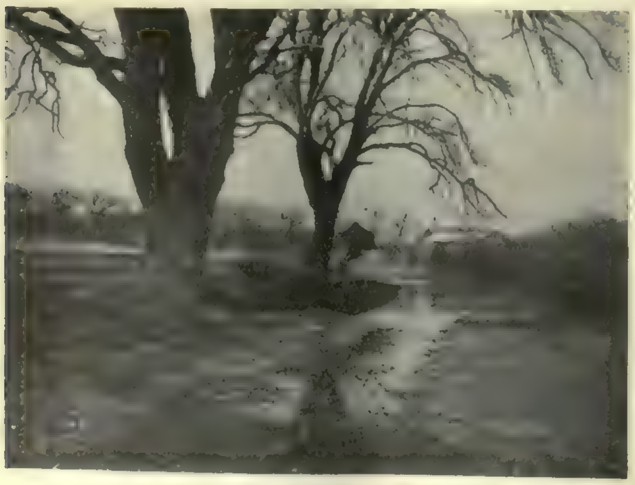

Fig 2.
Yellow stained platinotype print on panchromatic plate with G. filter.

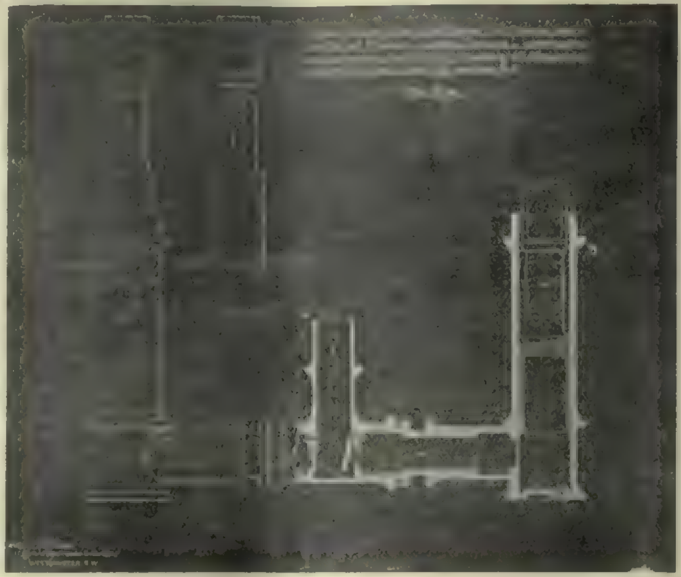

Fig. 3
Blue print photographed on process plate.

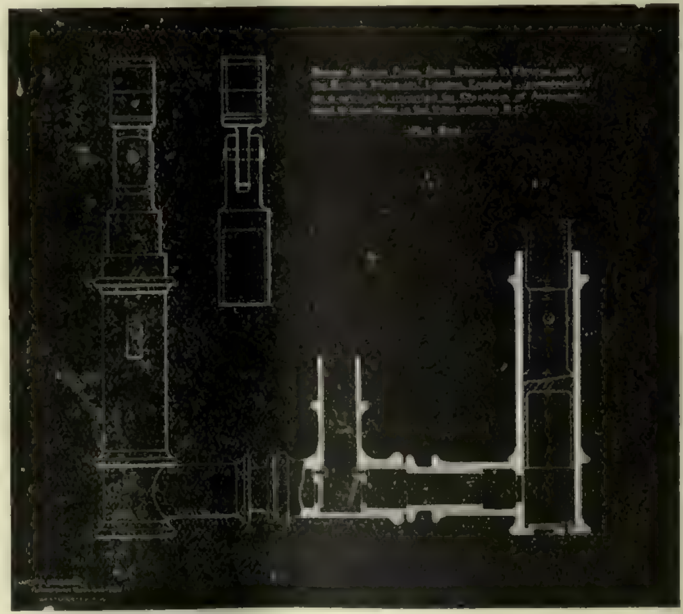

Fig. 4.
Blue print photographed on panchromatic plate through F. filter.

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* "Orthochromatic Filters." Croydon: Wratten and Wainwright, Limited, price 6d.

We can commend in particular Chapter IV. of the manual, which deals with the multiplying factor of a filter and shows very clearly, by simple arithmetic, the extent to which plates differ in their ability to record colour as it is seen, and the degree to which advantage must be taken of the use of a light-filter. Chapter V., dealing with the use of contrast filters, is one which every photographer engaged in making negatives of articles of commerce, museum specimens, etc., should not neglect to study. By way of example of the results obtainable by suitable selection of a contrast filter we reproduce here, by the courtesy of Messrs. Wratten, two pairs of half-tone illustrations representing the use of contrast filters. Figs. 1 and 2 are photographs, both taken of a platinotype print, which had been stained by passing a brush charged with yellow dye across it, so as to leave a broad yellow stain. In Fig. 1, taken on an ordinary plate, the stain appears as black, while in Fig. 2, for which a panchromatic plate was used with a Wratten G. filter, the stain has entirely disappeared, only a trace, which cannot be reproduced, being visible in the negative.

Another pair of equally striking examples is provided by Figs. 3 and 4, which are both reproductions of the same engineer's "blue print," Fig. 3 photographed on an ordinary process plate and Fig. 4 taken on a Wratten panchromatic plate through a Wratten F filter. In many such instances as these, such as photography of furniture, pottery and porcelain, etc., the use of a suitable light-filter yields an almost incredible superiority of result. Messrs. Wratten here give their advice as to the selection of filters suited for the generality of such "commercial photography." In Chapter VI. the accuracy of light-filters for various descriptions of work is dealt with, and the succeeding chapter treats of the most advisable methods of fitting the filter to the lens or camera. A few final hints on the care of filters form the conclusion of the text, which is followed by an abbreviated price list of the Wratten ortho' and three-colour filters.

# Photo-Mechanical Notes.

### Improvements in and Relating to Colour Printing.

A PATENT, No. 25,870 of 1910, has been granted to H. Bendixon and J. Widdop for "an invention having for its object to produce colour prints at a high speed at a low cost and of a kind not hitherto attained. The invention consists in preparing a suitable monochrome photogravure by rotary gravure intaglio printing, and subsequently applying colours thereto by a lithographic process. . . . . In this manner a high-class colour print, having as basis a monochrome gravure with the colours applied by lithography, is obtained, and at a cheap cost because the cost of producing gravures by a rotary process and colouring them by lithography is small, especially if rotary or off-set lithographic processes be adopted."

The process of combining monochrome photogravure with colour from lithographic surfaces is not new, and is generally mentioned when combination printing is being discussed. Full description of methods of doing this have appeared in various textbooks and articles—for example, in Fritz's "Handbuch der Lithographie," 1901, also Brandlmayr in "Photographische Korrespondenz," in 1899, and Unger in last year's Eder's "Jahrbuch." Nor, surely, can the combination of rotary photogravure with litho, or even off-set litho, be claimed as any novelty, since in the "Process Year Book" of 1909 the Editor says, on page 10: "In our opinion, the processes of the immediate future will be rotary intaglio, and off-set litho, or a combination of both, with the chances greatly in favour of the last-mentioned process."

### PHOTO-MECHANICAL PATENTS.

The following patent has been applied for:—

HALF-TONE BLOCKS.—No. 10,931. Production of half-tone plates or blocks. Fred Booty.

TRADE EXHIBITS AT THE R.P.S.—The secretary of the Royal Photographic Society notifies us that the trade section will remain open until 10 p.m. each evening in place, as first announced, of closing at 8.15.

# Exhibitions.

## PHOTOGRAPHY AT THE SCOTTISH NATIONAL EXHIBITION.

THE exhibition in Scotland this year is the Scottish National at Kelvingrove, Glasgow. To this spot all Scots will at some time or another during the summer wend their way to feast on the developments of to-day, glory in the records of the nation's past, or frankly enjoy themselves with the plethora of entertainment provided. The exhibition aims at demonstrating Scotland's place in the history of nations (the Duke of Connaught in opening it on Wednesday paid tribute to this national pride), and, speaking photographically, it seems well that a photographic collection should form one of the features. The Scottish Salon has been demonstrating Scotland's photographic ability for years back, and here, in this national exhibition, we have the nation as a whole proudly proclaiming the prowess of its photographers.

The photographic section is well situated in the Fine Arts Building, with an entrance from the grounds and another communicating with the rest of the building. The walls are draped somewhat above the line of vision with a neutral coloured canvas; above that a very light cream colour is carried right up, continuing over the roof. The general appearance is airy and effective, and, needless to say, the lighting is from the roof.

The basis of the exhibition was the last Scottish Salon, but previous Salons were also called upon, and the committee also inspected other exhibitions, so that no pictorial worker would be missed. The avowed standard of selection was pictorial merit, but one would have fain seen the historical entering more into the exhibition. The pictures in the adjoining galleries aim at presenting a history of Scottish art from the time of Raeburn to the present day, but no such aim is evident in the photographic section, although one is pleased to see a collection of eleven photographs from the negatives of D. O. Hill, the Scottish pioneer of photographic artistry; these are, with one exception ("Newhaven"), portraiture, and display an artist's love of line arrangement, telling treatment of masses, and a virility (if the word may be so used) that is none too common in present-day portraiture.

Needless to say, where admission to the walls was by invitation, most of the photographers represented are well known, and in the more prominent of them some dubiety is aroused as to whether they are represented by their best, their most representative works. In one or two instances especially, works that one would have wished present are absent, and the substitutes do not reconcile one to their omission. Of course, in this respect the committee were not to blame, as they could not hang what was not there, but it is another proof that a man is not always the best judge of his own work.

The hanging is well done; that statement is made advisedly, and with a full knowledge of the difficulties the committee had to contend with. Colours are varied, we have red and green represented. Modern work has mostly the large mount and narrow frame, but some of the older work is shown in its original setting of a broad massive frame and no mount. The difficulty of so disposing these conflicting units as to form a harmonious whole can only be realised by those who have tackled the task. Probably this explains some pictures being "skied" while others are "cornered."

The absence of a catalogue at the press view militated against the comfort of the pressman, but a detailed description of the work is unnecessary to the readers of the "B.J."; most of it has been noted in these pages before, and a walk round seems like a renewing of old acquaintances.

One feature of Scottish photographic exhibitions borne in upon us at the National (we have alluded to it before in these columns) is the prominence of the professional. The committee, Messrs. Jas. McKissack (convener), Arch. Cochrane, and F. P. Moffat, shows a majority on the amateur side, so that partiality cannot be given as the reason. The same thing is in evidence at all the leading Scottish exhibitions. This indicates that these Scottish professionals must be keenly interested in photography as an art, apart altogether from business considerations, and yet many of them whom we have the pleasure of knowing personally are good men of business.

In the centre of the gallery a special stand has been erected for a display of Autochromes.

Not only in its own special section is photography in evidence in the exhibition, it invades many sections, giving its valuable aid in varied directions. In the architectural sections, photographs, along with architects' drawings, show the position of present-day architecture, and in the historical section the camera is called in to show to the visitor the architectural triumphs of the past.

In the Kelvin Hall (a tribute to the memory of the late Lord Kelvin) photography appears as the handmaid of science and industry, and records the triumphs of science, engineering, and other industries.

Messrs. T. and R. Annan are the official photographers to the exhibition, but hand cameras are allowed within the grounds, and subject matter is prolific—the Scots toon, the thatched cottages, vistas through the many archways, the Laplanders and their reindeer and dogs, the Sengalese—opportunities are not wanting, and it will be surprising if the next exhibition season does not reveal many pictures owing their origin to the National Exhibition at Kelvingrove.

### PORTRAITS BY MR. E. O. HOPPÉ.

THIS collection of portraits is on view at the Camera Club, 17, John Street, Adelphi, W.C., and is well worth a visit by all who are interested in methods and resources of the amateur-professional. Mr. Hoppé has been very fortunate in obtaining sittings from five-and-twenty people, all more or less of note, including the Prince and Princess of Bavaria, many artists, authors, and others. They are all of moderate size, and in the few cases where Mr. Hoppé exhibits enlarged versions at the present exhibition of the R.P.S., it is only fair to say that the original versions are by far the finer, having none of that coarseness and congestion of tone that his own portrait, and those of Sime and Nicholas, display to such disadvantage in Knightsbridge. At the Camera Club the portrait that is perhaps all round the finest is that of P. E. Laszlo, Esq., the painter. Next to that, Dr. Fitzgerald comes in order of merit, followed by Frank Brangwyn, A.R.A., Prof. Emil Sauer, and Arthur Machen, Esq. All the prints are characterised by richness of tone.

## Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between May 1 and 6:—

HALATION.—No. 10,633. Device for reducing halation on the retina on a photographic surface. Brank Burnett Dick and Oswald Hardey Evans.

PRINTING.—No. 10,701. Electric photographic printing or copying machines. J. Halden and Co., Ltd., and Herbert Richard Watts.

CONTINUOUS PRINTING.—No. 10,702. Continuous electric photographic printing or copying machines. J. Halden and Co., Ltd., and Herbert Richard Watts.

DAYLIGHT DEVELOPMENT.—No. 10,500. Photographic daylight developing apparatus. Percy Albert Craven.

APPARATUS.—No. 10,533. Photographic apparatus. Cecil Eugene Fuller.

CINEMATOGRAPHS.—No. 10,655. Automatic light cut-offs or shutters. Williamson Kinematograph Company, Ltd., and James Williamson.

CINEMATOGRAPH-PHONOGRAPH.—No. 10,936. Working of cinematograph and talking machines. Edmund Seal Donisthorpe.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

COLOUR SCREEN-PLATES.—No. 19,554, 1910.—In Patent No. 16,273, 1910, is described a method of producing colour screens for colour photography by scattering suitably coloured solutions of resins or colloids of an appropriate kind in such a manner that the fine drops produced fall through a height sufficient to allow them to solidify or dry during their descent.

According to the present invention, materials which are sensitive to light are mixed with the solutions to be scattered, so that after the scattering operation these materials form an intimate mixture with the elements of the colour screen. In consequence of the hardening of the gelatine occurring during the development, the colour is fixed. The screen and the sensitised emulsion thus form an intimate union instead of two separate layers, as hitherto.

An example will illustrate the invention:—100 grams of gelatine are caused to swell in 1 litre of water and warmed until they melt; 40 grams of potassium bromide are added, and then is introduced into the solution, kept warm, a concentrated aqueous solution of ammoniacal silver nitrate, with constant stirring in the dark, until a quantity of silver nitrate equivalent to the quantity of potassium bromide has been added. After this emulsion has solidified, been granulated, and washed in the usual manner, there is added some ethyl red for the purpose of increasing its sensitiveness. Equal portions of the finished emulsion are then mixed, each with a suitable quantity of an indifferent red, green, and blue dye stuff respectively, and then scattered. The fine particles of sensitive emulsion thus produced are next brought on to glass plate and treated exactly as is the case in the preparation of ordinary gelatine plates. After developing and fixing there is obtained forthwith a picture in natural colours. Rudolf Ruth, 13, Neue Kantstrasse, Charlottenburg, Berlin.

DARK-SLIDES.—No. 10,290, 1910 (April 7, 1910). The invention consists of an improved dark-slide or plate holder, fitted with a "spring-pin" for releasing a glass plate or the like from the plateholder (when its protecting slide has been withdrawn), for the purpose of transferring the plate into a developing tank, such as described in the specification of Patent No. 8,405, 1910, "B.J."

The "spring-pin" is attached to the top of the plateholder, and, passing through it, a downward pressure upon the "spring-pin" causes it to press the plate (within the plateholder) down upon and so compress the spring or springs upon which the lower edge of the plate rests within the plateholder until the upper edge of the plate is free of the plateholder, when the upper part of the plate is pushed forward by a spring provided for that purpose in the plateholder immediately behind the back of the plate. As soon as the upper part of the plate is quite out of the plateholder the recoil of the spring or springs (upon which the lower edge of the plate rests) tends to lift up the plate clear out and away from the bottom of the plateholder, and the plate is delivered out from the plateholder.

This invention may be applied to single or to double dark-slides or plateholders of suitable construction, and in the latter case there may be separate "spring-pins" for each compartment of the dark-slide or plateholder, or one "spring-pin" may serve to deliver a pair of plates from the double dark-slide or plateholder simultaneously. The whole operation is nearly instantaneous. John Seaton Warburton, 19, Stanwick Road, West Kensington.

FOCAL-PLANE SHUTTER.—No. 8,874, 1910 (April 12, 1910). This invention relates to shutters of the curtain, or roller-blind, type, such as are known as self-capping focal-plane shutters, and are more especially intended to be used close to the sensitised plates or films, although they may be used with, or in proximity to, the lens, and wherein two blinds are employed which can be adjusted relatively with one another to give any required aperture for instantaneous exposure, and to remain of constant width during such exposure, and which will allow of full aperture for time exposure and for focussing, the invention having for its principal object to provide a shutter with improved operating mechanism for adjusting the aperture for instantaneous exposure, the aperture being adjusted when the shutter is being set by allowing the upper blind independently to move a distance corresponding to the desired aperture, and, on the release of the shutter for exposure, the two blinds both travel together, during exposure, until the lower blind has reached the end of its course, the upper blind then independently continuing its journey until its lower edge is behind the upper edge of the lower blind, thereby closing the aperture after exposure.

The principal working parts comprise an improved combination of mechanism for simultaneously winding up both blinds and for the independent winding of the upper blind for the purpose of obtaining the aperture, means for holding and releasing the upper blind when set for time exposures, or for focussing, or time exposure, the said means consisting of two sliding bolts, one operating the other in the reverse direction through the medium of a pivotally mounted collar provided with two arms and improved means for disengaging one bolt from the other for focussing, or instantaneous exposure.

An adequate description of the shutter requires the seven drawings and detailed explanation thereof contained in the specification. John Stuart, 3, North Side, Clapham Common, London, and Georg Jochumsen, of the same address.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

Cinematographs.—No. 27,785, of 1910. Suspension of films, perforated or not, in drying arrangements. Compagnie Générale de Phonographes, Cinematographes, et Appareils de Précision.

## New Trade Names.

Kinar.—No. 330,988. Photographic chemicals, plates, and films. Jaques Edwin Brandenberger, 2, Avenue de la Moselle, Thaon-les-Vosges (Vosges), France, manufacturer. February 13, 1911.

Kinar.—No. 330,990. Photographic papers. Jaques Edwin Brandenberger, 2, Avenue de la Moselle, Thaon-les-Vosges (Vosges), France, manufacturer. February 13, 1911.

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## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Developing Carbon Prints.

The best way of favouring the development (writes Mr. J. Underwood Strong in "Photography and Focus" for May 9) is to catch hold of the transfer paper by a corner and to move it quickly from side to side. A movement of half an inch is quite enough, and the soluble gelatine and pigment will be seen to stream away from the paper directly the movement is commenced. It must not be done too roughly, or the paper may tear. If there is room in the dish, instead of doing this two opposite corners may be held and the print drawn quickly backwards and forwards under the water. Either is better than the method of baling the water over the print with a jug or cup, which makes a splashy mess, however carefully it is done, and may lead to the film being broken in some very light highlight, a defect for which there is no remedy, and the result of which it is hard to conceal.

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## New Books.

"Photography for Bird-Lovers." By Bentley Beetham. London: Witherby and Co. 5s. net.

Those who devote themselves to the fascinating hobby of Nature photography can hardly complain that their work is overlooked by writers capable of giving them the most detailed and complete technical assistance. The present volume is but one of several which have appeared during the past few months. In it the author confines himself strictly to his subject-matter proper. In the matter of apparatus his device is for a reflex camera in preference to one of any other type. He illustrates his own design of dwarf tripod legs, in view of the confined situations in which the bird photographer has frequently to remain for hours at a time. His own preference is for a lens of the ordinary type, not a telephoto. He advises placing the camera at close quarters to the subject, and operating the lens at a considerable distance by a simple mechanical device by which the pneumatic ball may be squeezed. This allows of the worker hiding himself some way away, and often of his assuming a much easier posture. But in the special branch of work of photographing timid bird creatures, skill and craft in stalking the subjects call for the worker's study to a far greater degree than the selection of his equipment, and this branch of the subject is very fully dealt with by Mr. Beetham in the chapters on "Stalking" and "Concealment." The volume, which is illustrated by a number of admirable examples of the author's work, may be recommended as an altogether excellent text-book of this highly specialistic subject.

M. Puyo on the Oil Process.—A re-edition of the manual on oil printing by M. Le Commandant Puyo has just been issued by Messrs. Charles Mendel, 118, Rue d'Assas, Paris, price 3 francs. In it M. Puyo has provided the oil worker with the fruits of his continued experience in the process of which he, with M. Demachy, is a leading exponent. The volume does not profess to be a réchauffé of all the different dodges which have been practised in oil printing, but is a plain statement of the practice which the author has found best. In a final note M. Puyo states as the chief factors in the successful working of oil printing: correct exposure of the tissue, preferably by an actinometer; obtaining the print in the best state for inking by means of a bath of warm water following one of 10 per cent. formaline; adjusting the ink to requirements, and, finally, cultivating a light touch throughout when using the pigmenting brushes. The volume is illustrated by a number of actual bromide prints, which admirably show the effects to be secured by skilful pigmenting.

Film and Reversed Negatives.—Under the title "Les Clichés Pelliculaires," M. Charles Mendel and Co. have published a small manual by M. L. Tranchant dealing with the technical methods for preparing reversed negatives by stripping and other means, when using both film and glass negatives. The little volume likewise gives instructions in the preparation of positives and negatives by a reversing method, though in this section we fail to note any references to the detailed instructions which Dr. D'Arcy Power, of San Francisco, has recently published as a complement to the methods of M. Balagny and the late Mr. Douglas Carnegie. The price of the brochure is 60 cents.

"La Photographie des Objets Colores."—The very useful text-book by Dr. C. E. K. Mees, recently issued by Messrs. Wratten and Wainwright under the title "Photography of Coloured Objects," has now appeared in a French edition, which is published from the office of our contemporary, "Le Procédé," 150, Boulevard du Montparnasse, Paris, at the price of 2 francs. Dr. Mees is fortunate in having as a translator a technician of the ability of M. L. P. Clerc, by whom the English text has been excellently rendered into French. We may hope that the volume will be the means of furthering the studies of serious photographic workers to whom technical literature in English offers difficulties.

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## New Materials, &c.

Edwards' "Matte-Ground" Plates.—These very convenient plates for window transparency work have now been issued by the Leto Photo Materials Co., Ltd., 1, Crutched Friars, London, E.C., with an improved fine grain, which is a perfect substitute for the finest ground glass, and, at the same time, avoids, in the finished transparency, the extra cover glass which, in the ordinary way, renders the complete result of unnecessary thickness. At the same time, the price of the plates has been advanced from 1s. per dozen to 1s. 6d. in quarter-plate size, other sizes in proportion. It should be added that the "Matte" plates are also issued coated with the Edwards' isochromatic emulsion, and in this form supply a most convenient plate for the making of enlarged negatives, or positives, which may require after-retouching with a pencil.

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### FORTHCOMING EXHIBITIONS.

May 8 to 31.—Royal Photographic Society. Sec., J. McIntosh, 35, Russell Square, London, W.C.

May 10 to June 3.—London Secession. Sec., M. Arbuthnot, Winchester House, Old Broad Street, London, E.C.

May 12 to 20.—Photographic Arts and Crafts. Sec., Arthur C Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

# New Apparatus, &c.

Coronation Half-Tone Blocks.—Messrs. Hood and Co., Ltd., St. Bride Works, Middlesbrough, send us a large circular illustrating the various sizes of half-tone block portraits of H.M. King George V., which they keep in stock for immediate supply. These range from $5\frac{1}{2}$ by $3\frac{1}{2}$ inches down to a small oval $2\frac{1}{4}$ by $1\frac{1}{2}$ inches, surrounded by a dainty line decoration. The prices range from 17s. 6d. to 12s. 6d. for half-tones, or from 10s. 6d. to 5s. 6d. for electros. Larger blocks may also be obtained on this subject; for example, one 8 by 6 inches costs £2 2s. as half-tone, or 30s. as electro. Messrs. Hood have recently introduced a portrait of H.M. the Queen, half-tones or electros of which they can likewise supply of any size. In sending us examples, they remind us of their preparedness for rapidly turning out printing suitable for local Coronation souvenirs of all descriptions.

## CATALOGUES AND TRADE NOTICES.

The Goerz Quarterly.—No. 11, dated April, of this trade publication, deals with the new model of the Goerz folding pocket "Tenax," and contains particulars of other departures in the camera manufactures of the Goerz firm.

To Liverpool Photographers.—The newly issued list of Messrs. Fred. V. A. Lloyd, Ltd., 15, Lord Street, Liverpool, is one which those within the radius of the Mersey city should make a point of having by them. It describes the latest and most up-to-date accessories for the various branches of photography, and should serve as a useful reminder of the facilities of Messrs. Lloyd for supplying their customers with all descriptions of goods.

Fine Chemicals.—The current "B" price list of Messrs. Harrington Bros., 4, Oliver's Yard, 53, City Road, London, E.C., is one which photographers should keep at hand. For one reason, it contains as large a section dealing with aniline dyes used for sensitisers and light-filters as we have seen in any list. Messrs. Harrington supply these dyes in quantities from 1 to 14 gms., and are likewise manufacturers of all descriptions of fine chemicals suitable for regular photographic work, or experimental purposes.

"Ways and Means in Photography."—A new booklet just issued by Messrs. Burroughs Wellcome and Co. under this title deals with a few selected processes of photography, which, like many others, are greatly simplified by the use of "Tabloid" chemicals. The booklet points to the aid in exposure by use of the Wellcome "calculator," and instances the convenience of the "Tabloid Rytol" developer by reference to the results obtained with it by Mr. Ernest Brooks on his recent South African tour with the Duke of Connaught. The booklet is one which all photographic workers will find of interest, whilst dealers should obtain a supply of it for distribution to their customers.

Equipment of the Studio.—A further new list of Messrs. Marion's deals solely with this firm's designs in backgrounds and studio furniture and accessories. In giving it the title, "The Swing of the Pendulum," they clearly show themselves to be alive to the present tendency among all high-class photographers to banish from their studios the artificial and often ugly accessories, and to adopt a kind of accessory which is, at the same time, a piece of furniture. On these lines they are able to show some extremely choice designs in chairs, tables, settees, etc., and the list should certainly be studied by any photographer who desires to keep abreast of the facilities which now stand at his door.

Voigtlander Lenses and Cameras.—A most handsome full price list of the renowned productions in lenses and cameras of the old-established Brunswick firm of Voigtländer and Sohn has just been issued by the English agent, Mr. F. G. Phillips, 12, Charterhouse Street, London, E.C. It contains, as an introduction, an excellent small treatise on the selection of lenses for given classes of work, such as landscape, architecture, and portraiture, and a number of hints on the choice of accessories in the way of telephoto adjustments, light-filters, etc. The examples illustrative of the work of the Voigtländer anastigmats are all that can be desired, as showing the achievements of these lenses in the most difficult branches of photography. The concluding portion of the list describes the cameras, supplied by Messrs. Voigtländer, among which we notice a new folding reflex, which we hope to review in due course.

Electric Light in Studio and Work Room.—Messrs. Marion and Co. have just issued a 30-page list entitled "Switch on Gold," which deals with their own department for electric lighting for portrait and printing purposes. The list very comprehensively describes the various patterns of "Northlight" open arc lamps, and gives the photographer a good deal of practical information as to economical running and manipulation of his electrical supply. The accessories required for studio work are also described, and the new "Northlight" enlarging, copying, and reducing apparatus likewise figures in the list with other electric lamps designed for use in the printing and enlarging room. Messrs. Marion are able to point to large numbers of leading photographers who make use of their lamps, and the reproductions in the list afford a sufficiently eloquent testimony to the success with which the installations have been used.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Saturday, May 20.

Manchester Amateur Photographic Society. Ramble to Delamere Forest.
Borough Polytechnic Photographic Society. Outing to Hampstead Heath.
North Middlesex Photographic Society. Outing to Oxshot and Fairmile.
Darwen Photographic Association. Excursion to Grindleton.

### Monday, May 22.

Southampton Camera Club. "Some Experiences in Architectural Photography," S. G. Kimber.

### Tuesday, May 23.

Bradford Photographic Society. Excursion to Heaton Woods.
Hackney Photographic Society. "London's Cathedral." Albert Hester.
Manchester Amateur Photographic Society. "Flower Photography." H. Malby.

### Wednesday, May 24.

Croydon Camera Club. House Exhibition.
South Suburban Photographic Society. Annual Meeting. "Fifty Years of Photography." E. Eastwood.
South Essex Camera Club. "Historic London: The City." C. Forbes.
West Surrey Photographic Society. Flashlight Photography.
Balham Camera Club. "Open Landscape" (Discussion). W. R. Bond.

### Thursday, May 25.

Handsworth Photographic Society. "How to Make the Best of your Camera." W. J. Foster.
London and Provincial Photographic Association. "'Constable's Country' Around Dedham." Stanley E. Fincham.
Chelsea and District Photographic Society. Portfolio Evening.

Croydon Camera Club.—Mr. L. F. Wastell last week gave a full-dress rehearsal of his new lantern lecture, entitled "A Loon in London," prior to its presentation at the exhibition of the Royal Photographic Society. It would be presumptuous openly to differ from the lecturer in the estimate of his personal characteristics, as expressed by the word "loon," which a standard dictionary defines (inter alia) as "a sorry fellow," "a rogue," and "a rascal"; but we may perhaps be forgiven for remarking that the appellation seems verging on self-depreciation, generally to be avoided. The lecture, illustrated by about one hundred slides, all of first-rate technique, and many of real pictorial merit, was peppered with those tales, jests, and quaint conceits invariably expected from Mr. Wastell, and these were of the best. It opened with a really fine historical sprint, to the astonishment of many, who surmised that the "Walrus" must have dived into the musty archives of the British Museum library, for the time being forsaking its natural element—water, and the tonic ingredients in solution so necessary for the well-being of this mammal. Alternations from the gay to the grave, and even the pathetic, were frequent. Yet the lecturer managed to carry his audience with him in the somewhat rapid transitions of mood, a no mean achievement. Frequent, too, were excursions into the region of the poetic muse, which were entered and left, so to speak, without a splash; a monotonous and soporific intonation, of the kind appropriate to family prayers, doubtless indicated that the author of "Piffle" keenly felt the sentiment of the lines he was reverentially murmuring. At the close of the lecture the many members present waxed most enthusiastic, which caused Mr. Wastell comfortably to miss two trains back in succession.

# Commercial & Legal Intelligence.

THE PARTNERSHIP between Louis Wigand and René John Forgas, carrying on business as photographic enlargers, etc., at 268 (formerly 278), City Road, E.C., under the style of the Star Photo Printing Company, has been dissolved by mutual consent. All debts due to and owing by the late firm will be received and paid by L. Wigand.

AT THE COVENTRY BANKRUPTCY COURT, last week, Reginald Edwin Michael Bleasdale attended for his public examination. He said his present address was 16, Hampton Street, Warwick, and he was thirty-nine this month. He was a photographer, and commenced business on his own account in 1890, previous to which he had been working with his father. After his marriage in 1896 he lived at Wellesbourne, near Warwick, and after residing there about a year, went to Nuneaton, where he lived at several addresses. In October last year he opened a shop in Victoria Buildings, Church Street, Nuneaton, and carried on business as a photographer, stationer, and newsagent. Previous to that he had not had a shop. In addition, at one time he was an insurance agent, and at another time he was a moneylender's agent. When he started on his own account he had no capital, but at the time of his marriage he had £50, which he had saved. The shop was not a success, and the causes of his failure were bad trade and exorbitant charges by moneylenders. The examination was adjourned until the June court.

# News and Notes.

THE CONGRESS OF APPLIED CHEMISTRY.—The eighth international congress of applied chemistry will be held in Washington, U.S.A., on September 4, 1912. Section IX., devoted to photo. chemistry, will be presided over by Professor W. D. Bancroft, with Mr. R. James Wallace, of the research laboratory, the Cramer Dry Plate Company, as vice-president. The secretary of the section is Mr. E. J. Wall, F.R.P.S., the Fireproof Film Company, Rochester, N.Y.

A SWEDISH CONTEMPORARY.—We have to welcome a new contemporary, the "Svenska Fotografen," a monthly journal, issued by a firm of Stockholm publishers, named Kungl. Hofbortr. Iduns Tryckeri-, A-B, under the editorship of John Hertzberg. The February number shows that the new journal is planned to interest all classes of photographers in Sweden, its articles dealing with popular printing processes, including oil, matt albumen, collodiochloride, etc. The text is printed on a pleasing non-art paper, whilst a number of supplements, on a cream calendered paper, are in excellent style. We may congratulate photographic workers in Sweden on a new journal which should do much to popularise photography in that country.

R.P.S. EXHIBITION LECTURES.—Saturday, May 20.—"The Home Life of Wild Birds." By Alfred Taylor.

Monday, May 22.—"The Practical Side of Alpine Photography." By C. Atkin Swan, M.D.

Tuesday, May 23.—"A Miniature Alpine Garden." Made and Photographed by H. T. Malby, F.R.P.S., and R. A. Malby.

Wednesday, May 24.—"The High Alps with a Camera: Climbing the Peaks of Monte Rosa." By H. Speyer.

Thursday, May 25.—"From Arctic Snow to Tropic Sun." By H. M. Lomas.

Friday, May 26.—"Rothenburg, o/d. Tauber and its Festival Play." By James Shaw.

Saturday, May 27.—"History in Caricature and Satire." By A. H. Blake.

PROFESSOR H. E. ARMSTRONG was the guest of the evening, on Saturday last, May 13, at a banquet at the Hotel Cecil, organised by past and present students of chemistry and engineering at the Central Institution of the City and Guilds of London Institute, in recognition of his career as teacher of chemistry and educationalist. Professor W. J. Pope, F.R.S., of Cambridge, presided over a very large gathering, which included among the guests Sir William Crookes, F.R.S., Professor John Perry, and Sir James Dewar. The chairman, in proposing the toast of the evening, that of Professor Armstrong, alluded in felicitous terms to the regard in which the large numbers of his old students held him as a teacher and authority on education. Professor Armstrong, in replying, alluded to the pioneer work which he, in conjunction with his colleagues, had been enabled to carry out. They had set themselves to organising new methods of teaching, and his long experience had shown him that it was no longer necessary to go to Germany for a chemical education. He alluded to the important place which research should have in modern scientific training. The proceedings were marked by the greatest enthusiasm. The arrangements of the evening were in the hands of Messrs. F. F. Renwick and G. W. Tripp.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## THE STATUS OF PHOTOGRAPHY IN THE NEW COPYRIGHT BILL.

To the Editors.

Gentlemen,—You may have seen that in the Copyright Bill now before the House of Commons it is proposed to make an alteration in the copyright for photographs to fifty years, although the Gorell Report, pp. 18-19, of the Copyright Commission recommended giving the same treatment to photographs as to any other form of pictorial art, as it has been previously. I am sure that all photographers—whether directly interested in pictorial photography or not—would feel that a most determined stand and movement should be made immediately to prevent this change.

If anything were done, it would have to be done at once, and enclosed you will find a list of those who, I understand, are members of the standing committee. A good many of your readers interested in this matter would, I should think, be able to help to explain the position to, and to influence, their Members of Parliament, so that they would see that the same treatment is given to photographs as to any other form of pictorial art.

It may also interest you in this matter to have a copy of the "Outline of Evidence" on these points that was submitted to the Copyright Commission some time ago, and I am enclosing this to you herewith.

It ought to be added that I believe some other evidence was put in stating that photographers were willing to accept fifty years only for *all* photographs. There is, however, I am sure you will agree, an important principle involved in the interests of photography which ought not to be lost sight of.

It may be advisable to form as strong a committee as possible immediately to ensure that the interests of photography are fully considered whilst the Bill is under consideration.—Yours faithfully,

GEORGE DAVISON.

Wernfawr, Harlech, North Wales.
May 5, 1911.

The following is the outline of evidence referred to by Mr. Davison, on whose letter we comment under "Ex Cathedra":—

In the interests of photography, and on behalf of a large and growing body of workers occupied in making pictures by photography, it is desired to submit evidence, if any be needed, to show that, in any new statute:—

1. Photographs should be classed for copyright and term of protection, as they are at present in England, that is, with other original works of graphic art, drawings, paintings, etc.

2. The marking of negatives and prints with name, date, or other sign would probably prove difficult and objectionable, and is a condition which is not needed for the convenience of the community, and should not be imposed upon the photographer.

As regards (1) it is submitted:—

(*a*) That photographs may be, and can be, readily shown to any unbiassed observer to be fine works of art. Examples by D. O. Hill, Mrs. Cameron, J. C. Annan, Edouard Steichen, Baron de Meyer, Robert Demachy, and very many others, may be referred to, and see "Camera Work," one of the very finest of all illustrated periodicals in the world.

(*b*) That this has been recognised by art galleries by the purchase of fine photographs for national permanent collections. (See list A below.)

(*c*) That exhibitions devoted exclusively to works of artistic value have been held in various art galleries, and recognised for many years. (See list B below.)

(*d*) That highly competent authorities can be quoted who have given their judgment on this matter. (See list C below.)

It may also be added in this place that for copyright purposes and term of protection it would neither be practical nor logical to make a distinction between one class of photograph and another, any more than between one quality of drawing and another. All come into the domain of art together. The making of all productions, drawings, paintings, and photographs is art work, and the proportion of bad art is as great amongst paintings and drawings as amongst photographs. The term "fine art" may be given a conventional or agreed meaning, but it cannot be correctly used to classify any particular methods. The fineness of a work does not depend upon the means employed, but upon the individual employing them.

As regards (2), it is submitted that it would be highly undesirable in most instances to have to disfigure photographic negatives with markings or signs. Many of them are of small size, and the photographic image is very delicate. To mark the mount would be an imperfect device, as mounts are not always used, and can be detached. And where and what is the necessity for it? The public is protected without it in its proper claims under the statute, as the life of the author gives a definite limit to refer to. The writer of the article on copyright in the "Encyclopædia Britannica" asks, "Who knows anything as to the authorship of a photograph?" but he is evidently bitterly prejudiced against artistic photography, for the suggestion is not true; and even if it were, ignorance of authorship would be no good reason why a thing should be stolen. Photographs, whether as pictures or records, are acquiring greater value every year, and authors are jealous of their ownership, and are easily found if the desire to find them be genuine.

Whatever may be recommended under this head, it is most earnestly submitted that the onus of tracing authorship, and whether photographs are protected or not, should be left as now, lying as heavily as it can upon those who covet the pictures and have a pecuniary interest in stealing or making use of any prints they can lay hands on. If ability to sue for infringement be made to depend upon the existence of markings or name and date upon photographic prints, it would open up a very wide field to the many predatory editors and publishers and their agents for picking up and improperly and unjustly using photographs for their profit. It is therefore strongly urged that no clauses shaped to protect and shelter people who are notoriously out to get something for nothing in this way should for a moment be considered. The present system is simpler, sounder, and more just.

LIST A.

1. "*Toncques Valley*," by R. Demachy, recently purchased by the *Metropolitan Museum* of New York for $250. See "Munsey's Magazine."
2. The Director, Prof. Lehrs, has bought for the Kupfers-Kabinet *Royal Art Gallery*, Dresden, two prints by Clarence White and one each by Steichen, Kuhn, and Coburn. *Royal Art Gallery* is under the patronage of King of Bavaria.

LIST B.

*Photographic Salon, Pictorial Section Royal Photographic Society*, Walker Art Galleries, and various other Provincial Art Galleries—Paris, Vienna, Berlin, New York, St. Petersburg, Japan—and all reviewed by press generally as art exhibitions.

*Corcoran Art Galleries* (Washington, 1904), Carnegie Institute (Pittsburg), Dept. of Fine Art, Little Galleries.

*Brussels Museum* have purchased a number of photographs for their *Art* collection.

*British Museum* has housed the collections of the Photographic Record Association.

LIST C.

1. Sir Chas. Eastlake, President of Royal Photographic Society.
2. Celebrated French critic, *de la Sizeranne*.
3. Whistler on D. O. Hills: "Most curiously attractive photographs. I should say more simply, pictures, for they certainly are pictures, and very fine ones, too."
4. Dr. Lehrs.
5. Maeterlinck.
6. Rodin.
7. *Camera Work* series of interviews of G. B. Shaw in "A.P.," January 29, 1907.
   "I affirm the enormous superiority of photography to every other known method of graphic art that aims at depicting the aspects and moods of nature in monochrome."
8. *Chas. Fitzgerald*, Art Critic to the New York "Sun."
   "Why, it is not only a possibility, but a certainty beyond all controversy."
9. "*The Triumph of the Camera*," by Arthur Hollier, in June, 1910, "Cosmopolitan Magazine."
10. *Maeterlinck* article in front of *Steichen Supplement*, "*Camera Work*."

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## COLOUR PROCESS.

To the Editors.

Gentlemen,—In your issue of May 12, page 358, re R.P.S. Exhibition, you state that my exhibits, 291 and 295, are by the three-colour carbon process. May I call your attention to the fact that they are *two-colour* carbon, and by a method I worked out myself, and which I have been using for the last two years. An account is given of the process in "Photography and Focus" for November 23, 1910. Further, the process is not so difficult as the three-colour carbon.—Sincerely yours, R. WALKER BERRY.

Knowle Green, nr. Longridge, Preston.

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPHS REGISTERED:

W. Terry, 41, Den Lane, Hey, near Oldham. *Photograph, Old Gipsy Sarah's Home.*

A. Hayward, 53, Queen's Road, Lavender Hill, London, S.W. *Photograph of Mr. Howard Russell, Actor.*

A. THOMAS.—Yes, 1891.

SEPIA, CARDIGAN.—We are sorry we can form no idea.

HANG 'EM.—We think you might charge the sum you name, if you are invoicing the job at one inclusive price, but we doubt if customer will pay 6s. extra to a quoted price for the work.

LINE PROCESS.—Can you kindly recommend us a book upon amateur process line engraving in its entirety?—THOMAS NICHOLLS.

"Line Engraving," by W. Gamble. (Penrose and Co.)

SOUTH AFRICA.—Will you kindly tell me the name of the best photographic paper in South Africa, in which to advertise for a situation?—Vectis.

There is only one—the "South African Photographer," published by Lennon, Ltd., Cape Town.

**Miniatures on Ivorine.**—Will you kindly tell me the best process of reproducing miniature portraits on ivorine for painting. Is there a firm who produce sensitised ivorine to print from the negative?—T. R.

The carbon process. So far as we know the ivorine is not obtainable sensitised.

**Metol-Hydroquinone Developer.**—Will you please tell me of what a mean formula consists for metol-hydroquinone, with water 1 oz.?—J. Bond.

About the average for bromide paper is: Metol, 1½ to 2 grs.; hydroquinone, ¾ to 1½ grs.; soda sulphite, 15 grs.; soda carbonate, 15 grs.; potass bromide, ½ gr.

**Lens Tests.**—I would be much obliged if you would let me know the mode of procedure to be followed and the cost in having a lens tested by the National Physical Laboratory (?). (I am not sure of the name nor of the exact address.)—A. Thomas.

We believe the cost is 2s. 6d. or 10s., according to the nature of the tests. Address the National Physical Laboratory, Teddington, Surrey.

**Colouring Postcards.**—Will you kindly let me know the cause the colours will not take on our postcards? Will you let us know the cause through the "B.J."?—H. R.

There is often a difficulty in colouring glazed prints with dyes. Possibly you have a little grease or wax on the surface from the glazing plate. It is often better to colour before squeegeeing. Lockyer's tints, and probably others, will allow you to do this without starting the colour. Blue is always the most difficult to spread evenly. Some of the colour manufacturers sell a medium with which the print is washed over before applying the dye.

**Sepia Tones.**—(1) How do you colour midgets, etc., a sepia? If with salt, is it before or after the hypo? I use metol and hydroquinone developer and bromide glossy paper. And how are they toned any other colours? (2) Sometimes the paper blisters, although I use an alum bath after hypo. I blame the heat of the water in summer. Could you give me a little advice on this?—Kelso.

(1) Your best plan will be to use the sulphide toning process as described on page 769 of the "Almanac." (2) You should avoid the trouble if you put prints for five or ten minutes in 5 per cent. alum solution.

**Discoloured Print.**—Will you kindly inform me, through the "B.J.," the cause of the discolouring on the enclosed card? In my opinion it is sulphurisation, but I always thought this was caused by toning in a combined bath with lead in it, or little or no gold, but in the bath that this card was toned there was no lead, and fairly rich in gold.—L. A. F.

It is undoubtedly due to sulphurisation, and possibly you used a gold solution that was too acid. The gold should invariably be neutralised before adding to the rest of the solution. We do not think lead is likely to cause sulphurisation if used in proper quantity. Try one of the baths given in the "Almanac."

**Copyright.**—A firm has given me an order to copy a post-card photograph of an interior of a certain church. The card is not marked copyright. What I should like to know is: 1. May I copy this, or shall I infringe someone's copyright by doing so? 2. I am inclined to think that photographs of public places of worship cannot be made copyright. Kindly let me know your opinion.—Constant Reader.

1. The photograph is not your copyright and probably not that of your customer. Hence, in executing the order you will render yourself liable to proceedings for infringement. There is no need for a copyright photograph to be so marked. 2. You are quite wrong. There is no such distinction.

**Price of Work.**—I would esteem it a favour if you could give me an idea as to what would be a reasonable price to charge for following. I am at present taking a set of negatives, half plate. These are for a gentleman who is going to show them in —— Exhibition. I had to cover about thirty-six miles in taking negatives, and have to supply one print toned bromide of each. Shall be glad if you can find space in your "Correspondents'" column, to give me an idea of what you consider a reasonable charge. There are twenty-eight views.—T. F. M.

It is difficult to answer your question without knowing the time occupied in taking the negatives. We think 3s. 6d. to 5s. per subject, including the print, plus railway fares or other travelling expenses, would not be unreasonable.

**Gradated Screens.**—Can you kindly tell me through your "Answers" column whether the gradated yellow screens really give visible clouds on landscape negatives which are properly exposed for the rest of the landscape, and whether a uniform screen with a saw-edged strip of black paper pasted on it to cut off some of the sky rays, is equally good or useless? I do not want to spend a pound on a gradated (or "graduated" as the makers call them) screen if it will not prove to be useful.—W. S. Davenport.

Yes, certainly; the gradated screen will do so if you adjust its height correctly. It is made to slide up and down for this purpose. The other device can no doubt be arranged so as to work in certain cases, but it is very troublesome to use and not always effective in our experience.

**Bleached Pictures.**—Can you inform me the process by which the enclosed prints are done, also particulars as to working same? From what I am informed, they have no image on when printed (or the image is bleached out after), and by simply putting into some solution the image then appears, but gradually disappears again. I must add they can be handled in full daylight after printing and before putting into solution to bring image. The enclosed prints have not been in solution, the image simply appearing by length of time kept.—J. C. G.

One process for such appearing photographs is to bleach silver prints in bichloride of mercury solution and render them visible again with hypo solution. This is the ancient "magic photograph." Another method is to bleach in with a copper salt, or other bleaching solution, which leaves an invisible image, which becomes visible on exposure to light only.

**Supplementary Lens.**—I have a "Wray's" landscape lens, 18 in. focus, stops $f/8$ to $f/64$. The diaphragm slot is 3 in. in front of lens. Diameter of lens is 2⅜ in. 1. Could another be combined with this, so as to reduce the focus to 9 in. or 12 in.? 2. Would the position of diaphragm be altered? 3. What would be the resulting aperture? 4. Would it give rectilinear results?—Globe Trotter.

1. A 36 in. single lens will reduce the focus to 18 in., and an 18 in. lens to 9 in. The former would be the safer to employ. 2. It might be desirable to bring the diaphragm nearer the lens, but this can only be determined by actual trial. 3. If you reduce the focus to 12 in. the aperture will be $f/5.3$ for the $f/8$ stop, and other apertures will be increased in proportion. You would no doubt find it necessary to use smaller stops. 4. No. As regards distortion, the results would probably be not quite equal to those produced by the original lens.

**Printed-Out Image.**—Enclosed is a coated advertisement taken from an orange envelope, and printed and fixed as you see it, in daylight. Has it been lithographed with some silver dope similar to that on P.O.P.? If so, how could such ink be made? I suppose it would be impossible to prepare such an advertisement under a negative. If it could, photographers would have a means of "catchy" advertising at hand. It at first occurred to me that perhaps the design had been printed on P.O.P., and the excessive printing it would get by being laid in daylight would cause it to show, but the printing seems to have stopped. It was printed a couple of years ago, and has been carried in the pocket ever since, with this letter to you in view.—H. W. Gauld.

Such prints are made by bleaching bromide or gaslight prints with copper chloride or similar bleaching agent, such as potass bichromate and hydrochloric acid. No definite formulæ have been published, but we believe such invisible prints have been on the market.

Light Filters.—I have read many articles in the Colour Supplement of the "B.J.," but have been unable to fully understand and appreciate the same owing to a lack of technical knowledge. Can you assist me in the matter? (1) What is meant by the symbol Y, which I see so often used? Also what is the meaning of wave-length, and how is a wave-length measured? (2) How are light filters measured? (3) If you can recommend any inexpensive books on the subject, I should take it as a favour.—Frank A. Hodgson.

(1) The symbol Y denotes wave-length, which is the length of a light wave measured from crest to crest. If you want to go into this matter closely, we can only advise you to study some book on physical optics. (2) The increase in exposure is ascertained by trial. A grey and white object is photographed, and the exposure required with the filter is compared with that necessary without a filter. (3) "The Photography of Coloured Objects," by Dr. C. E. K. Mees, price 1s., and "Orthochromatic Filters," price 6d., both published by Messrs. Wratten and Wainwright.

Prints on Canvas.—Can you give me formulæ and directions for making photo-prints of some sort on the face (filled side) of artist's canvas? The filling or sizing is of an oily, repellent surface, quite impervious to blue print, sensitiser, etc. Something rapid enough for direct enlarging would be greatly valued, but detail and gradation are of no consequence, what is required being merely to save time of drawing in commercial oil stuff. If enlarging not feasible, then contact print, please, other than carbon preferred.—D. D. (Battle Creek, Mich., U.S.A.).

If you will clean the surface of the canvas with a mixture of liquid ammonia one part, and methylated spirit four parts, rubbing it on with a soft cloth until all greasiness disappears, you will find any sensitising solution will take evenly upon it. A slow gelatino-bromide emulsion, containing little gelatine, could be spread thinly upon the canvas with a brush, if a few streaks are not detrimental. A better plan is to buy the canvas ready sensitised. Messrs. Wellington and Ward and the Photolinol Company supply this in the ordinary way, or the nearest plate-maker to you would probably coat canvas to order.

Silver Point.—Would you kindly give me a brief description of the method of producing so-called "silver point" portraits. As far as my observation serves me, I believe the sitter is portrayed against a pure white ground, and in printing the negative it is vignetted on to a fairly large piece of paper, the print being kept somewhat pale. It is then "rough" mounted, and finally bevelled off in the manner of the carbon sketch. In the finishing, I believe, a suitable pencil being employed, the artist proceeds to "crosshatch" the background and features and drapery, which brings the original pale tint up to a greater degree of strength, yet has the appearance of being an entirely hand-drawn pencil sketch. Am I right in assuming "silver point" and "pencil sketch" to be one and the same? Kindly state by what process of printing this work is done in and most suitable surface to work upon.—Silver Point.

Of course, genuine "silver point" is a quite distinct process, but photographic prints put forward under this name are made by a process such as you describe. They are, in fact, faint white background vignettes worked up in pencil. Prints can be done in matt-bromide or platinum.

Papers, Etc.—Can you supply the following information in this week's Journal for us:—(1) Where we can obtain the thick brown paper or cheap pulp card which is used for painting backgrounds on, 8ft. x 6ft. size? (2) The colours and inks used by poster, ticket, and show-card writers; also the papers and glazed boards, etc., used? (3) American books on advertisement writing, where to obtain same, and their titles and publisher, if you know of any. (4) Small visiting or business card cases, in cardboard and covered with imitation leather, and with name and address stamped in gilt, for advertising purposes. (5) Books on scene painting. We have written several firms about these matters without any success. Perhaps you can supply the information.—Scenic.

(1) Try Messrs. Spalding and Hodge, Russell Street, Drury Lane, London, or Mr. F. G. Kettle, New Oxford Street, London. The paper is sold by the yard. Ask for carpet paper, 6ft. wide. (2) Ordinary powder colours, mixed with gum, are used by ticket writers. For rough or large work the oilshop quality is good enough. Messrs. Potter and Co., of Aldersgate Street, London, would supply the plain cards. Many writers now use photographic mounts for this purpose. (3) You could probably get these books through the Page-Davis School of Advertising, 195, Oxford Street. There is an English monthly publication, entitled "Printers' Ink," which deals with up-to-date advertising. We believe that the "Morning Leader" newspaper also publishes a book, written by the leading British advertising managers. (4) Messrs. Johns, Son, and Watts, 40, City Road, could quote you for these. (5) You can obtain books on scene painting, make-up, etc., from Mr. Samuel French, theatrical bookseller, 26, Southampton Street, Strand, London.

Amidol Developer.—1. The enclosed print was made with an amidol solution (Wellington formula), which was made up last September and gradually used in the meantime. I usually get amidol to keep a month, but this seems to be something extra. I should be grateful if you could give me a hint as to what conditions are present to account for this. Is it, possibly, that it was kept at an almost constant temperature? 2. Could you also find a line or two to let me know how old bromide paper can be made usable? 3. Also, if formaldehyde 40 per cent. may be used in place of formalin ("B.J.A.," 1911, p. 730, etc.)? —Q. S.

1. It is difficult to suggest any reason for the amidol keeping so long, and the only possible cause we can think of is the use of sulphite of an unusual degree of purity. If the alkali contained in sulphite is neutralised, the life of an amidol developer is considerably prolonged, and a sulphite free from alkali would no doubt work better with amidol than ordinary sulphite, which seems invariably to contain a small percentage of carbonate. Temperature may have had a little to do with it, but we have no experience of the effect of temperature. 2. A bath of bichromate of potash and hydrochloric acid, say 2 per cent. of each, will destroy fog, and after thorough washing and drying the paper may be used. It will, however, be much reduced in speed, and if the deterioration is not simply a matter of fogging the remedy may prove useless. We do not recommend the attempt to restore old material. It is generally cheaper to throw it away and buy fresh stuff. 3. Formaldehyde and formalin are the same thing, that is to say, formalin is a 40 per cent. solution of formaldehyde. Thanks for your hint, which we will use in a later issue.

◆

New Studio at the West End, Morecambe.—Mr. Watson, who for many years has conducted a high-class photographic business in Morecambe, has opened fine new premises in the Alhambra Buildings, Regent Road, where a modern equipment, with electric light, has been installed.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2664. Vol. LVIII. FRIDAY, MAY 26, 1911. Price Twopence.

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## SUMMARY.

The P.P.A. Congress.—We publish this week the comprehensive and authoritative paper on artificial lighting by Mr. T. C. Turner. The paper deals with practical adjustments of arc lamps; the choice and arrangement of arc light installations; types of enclosed arc; the mercury-vapour light and the latest form of it just introduced as the "Silica" and "Quartzlite" lamps; studio gas lamps; flashlight work; together with many lessons in the commercial value of artificial light installations. (P. 396.)

We publish this week the key to the group of members of the Congress taken on the occasion of the visit to the works of the Kodak Company at Harrow. (P. 402.)

At the meeting of the Congress, held on Thursday, May 18, the question of Sunday closing was the subject of an animated discussion, and a sub-committee was authorised to draft a resolution to the Home Secretary in reference to the inclusion of photographic studios within the scope of the Shops Bill. (P. 406.)

Mr. T. Drummond Shiels, who has taken a prominent part in endeavours to secure Sunday closing of studios in Scotland, gives a short account of the efforts which have been made. (P. 409.)

The adoption of a standard size of mount, suitable for inclusion in a loose-leaf album, was brought forward in a paper by Mr. E. Drummond Young, which we publish on page 407.

A report of the visit of the Congress to Messrs. Houghtons' works at Walthamstow will be found on page 405, where is reproduced a group taken on this occasion. Members were shown the large wood-working and metal-working shops in the "Ensign" factory, as well as the manufactory of mounts, which is now a large interest of the Houghton firm.

In a leading article on page 394 some of the matters dealt with at the Congress are the subject of some notes which we may hope will encourage photographers attending a future Congress to usefully supplement the discussions at the meetings themselves.

The Council of the Photographic Convention have recommended that a meeting-place in Holland should be selected for 1912. (P. 393.)

## EX CATHEDRA.

**The Convention, This Year and Next.** An advance copy of the full programme of the Photographic Convention, to be held at Exeter from July 10 to 15 under the presidency of Mr. J. B. B. Wellington, shows the same genius and thoroughness in organisation which has always characterised the work of its hon. secretary, Mr. F. A. Bridge. Arrangements for excursions in the picturesque Devonshire country have been made with every regard for the convenience and comfort of conventioners, and those who journey to Exeter are assured of a delightful week in the West of England untroubled by the need of considering the ways and means of getting about. The programme of papers for the meetings, which in most instances commence at 9 p.m., provides a series of after-dinner topics of interest to photographers. We are glad to learn that the council of the Convention, at a meeting held in London last week, recommended the members to select Holland as the venue of next year's Convention. It will be remembered that The Hague was named among the places for this year's Convention discussed at Scarborough last July, but that the opposition by certain members to a place of meeting outside the United Kingdom carried the day. As we then said, and say again, the Convention has a great deal to gain and very little to lose by transferring the scene of its activity to the Continent. The day is past in photography when numbers of people can be induced to assemble, except when under such strong trade stimulus as animates the P.P.A. Congress. In the United Kingdom the Convention does everything which it can do to provide an enjoyable week for its members, but most of them are quite capable of doing the same for themselves. Transfer the scene of meeting to Holland, Brittany, Normandy, or Belgium, and the Convention is in the position to confer great advantages upon its members in the way of travelling arrangements and permission to photograph in places to which individual tourists would find it difficult to gain access. On this account we are strongly of the view that the council is taking the wise step in recommending Holland for 1912, and we may hope that the body of members will support them at the Exeter meeting.

* * *

**Enlarging Without Condensers.** A writer in a contemporary recently described an arrangement that he had devised for enlarging, which, he stated, worked quite satisfactorily. This consisted of a metallic filament electric lamp used inside a focussing "holophane" reflector, a sheet of ground glass being used as a diffuser behind the negative. For small negatives we see no reason why such an arrangement should not work well, for years ago we adopted a somewhat similar method and found it quite serviceable. In our case we used a powerful argand burner (incandescent gas not then being invented) inside a parabolic reflector. In front of the reflector a sheet of ground glass was fitted, while a second smaller sheet went immediately behind the negative. To soften down the direct light from the argand we found it necessary to grind the larger sheet of glass on the back in the centre, so that direct light passed through two ground surfaces instead of one, and with this addition the apparatus worked fairly well. It had, however, two serious defects: the exposures were long and the parabolic reflector, which was made of cardboard, frequently caught fire; still, so far as even illumination was concerned there was little fault to find. In these days such elaborations are often unnecessary, for much more powerful illuminants are available, and, provided that the illuminant is powerful enough, no reflectors or condensers are required. Strangely enough, many seem to have overlooked this point, and it is not unusual to see condensers used when any such device is quite unnecessary. Given a powerful light, such as a big arc lamp, we have only to keep it far enough away from the negative to secure as even illumination as can be wished for. A diffuser behind the negative is desirable, but a condenser is no real benefit. A daylight enlarger can be directed towards an arc lamp about five feet away just as easily as it can be directed towards the sky in the daytime. With weaker lights that have to be brought near the negative to shorten the exposure, the condenser or an equivalent becomes necessary, for without it the illumination is uneven owing to the nearness of the light.

* * *

**Colour and Climate.** We heard a question put a short time ago that raised an animated discussion yet led to no definite result, because it did not seem that anyone present quite grasped the essentials of the problem. A three-colour worker, having experimentally adjusted the ratio of his exposures with a neutral grey test object in England, went abroad with his apparatus and set to work on snow scenes. As the result he found that he could only render snow as distinctly blue in colour, and on re-testing the exposures on the same test object which he had with him, he found that this also was rendered with an excess of blue. A re-adjustment of the exposures was necessary to render the test object in neutral tints and the snow as white, so not unnaturally he came to the conclusion that the exposures required re-adjustment for different climatic conditions. There is, however, another aspect of the matter. Our conception of colour is controlled to a very large extent by preconceived ideas, and our visual idea of white is not founded on strict colour analysis but on that of relative brightness. A tint has only to attain a certain standard of brightness to be immediately classed as white by the untrained observer, and the fact that it is not pure white will never be observed by him unless a still whiter white is put against it for comparison. Taking snow as an example of a "white" subject, though pure snow in England, in Switzerland, and in, say, Spitzbergen, is the same thing and of identically the same composition, yet it does not follow that it is of the same colour. In fact, trained visual colour analysts, such as painters, will tell us very decidedly that it is not. The casual observer accepts it as white in each place, simply because it is the nearest approach to white visible. He takes it as his standard without being able to appreciate the fact that it is a different standard from that which he would accept in another country. In the same way an object that is of a perfectly neutral grey in England need not be equally neutral in Southern Europe. If it is used as a test object it may photograph blue in the southern light though in England it was rendered as grey, and both renderings may be perfectly correct.

**Colour and Visual Perception.** Of course colour rendering is not always correct in photography, because the ideal process has not yet been evolved. There is always a compromise somewhere, and the slight errors that exist may become serious ones in certain conditions of lighting, but if a perfect process could be devised that would always faithfully record the precise colours in front of the camera, then the comparison of various climatic colourings would be easier. There would still be people to say that the results were wrong, but that would only be because their visual perception was defective as regards the natural objects. It is always difficult to identify colours in Nature, and, in fact, impossible without long training, though it is quite easy to distinguish even very trivial differences in artificial subjects. It of course follows that if the standard of whiteness varies in different climes all other colours vary also, and, in point of fact, they do do so to a very marked extent. Though a visitor to, say, Southern Italy may fail to observe that the things he has carried with him are not of the same shades of colour that they were in England, he will hardly fail to notice that the sky is of a different blue, that the sea is different in colour, and that distant hills differ in appearance from what he has been accustomed to at home.

◆

## SOME MATTERS DISCUSSED AT THE PROFESSIONAL PHOTOGRAPHERS' CONGRESS.

The formal programme arranged by even the most astute committee can never represent the whole life of a congress such as was held last week by the Professional Photographers' Association. Whenever a body of men, all keenly interested in the craft or business by which they earn their livelihood, assemble together for the exchange of views, topics must arise for discussion other than those provided in a set programme. It is not too much to say that the meeting arranged for the afternoon of Thursday, May 18, for the discussion of matters connected with the business side of photography, drew out the interest of those attending it to a greater degree than the more formal papers and lectures. And in view of the many letters on the subject which have recently appeared in our columns it was no matter for surprise that the attitude of the profession in regard to the closing of studios on Sundays, and in regard to the Shops Bill now before Parliament, should have aroused a vigorous expression of views. While many dissentient opinions were voiced, we were glad to see that the tone of the discussion throughout was of a perfectly friendly character and of a kind which evidenced the fact that the desire of the members was to keep before them the importance of the status of the whole profession.

In regard to the matter of Sunday closing, it must first be said that the Bill now before Parliament is intended to apply to traders—those who buy and sell. Photographic studios pure and simple are exempt from its intended provisions. This is clearly indicated by the fact that among the special references to businesses at all comparable with that of a photographer's the only one is to that of a hairdresser, to whom the Act, with several modifications, is held to apply. It may be taken that by the Bill as it stands at present photographers are in no way affected, and discussion was thus actively directed to the desirability, or otherwise, of taking steps to bring photographic studios within its provisions.

Now, the Shops Bill deals with a number of quite distinct matters. It deals with the opening of shops on Sunday, which it declares to be illegal. It also deals with the hours which assistants may work, limiting these to sixty hours per week, exclusive of meal-times, and it also provides that one weekday in the week an assistant shall not be employed after two o'clock in the afternoon. It likewise prescribes certain intervals for meals which shall be allowed to each assistant, and further fixes the amount of overtime which the assistant shall work as not more than sixty hours during the whole year. On the general question of the desirability of compulsory Sunday closing we believe that photographers as a body are agreed that it would be of immense advantage to their profession as a whole. In towns where a number of photographers keep open on Sunday there is plenty of evidence to show that they do so simply in a spirit of competition with each other, and that if all could agree to close every one of them would be glad to fall into line. And it must be admitted that in the majority of cases of studios which open on Sundays the class of trade which is done is of the cut-price order and therefore, in our judgment, not one which deserves to be unduly considered at the cost of the more reputable class of portrait business. Legislation of any kind is bound to press unduly in some quarters, but it was clear from the tone of the meeting that the members of the Congress believed that Sunday closing would be to their benefit. Certainly it would be to the benefit of the assistants, and on that account alone, in our judgment, would in time react with advantage upon the employers. We may therefore hope that the representations in favour of studios coming within the scope of the Bill, which were made by the Congress, will be supported by photographers, whether members of the P.P.A. or not. Very little time now remains for revision of clauses of the Bill, but it is still possible for individual photographers to approach their members of Parliament, pointing out what has been done by the Congress as a body and begging for the individual member's support.

Another business matter brought before the Congress was the suggestion emanating from the Edinburgh branch of the P.P.A. as to the adoption of a standard size of mount suitable for inclusion in a loose-leaf album and upon which photographs of various shapes and moderate sizes might be supported. Mr. E. Drummond Young, in a paper which we publish upon another page, has clearly set forth the reasons for this suggestion. The chief of these is the growing objection which is made by customers to the effect that they do not want any more photographs as, under the present conditions of odd sizes of mounts, they have no receptacle in which they can place them as they could in the albums of the old days made to accommodate C. de V. and cabinet photographs. Here again, as in the case of Sunday closing, there are arguments both for and against. Some members, who, by the way, did not express their views at the meeting, have held that the adoption of such a standard size on the part of the high-class photographer exposes his work to the competition of the cheap form of photograph which it is his endeavour to evade. But we think that, while there may be identity as regards size, there will always be a gulf between the quality of work from a high-class studio and that of the low-price photographer. Mere copying of the size and style of a mount will not make amends for the defects in lighting, retouching, and the production of the print which can be found in much of the cheap work. On the other hand, there certainly is good reason, we believe, for thinking that the public would appreciate some new design of album, which, in a simple way, would allow of their bringing together the photographs which they themselves obtain in the usual way from photographers or receive from their friends, and the design of album shown by Mr. Drummond Young appears to solve this question in a remarkably easy manner.

While writing upon these business topics which affect the portrait photographer we may perhaps also make reference to the remark, made by the editor of this Journal at the Congress dinner, suggesting that photographers would gain in status by adopting an attitude towards one another which is more akin to that of professional men. The President of the P.P.A., in casually commenting upon the suggestion, spoke of it as being a dream of the future, which could scarcely be put in practice until the advent of a millennium. In conversation with other photographers, however, we found that, so far from being an unaccomplished ideal, it is, in certain cases, a standard of conduct to which, within certain limits, they adhere in their business. Obviously certain photographers have facilities for doing work beyond the command of others, but every photographer must have in mind the many occasions on which business is lost to him as a result of customers taking prints to competitors and having work done by them which, strictly speaking, represents the skill of the studio where the portraits were made. We must not be understood as endeavouring to lay down a moral or ethical code to which photographers should subscribe. Our suggestion was made with the aim that such a policy, among photographers, of supporting each other would inevitably strengthen their relations with the public and would, as a result, contribute to the realisation of the aim which we believe is before all portraitists, namely, the raising of the status of the professional photographer.

# THE PROFESSIONAL PHOTOGRAPHERS' CONGRESS.

## II.

It says much for the organisation of the crowded programme, which the Professional Photographers' Association carried out last week, that from first to last the meetings and excursions passed off most successfully without a hitch of any kind. In only one respect perhaps could the arrangements have been better made for those attending the Congress, namely, as regards the accommodation for the evening meetings. At the lecture delivered by Mr. T. C. Turner on the Tuesday evening the meeting room was crowded to the point of distinct discomfort and to an almost like degree at the lecture on the Wednesday by Mr. Drinkwater Butt. As was, however, pointed out by Mr. Alfred Ellis at the dinner, the committee necessarily had to make its arrangements some time in advance, and the crowded state of the meetings was simply a consequence of the omission of many members to signify their intention of attending until the last moment. Had the committee been informed at an earlier date of the actual number of members who would be present a larger hall could have been placed at the disposal of the Congress. It is to be hoped that members will bear this fact in mind in signifying their intention to attend the Congress which, as seems practically certain, will be held in 1912. With a full knowledge of the numbers to be catered for the committee could doubtless arrange a series of actual demonstrations such as were given, again at considerable inconvenience, on the occasion of last year's Congress.

In this issue we are able to reprint the paper by Mr. T. C. Turner on artificial light in photography, a contribution to the subject which at the present day is of the greatest importance to photographers of all classes. Mr. Turner, as one of the oldest and most experienced users of artificial light, both in and away from the studio, dealt very thoroughly with all the commercial systems which are available, while he drove home, by a number of instances, the many commercial advantages of artificial lighting.

On the visits to the works of Messrs. Houghtons, Ltd., at Walthamstow, and to the Platinotype Company at Penge, members of the Congress were made no less welcome than at those of the Kodak Company at Harrow visited on the Tuesday. We were glad to see that the dinner, held at the Criterion Restaurant on Thursday, was largely attended by members of the photographic trade: among other good results of the Congress must be numbered the bringing together, under the most favourable auspices, of photographers and those who, as manufacturers of photographic materials and apparatus, have interests largely in common with proprietors or managers of studios.

Throughout the proceedings last week the enthusiasm which marked the first meetings reported in our issue of last week was fully maintained, and professional photographers as a body may be congratulated on having awakened to the great advantages of gathering together in numbers and exchanging views upon the many vital questions which affect their business affairs. At the meeting held on Tuesday evening the following message was sent to H.M. the King, its dispatch being the unanimous wish of the members.

> May it please your Majesty. We, the members of the Professional Photographers' Association of Great Britain assembled in Congress, beg humbly to tender to your Majesty the expression of our united devotion and loyalty to the throne and to your most gracious and illustrious person. On behalf of the Association,
>
> Frank P. Moffat,
> President.

To which the following reply, dated May 18, was received:—

> BUCKINGHAM PALACE—O.H.M.S.
>
> The President of the Professional Photographers' Association, Horticultural Hall, Westminster:—
>
> The King thanks the members of the Professional Photographers' Association assembled in Congress for their kind message conveyed in your telegram.
>
> C. Wigram,
> Equerry.

Our space this week does not allow us to complete the reports of all the papers read before the Congress, but we hope to conclude our record of a memorable series of meetings in next week's number of the "British Journal."

## ARTIFICIAL LIGHTING IN PHOTOGRAPHY.

[A Lecture (illustrated with nearly 200 slides, mostly made by T. C. Turner) delivered at the Second Congress of the P.P.A. held at the Horticultural Hall, Westminster, May 16, 1911, by T. C. Turner, of London and Hull.]

The subject of artificial lighting in photography must appeal to us with increasing interest, if we cease to regard substitutes for daylight as necessary evils in a somewhat unfortunate position. It is still quite a common experience to meet operators who dislike, or, at least, distrust, the use of any artificial illuminant, whether flashlight, gas, or even the electric arc. This may be due to conservative tendencies, or to a natural instinct of appreciation for sunlight, and a business life carried on under its happier, healthier influence. There are, however, signs which point to the ultimate disappearance of the daylight studio, to be replaced by the square and lofty room, artistically furnished, and lighted entirely by artificial means. Opinions may vary on the superiority of artificial light for all conditions of indoor photography, but we cannot ignore the fact that a large and constantly increasing amount of work is now done without daylight, and without loss of quality. In portrait making an alternative to the light of the sun is a *necessity*, for the public is not slow to consider the equipment of a studio at fault if sitters are sent away for bad weather or failing light. The old excuses for dilatory execution of print orders have ceased to be valid. The engagements of a professional firm can be kept with the punctuality observed by other men of business, and this is owing *largely*, if not entirely, to artificial lighting in photography. Financial problems of twenty years ago have been simplified to a great extent, and excellent apparatus is to be obtained at such moderate cost that no professional can afford to remain inert for a portion of his time.

Success in artificial lighting is worth striving for! It has enabled scores of photographers to avoid the misfortune of compulsory and debilitating hibernations, and—if the problem of natural colour work is ever satisfactorily solved—the men who are experts in electric lighting will probably make the most rapid and profitable headway under the new conditions.

In the early days of photography the vagaries of climate and the months of slow winter light caused so much anxiety that all sorts of devices to help out the exposures with magnesium ribbon were in vogue during the sixties and early seventies. One or two enterprising professionals attempted to solve the difficulty of photography after dusk by setting up batteries for the voltaic arc, but the expense of construction was very heavy, and the cells were troublesome and cumbersome to manage. Photography by artificial light was hardly on a sound footing until Henry Van der Weyde installed gas engine and dynamo in the basement of his Regent Street premises in the year 1877. And Mr. James Lauder (Lafayette) followed his example in Dublin three years later. Mr. Van der Weyde placed the carbons in a large cup-shaped reflector, cutting off the direct light of the arc by using a small iron basin below the lower carbon. This form of lamp, with slight modifications in the shape and portability of the reflector, and in the number of arcs, is still largely used (in spite of its somewhat ugly appearance in the studio). And this evening you will see many examples of photographs taken with the identical lamp Mr. Van der Weyde employed, and which has been in continuous use in London and Hull ever since. It should be remembered that before the days of the supply of current by electrical corporations photographers were obliged to have their own engine and dynamo, and some idea of the capital outlay involved, and the cost of working, may be gained from the view of the machinery house erected for the electrical installation at Barnsbury Park several years ago.

Electric lighting holds chief place among our available means of artificial illumination, because photographers in London, and all the larger towns, have the current mains at their doors, and there is practically no limit to the amount that can be drawn from the supply. It is for this reason that the greater portion of this evening's paper is devoted to the consideration of photography by electric light, and, through the courtesy of Messrs. Ellis and Walery, Speaight, Gill, Robinson, Gray, and Corbett, I am able to supplement my own slides with several from the negatives of these well-known artists. You will also be able to see on the screen photographs of most of the well-accredited lamps now being used, which have been kindly sent by various makers.

It is natural for us to have personal preferences in this matter of apparatus, for we all have special business needs peculiar to ourselves, but I have taken care to include only those methods of lighting which I know from personal experience are practicable—and those lamps which are held in high esteem among leaders in our profession.

You will find arrangements for utilising the open arc, the enclosed arc, and the mercury vapour tube: for photographers are obliged to choose one of these systems if adopting electricity.

Some technical knowledge of electrical matters is an advantage to operators who desire to work away from the fixed installation of the studio, otherwise few commissions can be accepted safely without expert assistance in adapting the apparatus to work on other circuits.

In the wet-plate days a photographer had to be something of a chemist to be able to avoid, or remedy, a breakdown with his baths. Now, with so much perfection in the manufacture of plates and printing papers, he may find time to study the scientific aspect of artificial lighting.

Perhaps a few brief notes on the units of measurement used in current electricity may with advantage be given at this point. Electric current is of two kinds, "alternating" and "continuous." The alternating is supplied at various pressures and different frequences, and the continuous at various pressures.

Electric pressure is termed electro-motive force (E.M.F.), and is measured in "volts." The amount of current, or *flow* of electricity is referred to in "ampères."

The flow of current depends greatly upon the resistance of the circuit, and this is estimated in "ohms."

If the electro-motive force (in volts) be multiplied by the current in ampères, the result is the electrical activity shown in "watts," and the "Board of Trade Unit" is defined as one thousand watts maintained for one hour—termed a kilowatt hour.

The famous law discovered by Dr. Ohm shows the relation of the three units, "volt," "ohm," and "ampère" to each other.

He found that the strength of the current varies directly as the electro-motive force, and inversely as the resistance of the circuit stated more definitely. The number of ampères of current flowing through a circuit is equal to the number of volts of electro-motive force divided by the number of ohms of resistance. Put in the form of an equation:

$$C = \frac{E}{R}. \qquad E = C \times R \qquad \text{and } R = \frac{E}{C}.$$

If any two quantities are known, the third can be determined. The current required for an arc depends upon the size of the carbons, and both depend upon the candle-power of the lamp.

The pressure depends on, firstly, whether the current is direct or alternating; secondly, whether the arc is open or enclosed; and, thirdly, whether the lamp is adjusted for a short or a long arc.

When the circuit pressure exceeds that necessary for the proper maintenance of the arc, the surplus must be cut down by means of a resistance coil.

For the ordinary open arc of the old style a pressure of 45 volts between the carbons and 20 in the resistance was sufficient. It is therefore obvious that with a 200- or 220-volt supply there must be enormous waste of electrical energy if a single open arc is still used.

Modern open-arc lamps are therefore arranged so that pairs of carbons can be worked in "series"—that is to say, the current is made to pass through first one pair, and then others, each pair absorbing its quota of volts, so that nearly the whole of the electrical energy can be transformed into light, instead of dissipated in heating up a large resistance.

The excellent lamps known as the "Jupiter" and the "North-light," to which I shall again refer, are designed with this special object in view.

If open-arc lighting is selected, choice may be made between the automatic or hand-fed apparatus. Either has its special merits. Hand-fed lamps may be made inexpensively, and a little practice enables one to work them with ease. They do not get out of order readily, and the candle-power can be varied by changing the size of the carbons and regulating the resistances to suit them.

For travelling about, hand-fed apparatus has the advantage of comparative immunity from accidental damage, and the simplicity of its construction renders it more suitable for the assistant of slight experience in electrical matters. In the fixed studio installation the automatic lamp, if well made, and properly adjusted at the start, is a great boon, and is worth the extra cost. To be able to pose and light without troubling as to the feeding of the lamp is an advantage both to the operator and the sitter. But if the shunt or series coils are not working properly the arc may be too long or too short. It is easy to tell when the arc is burning short by the hissing noise and a somewhat warmer tone in the light, which is only partially diffused, and may be quite shut in by mushrooms or excrescences round the positive or crater carbon.

When the arc is too long the light will be of a flaming nature, and is easily extinguished by any diminution of the current strength. A slightly flaming arc allows of the quickest exposures, but the modelling is not quite so good with faces naturally inclined to photograph harshly. It is important to work automatic lamps at the angle for which they have been best balanced, and not to disregard the need for first-class carbons.

A lamp may burn in a fearsome manner with one make of carbons, and become as silent as a Trappist monk with another. The safety fuse should always be light enough to protect the main fuse of any building in which one may be called to operate, and it is advisable to make sure that the lamp itself is well insulated from the reflector and stand. Otherwise unpleasant surprises are possible.

I well remember an incident which happened several years ago on the stage of the Haymarket Theatre, and the alarm caused among the ladies of the company through an accidental "short." The iron stand carrying the lamp had been pushed against a metal grating, which in some way made a good "earth," and exciting firework effects lasted for a second or two, until the main fuse gave out, leaving us in darkness.

A first experience of a tear and flash of a heavy current "shorting" is a little unnerving, especially if the operator is unable to discern quickly the cause of mishap.

For theatrical photography I have always employed open-arc lighting, because of the immense amount of light which can be got under control: when the arcs are placed in the cupola reflector and hung above the stage centre, the position and angle of the light can be so easily directed by means of cords. This is perhaps more suitable for small groupings or individual studies, such as those shown of Sir Herbert Tree, Sir Charles Wyndham, and Mr. Forbes-Robertson; but it can be used for the whole stage, as evidenced by the forum scene in "Julius Cæsar" at His Majesty's. Mr. Alfred Ellis uses, in addition to the arcs, several Cooper Hewitt tubes, and his method illustrated by photographs taken at the Empire and other theatres is certainly very effective when the stage is large and the scenery deep-set.

Triple open-arc lamps of the Boardman type are placed on either side of the stage behind the proscenium, and the tubes, 24 inches long—running three in series—are mounted on boards and hung from the flies. These photographs will arouse much appreciative interest. Open-arc lighting is also used for work in large halls, where congresses are held, and when groups on a big scale are sometimes required.

There seems to be a growing dislike for the results of flash-light photography, due in a measure, perhaps, to the efforts of the less skilful press photographer, whose work is too much rushed for careful and adequate representations. There is no proper reason why a flashlight group should not be successful, but the fact remains that a considerable percentage reproduced in the press is bad. The impression this creates, and the inconvenience of smoke in a badly ventilated building, will often cause magnesium to be barred.

Open-arc lighting on a grand scale is then necessary, and as an illustration a slide is made from a 15-inch negative taken a few months ago, showing a large after-dinner grouping in the Assembly Rooms at Hull. The employees of 25 years' service with the Hull and Barnsley Railway Company were entertaining their directors and chief officials, and the condition attaching to the preparation of a photographic souvenir was that electric light only should be employed. It was a large group, counting three hundred or more figures, and the distance from the front row to the back was no less than 26 feet. The negative was made with a 19-inch Ross-Goerz lens stopped to *f*/11, and exposed for 20 seconds.

This class of photography can be made to pay, for it is not the kind of thing that Tom, Dick, and Harry are prepared to undertake for a postcard issue or to offer as a "free sitting"!

One of the advantages of photography by electric light, at present, is that it cannot thrive on cheap-jack lines, and it can only be done well by people who know the value they give and the responsibility they undertake.

In large country mansions openings often occur to a photographer expert in artificial lighting, and the electric current is nearly always available. Coming-of-age festivities, Christmas family parties and revels, amateur theatricals, provide ample excuse for the presence of the camera. These are occasions when business may be done in an agreeable and profitable manner, for there seems to be a greater tendency for the guests now to preserve twelve- and fifteen-inch souvenirs of house parties than there was ten years ago, when every other man or woman in the country ate, walked, or slept with his own snapshotting kit ever ready at his side.

During the London season, Society—if not distraught with an incessant round of engagements—finds time for studio photography, when a series of Courts, balls, and fashionable weddings may revive in the West End hopes of the good old times returning. It is nearly always *artificial lighting* which brings in the golden harvest. The open-arc lamp has had a fair run in London studios, and is perhaps used to a greater extent than the "enclosed" form, or mercury tube, but the type of lamp that may suit one photographer is not necessarily the best for another: the choice of an installation depends so much upon the characteristics of the portraiture a photographer supplies to his clients.

Take, for example, the installation at Messieurs Speaight's studio. You will not be surprised to find provision made for an enormous amount of light when you remember the special demand made for it in their portrayal of charming children.

And so the photograph represents a regular battery of Boardman "Northlight" quadruple "open"-arcs mounted upon an iron stand, and planned to throw their light on whitened ceiling, curtain, or blind, at will. It is one of the fastest methods of lighting in use, and if it is not new, Messieurs Speaight's fine set of portraits prove that it cannot very well be improved upon.

And not only will the class of business done affect the choice of an installation, but the space available for lamps and accessories, and the electrical knowledge of the operator himself, provide factors which have a definite bearing upon the selection of apparatus.

Broadly speaking, the general lighting characteristics of a photographer's daylight negatives appear sooner or later in his electrically produced results, and the degree of success attained is not so much a matter of the scientific principle of a lamp—its shape or its candle-power—but a question of the *man*, his artistic knowledge, and the ability to put it to good use.

Artificial lighting may to a small degree level up the technical excellence of professional photography, but it does not lessen artistic difficulties for a bad operator. It enormously increases the range for variety in lighting and posing in the work of clever men; they are always at home and at ease by the side of their favourite lamp.

It matters not to them whether they are one day in their own studio and the next in a strange house, or even under the star-lit sky. The lamp is their slave, and the constancy of its light makes all the rest easy and pleasurable.

The question is often asked whether incandescent carbon is preferable to incandescent vapour, or *vice versâ*. It may seem more natural to photograph people under the carbon arc, because its light so nearly gives normal colour effects, but there are many points in favour of the vacuum tube, for its efficiency, actinism, and diffusion are remarkable.

With regard to this latter quality, one of the best-known photographers in London informed me that he found it excessive, and had reverted to the open-arc, using the tubes for printing only.

I think, perhaps, the haze—not to say fog—of a London winter may account partly for this opinion. The open-arc is particularly suitable for the penetration of fog, but great care is needed to keep the camera end of the studio in darkness when the state of the atmosphere tends to throw light into the lens with halation-like effects.

Two of the best-known lamps of the "open"-arc type used by photographers are the "Jupiter" (Griffin's) and the "Northlight" (Marion's), and here I may emphasise the advantages of purchase from firms that specialise for photographers. There are many big electrical houses, with world-wide reputations, which turn out thousands of fine lamps suitable for ordinary lighting purposes, but which are quite unsatisfactory for ours. It is the combination of photographic and electrical knowledge which is so useful, and such firms as the above, the Jandus Arc Lamp Company, the Westminster Engineering Company, Limited, the Westinghouse Cooper Hewitt Company, not to mention others, possess this double qualification, to the great advantage of their photographic clients.

The "Jupiter" lamp (Griffin's) is automatic in action, and gives a very fine white light with two pairs of carbons run in series. By an improved method of control very long arcs are obtained.

On a circuit of 200 volts, 140 are across the two arcs (in series), and 60 volts in the regulating resistance and line wires.

The maximum current consumption on 200 volt direct is 35 ampères. The reflector is of a somewhat unusual kind, and allows of considerable control in the direction or concentration of the rays.

This lamp is effectively used with a large diffusing screen strung with small curtains, or by reflection from a white wall or blind.

At the last Congress, it may be remembered, this lamp was shown here for one of the demonstrations.

Illustrations of the lamp and photographs taken with it will be thrown on the screen. Messrs. Russell and Sons, and Keturah Collins, of London, and Warneuke, of Glasgow, use this lamp.

Another popular lamp for open-arcs is the Boardman "Northlight," made by Marion and Co., and of which no fewer than 700 have already been supplied. This lamp diffuses light on the Van der Weyde principle; it is all reflected. The apparatus can be easily moved about the studio or stage. The reflector is collapsible, and can be swung at will or tilted at any angle, and there are no overhead wires or wheels to become entangled in the studio blinds. On a 200-volt supply four pairs of carbons take up 160 volts, and only 40 are dissipated in the resistance. A regulating resistance is made for this lamp, which allows of considerable range in the number of ampères of current used.

On the first contact stud the whole amount of 7 ohms is in series, and a small current of 12.8 ampères flows. This is quite sufficient for focussing, and then, by moving the switch over the contacts to the last stud, 4 ohms are knocked out, and the full 30 ampères obtained. With this multiple arc it means that when you pay for 30 ampères you are getting the light of 120.

Messrs. Lumière et ses Fils have recently prepared a special filter for the production of Autochromes with this lamp. Besides Messrs. Ellis and Speaight, Madame Lallie Charles and the London Stereoscopic Company are among London users of the "Northlight."

In addition to the studio lamp, Messrs. Marion supply apparatus specially designed for enlarging, copying, lantern-slide making, and also a very good printing lamp, which I show on the screen, photographed in use at Messrs. Speaight's. The manner of its use is very clearly shown. The enlarger will prove invaluable for the making from Autochromes of negatives for either mechanical or chemical or three-colour printing. And, as the light passing through the negative when enlarging is *diffused*, *reflected* light, retouching and other marks do not show on the enlargements. It is well known that when enlarging by artificial light, using a condenser, any blemishes appear in an exaggerated form, and this is quite avoided by the apparatus just introduced.

The body is of lead-coated steel plate, japanned dead white on the inside. And the illumination is derived from automatic multi-carbon arcs. When used on a 200-250 volt supply each lamp carries two pairs of carbons, which are hung one on each side of the negative opening.

Even illumination is obtained by a simple but ingenious method of inserting the carbons in the lamps. The positive is uppermost in one pair, and the negative in the other, so that the maximum light from the crater is thrown upon one side and down on the other. It is then projected by a reflector behind the lamp to the back of the body of the apparatus.

Before leaving the section devoted to "open"-arc lamps, I would draw your attention to a photograph of Mr. Ralph Robinson's studio, which shows this gentleman's arrangements for utilising the arc in conjunction with daylight.

The ordinary light is filtered through white blinds, which also serve the purpose of a reflector for the lamp, travelling laterally on a rail beneath them. It is a practical plan for utilising what daylight there may be on a dull day, and for assisting it with the piquancy, speed, and concentration of the arc.

### "Enclosed" Arc Lamps.

In 1895 the "Jandus" enclosed arc lamp was introduced into this country, and this was practically the first of a type which is now in extensive use in photographic studios.

As the name suggests, this arc is formed in a compartment from which the air is more or less excluded. When the arc is established, the carbon combines with the air and forms carbon dioxide, which fills the globe and prevents further access of air.

Being a non-supporter of combustion, the carbons do not volatilise so rapidly, and consequently last much longer—about ten times as long as in the open-arc. The carbons do not become conical, since their chief loss is due to volatilisation rather than actual burning, and they remain more or less flat.

This flattening would be a decided disadvantage were it not for the fact that the carbons are much further apart than in the open-arc. If they were closer, it would result in the lower one obscuring more light from the upper.

The advantages of the "*enclosed*" over "open" arcs are shown in several directions. With an extended arc a higher potential difference is possible, so that single lamps can be better adapted for working on existing pressures. There is a greater element of safety with enclosed arcs, since there is less risk from sparks or falling carbons, and, lastly, the studio is kept cleaner, and the air considerably purer. A certain *disadvantage* is noticed when the arc moving over the flat ends of the carbons produces some unsteadiness of the light.

These lamps require considerable softening of the direct light, either through papier minéral, china silk tracing cloth, or even ground glass. Many of my audience will remember Mr. W. E. Gray's demonstration with the Westminster enclosed arc at last year's Congress, and his manner of softening the direct rays without unduly curtailing light from the reflector behind the lamp. An oval patch about 4 x 3 is ground by the sand blast on to the circular glass of the lamp, and then between this and the sitter a screen of white silk is placed to still further diffuse the light. Mr. Gray kindly contributes four examples of his own portraiture.

Mr. A. Corbett uses the enclosed arc on lines which are somewhat similar. His disposition of the lamp and screens is shown, and also several of the results he obtains with this treatment. At the Polytechnic Mr. Howard Farmer's praise of the enclosed arc is lavish, and he has expressed the opinion that, by comparison, the old type of lamp used by photographers "is only fit for the scrap-heap."

Great improvements have recently been made with these lamps, but ten years ago, after a fairly exhaustive test in portrait-making, I gave up the "enclosed" for my old love, the "open" arc. The extra speed of the newer, more violet light did not compensate for the loss of a more orthochromatic rendering with the yellower open-arc.

But to-day a photographer may have a great range of coloured lights, which are obtained by introducing different chemicals into the carbons, and which provide red, yellow, green, or violet rays, as desired.

In the new Regenerative Lamp of the Jandus Company, the light, while containing all colours from the red to the violet end, has a superabundance in the yellow. This is a practical equivalent to working with a yellow filter, and, in conjunction with a colour-sensitive plate, should give a truer tonal effect than the lamp supplying violet rays in excess.

I do not think this use of different carbons in the enclosed arc has been pushed to its fullest possibilities in portrait studios, for in all those I have recently been privileged to see I found violet light alone.

And then the idea seems to be widely held that the "enclosed arc" is pre-eminent in the formation of ultra-violet (invisible) rays, and that these have some supreme photographic virtue!

I may be mistaken, but the presence of these rays outside the lamp cylinders seems open to doubt, for glass cuts off ultra-violet light, and most lenses do the same.

It is more probable that the rapid molecular disintegration of the silver salts is due to the *violet visible* rays, which are far less mysterious, and certainly less harmful to our health.

The light-waves which give the sensation we call violet are vibrating at a rate of over 700 billions per second; when they rise to 2,000 billions the ultra violet region is reached. The Röntgen waves possibly run into trillions, and physiologists tell us that these vibrations of incomprehensible frequency beyond the violet are liable to cause serious damage to human tissue exposed for any length of time to their action. But we do not hear of an ultra-violet tragedy among workers with the enclosed arc!

I have noticed that some printers suffer temporary inflammation of the conjunctiva after recklessly looking at the light. When the enclosed arc is used for printing, a shade should always be in position *over* the lamp, and an effort made to avoid sudden movements from the blinding glare into the yellow or ruby glazed "dark"-room. While on the subject of printing I may mention that photographers obtain the quickest results (not necessarily in the cheapest way) by using the enclosed arc for all silver papers, and the open arc for carbon. The mercury-vapour lamp is most *economical*, and for printing in platinotype is absolutely ideal.

The choice of a lamp of the enclosed type is not easy to make, for there are several of excellent construction on the market. In addition to the Jandus Arc Company, the Westminster Engineering Company supply lamps which have a high reputation. Their latest patterns are the "Toplight" lamp for portraiture, and the "Westminster" projection lamp for enlarging purposes.

Then the Kodak Company have brought out the "Actinae" and the "Invarae," and both these lamps are ingenious in construction and admirable in action.

There are several slides of all these lamps, but, as the apparatus is on view in the Exhibition, a detailed description may be safely left to the gentlemen in the large hall below.

The Kodak Company have also a number of very useful accessories for electric light workers, such as the "Universal" head and side screen, the Kodak "Diaphragm" screen, and the "Century" head screen, while the "Aristo" printing cabinet—an old and valued friend to many—will bear careful consideration by those who fume and fret over the disappointments and drawbacks of daylight winter printing.

### The Mercury Tube.

So far we have been dealing with light which depends upon the incandescence of a solid body in a finely divided state. Now we turn to the Cooper Hewitt lamp, which derives its light from the gas, or vapour, of mercury, raised to a high state of incandescence by the passage of the electric current through it in a vacuum tube.

If there is any difficulty in the use of the open or enclosed arc, it is generally found in a lack of proper diffusion, even when the light of a powerful arc is *reflected.*

With the Cooper Hewitt tube the candle-power per square inch is only one three-thousandth of the arc, consequently it *cannot* cast a sharp, heavy shadow—indeed, the lighting of the model may be accomplished satisfactorily without diffusing screen or reflector.

The extraordinary interest which the lamp has created in photographic circles is, however, due to qualities other than this.

It is a pure violet light, and consequently at the end of the spectrum which has the greatest photographic action. A trial plate with this lamp is nearly always over-exposed, for the visual effect is deceptive.

The light is flickerless and of uniform intensity, which makes it of supreme value in the enlarging room, from which the condenser may be banished. The efficiency is so high that the lamp requires only .33 watt per candle-power, and this, combined with the actinic value of the light itself, makes it the most economical light in the world—with one exception, the "Silica," to which I shall presently refer, and which absorbs only .22 watt per candle-power. With all these admirable qualities, the monochromatic light has the inseparable drawback of distorting colour values, and therefore of producing a weird look upon the sitter's face.

I do not think this matters when the sittings are "for men only"; the masculine mind seems to be amused, and often it is the means of an excellent expression being caught.

Ladies do not take quite so kindly to it, and it may be doubted if children are so quickly drawn to an operator whose face is a study in green with purple patches. We are obliged to consider the sitter's impression while in the studio, and it therefore becomes important for us to find, if possible, a means of remedying this one drawback. At present two methods are on trial. One is to introduce red rays by passing the light of a bunch of metal filament lamps through light red glass placed as near as convenient to the sitter.

This does not relieve the post-mortem appearance of the operator, but it saves the sitter, at all events, some of the more discouraging comments of her friends. Another plan is to lower the vibration frequency of the violet light falling on a fluorescent reflector on a screen placed in *front* of the tubes.

For this latter purpose muslin is steeped in a chemical solution of rhodamine and hung before the lamp. This fluoresces and emits a certain amount of reddish light, but it also cuts off about 20 per cent. of the actinic light, and the screen itself requires renewing about every three months.

The photographs taken in my studio at Hull a few nights ago will show to those of our members unfamiliar with mercury-tube arrangements the general appearance of the Cooper Hewitt apparatus and the lamp more recently introduced by the Westinghouse Cooper Hewitt Company known as the "Silica," a mercury-vapour lamp also, and automatic. When this lamp was placed in the cupola reflector at Regent House, it was, I believe, the first time the Silica light had been brought into use in a photographic studio, and the first few sitters taken with it have been reproduced as slides for your examination on the screen to-night.

The stand for the Cooper Hewitt light is wired for two K tubes run in series, and two long reflectors fixed upon the ends of the cross arm allow the vacuum tubes clipped underneath to be tilted.

When the switch has been closed the mercury resting in the bulb of the negative end, or cathode, of the tube is allowed to run to the positive end, and this short-circuits the two electrodes. Immediately this takes place the tubes light up, and they are then returned slowly to their normal position. One special precaution is necessary, or the tubes are destroyed in a few minutes. They *must be connected up to the right polarity.* This can be ascertained by means of the pole-testing paper, remembering that the negative pole gives a red stain on the paper when moistened. The two electrodes fused through the glass, called respectively the anode (road up) and kathode (road down), are marked plus and minus.

The makers of the lamp insist that the tubes shall not be allowed to burn with the kathode uppermost—probably for the reason that the iron anode would burn and break down the vacuum if the mercury collected at that end. If you look down one of these lighted tubes into the blackened bulb you will see a bright spot of brilliant light jumping over the mercury surface.

It is safe in the bulb end, but nowhere else. Now, this lamp has a consumption of only 3½ ampères at 200-250 volts, and develops 2,000 candle-power.

The practical bearing of this statement is that it can be brought into use in any house of ordinary electric wiring, provided it is supplied with continuous current. But even the difficulty of an alternating current may be overcome, for yesterday morning I received a new May List from the Westinghouse Company, which describes a new converter for transforming the alternating current into a direct supply. This is an important introduction for those photographers who desire the mercury lamp, but have the wrong kind of current, and the invention will also effect a great saving in cinematograph exhibitions, where direct current is highly preferable for operating projection arcs.

I have already alluded to the value of the mercury tube in the enlarging camera, where its unvarying intensity is a great asset.

The company have brought out a special enlarging outfit, which is destined to a sphere of great usefulness.

The mercury tube as a printer is becoming increasingly welcome; the practical absence of heat from the glass, the diffusion of the light, and the economy of the current renders it of special service. The Platinotype Company have devised a very useful printing outfit for this tube, with a capacity for eighteen half-plates or nine whole-plates, and you will no doubt see this at the company's works when you visit Penge.

A profound impression is made upon the photographic mind when entering a mercury-vapour printing room in full swing.

My first experience was at Messrs. Lafayette's, where Mr.

James Lauder kindly showed me the basement of his Bond Street studio filled with ghostly looking printers, pegging away as if, instead of electricity, a burst of May sunlight had caused them all to "hurry up." It was an amusing sight; it was instructive also!

All round the West End the mercury tube is in evidence, at Messrs. Ellis and Walery's, the Dover Street Studios, Messrs. Foulsham and Banfield's, at Mr. Barnett's, and many other studios; not alone, it is true, for the "open arc" or the "enclosed" are installed in nearly all of them.

Mr. Banfield is particularly enamoured with his enclosed arcs, and Mr. Ellis and Mr. Lauder with the open arcs. The excellence of the work of all these firms conclusively proves—as, I hope, my lecture suggests—that each of the electrical systems has a distinct use, and the perfectly fitted studio should now-a-days have them all.

The mercury tube is indispensable for the process worker, who is able to take the source of light to within a few inches of his subject, and it may be seen employed in this way by Carl Hentschel, Limited, in Fleet Street, and the Anglo-Engraving Company in Chancery Lane; while, among renowned cinematograph film producers, such firms as the Charles Urban Company, of Wardour Street, and Pathé Frères, of Paris, attest, by their great use of the mercury vapour tube, their appreciation of its extreme actinic qualities.

Before bringing this lengthy review of photo-electric lamps to a conclusion, a few words must be spared for the Westinghouse "Silica" light, of which a similar type of lamp is made by the Brush Electrical Company, under the name of "Quartzlite." The difference between the Cooper Hewitt light and these later mercury tubes is, from a practical point of view, one of compactness. The long glass has dwindled down to a short quartz tube (of about 4 inches), automatically tilted when the current is switched on.

Quartz has two special attributes, one being that it is possible to withstand enormous temperatures without fusing, and the other that it passes the ultra-violet rays. The former quality allows of the concentration of the 3,000 candle-power into a small and convenient compass within a lamp of ordinary shape and proportion, and the other makes the light such a powerful germicide that it is actually in use at Marseilles for the sterilisation of the water supply. This property is removed by the outer glass globe, which completely cuts off the ultra-violet, but it is necessary to remember that a naked quartz light should not be looked at.

In the "English Mechanic" for April 7, the report of the Quekett Microscopical meeting at Hanover Square included a paper by Mr. A. C. Banfield on "A New Quartz Mercury-Vapour Lamp." Mr. Banfield's reputation as a scientific as well as an artistic photographer induced me to pay him a visit, and although I found his application of the light was to work with the microscope, I saw no reason why it should not be successfully tried for portraiture. Now, you will see the Silica lamp lighting up the Boardman open arc and the Cooper Hewitt apparatus in the Hull studio, and if it is too soon to express a well-considered opinion, I think you will find, from the photographs made with this light so far, that it is a lamp deserving close attention and experiment.

It may be placed midway between the arc and the Cooper Hewitt tube, for it has neither the sharp shadow-forming characteristic of the former nor the extreme diffusion of the latter. The light is rather greener than violet, and appears to possess that eerie quality of seeming to go round corners. I understand that Messrs. Vickers, Sons, and Maxim have just recently brought a large number of Silica lamps for their Sheffield works, and that some are hung as high as ninety feet above the floor of the casting pits. This will show how all-pervading the light must be. Looked at, it does not seem an extravagantly brilliant light, and yet in some way *you see things* with it at a great distance.

### Gas.

I do not think a photographer is likely to install gas if he has the choice of electricity, but there are situations in which it is *gas or nothing*.

He must face the alternatives of being roasted or "frozen out" in a business sense when the Christmas season comes on.

The heating of the studio atmosphere by a powerful gas light installation is its only drawback; the quality of the portraiture done with it can be made fully equal to anything done with electric or flashlight, if its use is limited to the ordinary requirements of photographers, and groupings of reasonable size and difficulty.

To some extent, we produce the light of the enclosed arc (when the carbons are giving a yellowish light), but, although not so quick as the arc, it requires far less diffusion to make the light of the requisite softness.

Gas gives to us a screened effect—without a yellow screen being employed—and, naturally, less retouching is required. I believe if orthochromatic plates, or even panchromatic plates, were employed, some quite surprising results would be obtained; but in the past gas has been rather the Cinderella of artificial lighting, and its advocates have not always been men of the first rank in photography. They have kept too much to the ordinary plate, and a strong, quick-acting developer, and these are not the best means for getting the maximum effect out of gas. In the Exhibition we have the advantage of seeing two of the best gas using apparatuses on the market—the "Howellite" and the "Powerful." The mantles of the former, made on the Plaisetty principle, are the invention of Mr. Thomas Terrell, K.C.; and represent a great advance upon the older stiff collodionised form.

This new flexible mantle shapes itself to the burner flame whatever pressure is supplied, and its lasting qualities are three or four time as good as any other.

Naturally, the main battery of lights will be kept down as much as possible, when it then consumes about four feet an hour. At full pressure this is increased to 36 feet.

The method of mounting the mantles in front of an iron reflector (aluminium-coated) is a good one, and the coating lends itself readily to a further covering of matte white, which many operators will prefer.

I was agreeably surprised to find the sliding frame and balance weights of sound, practical workmanship, for the illustrations in the Press give one the impression that it is heavy and clumsy to move about.

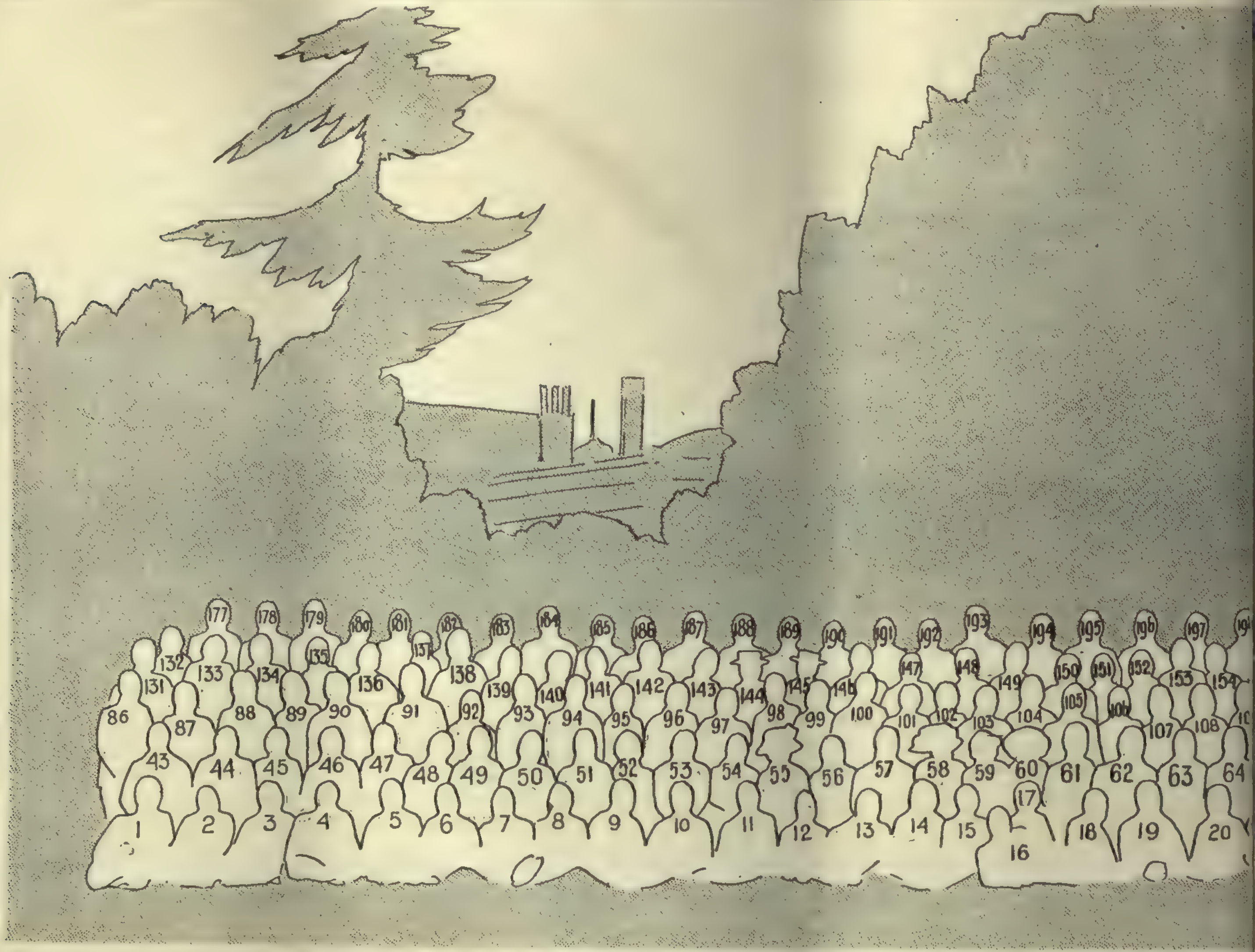
An older lamp, but one which has done a very great deal of useful work all over the country, is the "Powerful," supplied by the Kodak Company. This lamp is no toy, and, although it is a cheap lamp, thousands of photographs are made with it every winter. I am indebted to Mr. W. Taylor, of Morecambe, for several slides made with this light, and from which you may form an opinion of the lamp's efficiency.

### Photography by Flashlight.

It goes without saying that the operator who is at home with the electric lamp in the studio finds no difficulty with flashlight, for exactly the same principles with regard to modelling hold good in both cases. High-lights must not be over-exposed, and yet the deepest shadows require detail. Just as he avoids the harsh glare of a great open light of clear glass, or a concentrated brilliancy of the electric arc, so he is ever on his guard against the fierce blaze of a naked magnesium light, and its sooty and chalky effects.

It is the nice "balance" of light and shade that is so important, and which distance, angle, and diffusion combine to give.

*Continued on page 404.*



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106. A. G. Bolw
107. A. Gregg
108. T. Lee Sym
109. Oscar Hard
110. J. Walker
111. W. Coles (
112. Graystone
113. B. Killick (
114. D. Osborne
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116. C. Speight
117. W. H. Cox
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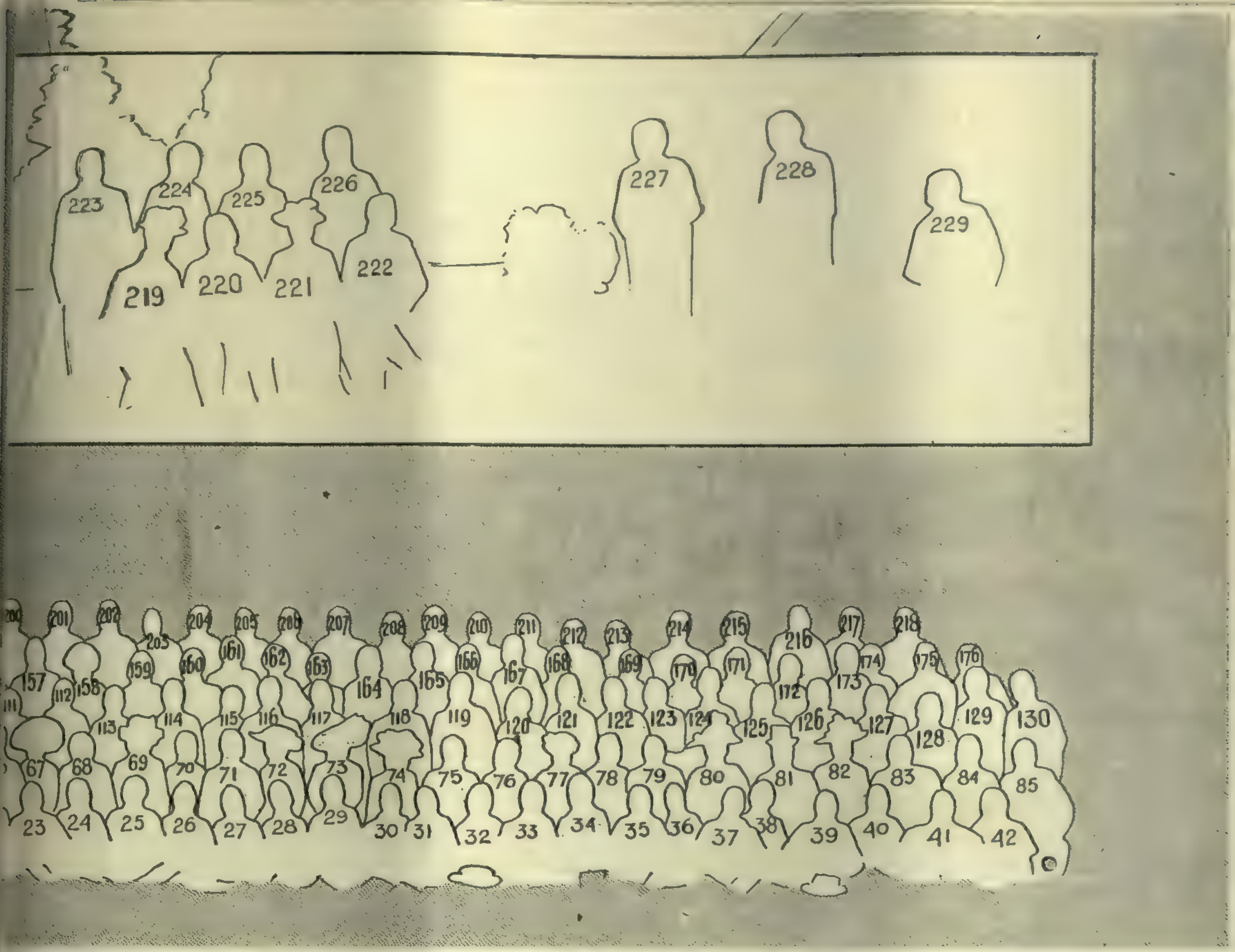
121. F. Thursto
122. D. Murray
123. F. Spalding
124. A. Whitlo
125. Clare Speig
126. E. Wilkins
127. F. P. Med
128. G. A. Hale
129. F. G. Hut
130. H. Samsen
131. W. J. Wes
132. J. Muller (



PHOTOGRAPHERS' ASSOCIATION, HELD MAY 15-19.

isit to the factories of Messrs. Kodak, Ltd., Harrow. A reproduction of the group was presented as a supplement to our issue of last week.

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153. A. E. Parkin (Hull).
154. W. Davey, jun. (Harrogate).
155. A. McCann (Uttoxeter).
156. J. S. Simnett (Burton-on-Trent).
157. W. E. Sorrell (Crouch End).
158. Mrs. W. E. Sorrell (Crouch End).
159. T. R. Hammond (Conway).
160. J. H. Coath (Liskeard).
161. C. W. Cole (Feltham).
162. J. A. Woodhead (Bradford).
163. A. J. Bailey (Pimlico).
164. J. S. Catford (Kingston-on-Thames).
165. J. Norval (Dumfermline).
166. H. Thurston (Luton).
167. B. Clark (Wolverhampton).
168. F. Robinson (Camberley).
169. J. S. Bullen (Grimsby).
170. H. Osguthorpe (Spennymoor).
171. A. W. Lee (Muswell Hill).
172. G. Faulkner (Upper Holloway).
173. A. O. Forrest (Pontypridd).
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205. A. C. Bailey (Battersea).
206. A. Hayward (Lavender Hill).
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214. H. Mansell (Saffron Walden).
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216. R. Owen (Glasgow).
217. G. H. Balmain (Edinburgh).
218. T. Lambkin.
219. Mrs. Bond Sims (Southsea).
220. Lang Sims (London).
221. Mrs. Lang Sims (London).
222. Alfred Ellis (London).
223. J. B. Major.
224. T. Bond Sims (Southsea).
225. E. Sweetland (High Wycombe).
226. J. Hughes.
227. A. Catford (Kodak, Ltd.).
288. S. V. Haus (Kodak, Ltd.).
229. Arthur E. Lane (London).

*Continued from page 401.*

The secret of good modelling does not lie in the provision of an immense light, but rather in trying one's best to do with the smallest amount possible, so that we preserve all our scale of tones.

As an artist often paints with greater breadth in a dimly lighted room, so photographers gain increased restfulness in their work by avoiding crude, powerful, general lighting.

Does not the *twilight* of this brilliant May day appeal strongly to our æsthetic sense? And the studio light which most of us desire is the one in which we see least of the garishness of mid-day effects.

So, to be successful with flashlight we must avoid the sharp, unflattering shadow at all costs, by using diffusing media, reflected light, as wide a flame as possible, and by avoiding too frontal and low a position of the light itself.

I do not remember seeing a studio which has been given up entirely to flashlight work, but for children's portraiture or for animal photography one can well understand the good purpose to which such a place may be put. The nearest approach to ideal conditions is perhaps made by those photographers who provide a small independent box to place against the ordinary studio side-light. If this is high enough, the chamber painted dead white, the studio glass ground or matted, and the flash fired electrically, a very useful auxiliary to other lighting is made in a comparatively simple manner.

In these days of growing popularity for the Autochrome, some such adjunct may become a necessity, for the continued combustion of magnesium in any apartment gives to it a permanent evil odour, and to the furniture an unpleasant, sticky touch.

But it is when away from the studio that flashlight has its greatest use to the majority of photographers. It is almost a rule in my own establishments that a supply of "Ideal" or other good powder shall be carried in the camera case, for as a *time-saver* it is often equivalent to one, or even two, extra cameras at work. Let me give an example. Some months ago a lady in the country owning a great London house overlooking St. James's Park, which she had let furnished for the season, desired a photographic inventory of certain valuable furniture, objets d'art, etc.

In giving the commission, she asked that her tenant should be disturbed to the least degree possible, and that the work should be carried out with extreme celerity (three days). The list of articles ran into three figures, ranging from miniatures, vases, engravings, paintings, to Louis chairs, Chippendale cabinets, Sheraton bureaux, and Tudor bedsteads.

At a glance, it looked like weeks of work; and, as the articles were spread all over a great building, to move them would require a small army of workpeople.

Using daylight for all the small articles that could be easily set up within proper distance of the windows, we flashlighted the rest with perfect satisfaction to our client, who to this day is unaware of the manner in which we accomplished the feat. I should perhaps mention that in many cases we were obliged to hang or stretch large sheets behind the pieces, and in others to use orthochromatic plates and screens, and these considerations added to the difficulty of getting through in time.

And yet another instance. An urgent commission to photograph a valuable old painting, in a country house difficult of access, arrived late one day. "Could it be done without fail that afternoon?" was the message. . . . When I arrived at the station the acetylene lamps of the awaiting car were burning, and the chauffeur wonderingly asked if it was any use taking me up to the house. "Of course"! And when the noble owner of the painting suggested that, after all, I had better come again to-morrow, and *take it properly*, I felt the claims of the modern photographer to be independent of daylight required substantiation at once. Well, you will see a slide of that negative, and it has been enlarged, reduced, and reproduced in all sorts of processes ever since that flashlight exposure was made that night.

Flashlight is useful everywhere. One night after a ball a peeress asked if her tiara of magnificent diamonds could be photographed before it went back to the county bank for safe keeping. I think the slide will show that it could. And, on another occasion, when the days were far too short to deal with a large collection of plate, flashlight was used, and used successfully far into the night, till the upper servant in charge of the plate-room had to cry mercy to go to bed!

Not long ago the magnificent church of the Holy Trinity—the largest parish church in Hull, and, indeed, in England—was found to be in imminent danger of collapse. A narrow passage cut through to the foundations of the tower showed that the wooden piles driven into the clay and silt by thirteenth century builders were rotting through the ever-increasing dryness of the soil. (Hull, in the early days of its history, was built almost in a marsh.)

The vicar wanted the city to know the state of affairs (and also many thousands of pounds to put things right again), so he called and explained his need of a photograph.

I did not enjoy the experience, as he and I crawled on our hands and knees to the spot, but it had to be done, and you will see those tree trunks of the thirteenth century as they appear supporting the foundations—by flashlight.

And there is another similar sort of subject of a central gallery in the "Tomb of the Kings" under Jerusalem. Most photographers on holiday carry magnesium ribbon with them. The Arabs round Jerusalem are such pests with their everlasting cry of "Baksheesh!" that my travelling companion and I determined to explore after dark, when these fellows would be safe in bed. We went in with a candle and a trail of string behind us, to make sure of getting out again, and you will see we got quite a decent photograph that night, to prove to our friends that we had "done the trick"—once again magnesium was our good ally.

And I do not doubt that you, my confrères, could provide many similar subjects proving the constant need of flash-powder or magnesium.

As an aid to justice, flashlight is used continually by the police authorities all over the country, although it may not be generally known, since the photographs are always regarded as confidential documents would be. A few weeks ago a drunken brawl in a Hull slummery led to the death of an unfortunate woman and the firing of the house. The whole scene had to be reconstituted and photographed by flashlight: the position of the quarrelling people; the throwing of the lighted lamp; and then, in the subsequent plates, were the evidences left by the crime in burnt-up furniture and smoke-stained walls.

The "Daily Mirror" is not the only live organisation for photographically recording events from day to day. Among professional workers a great mass of record-taking duty is done quietly and unostentatiously, and nearly always by flashlight.

The usefulness of flashlight makes itself shown at almost every kind of function, on almost every occasion when men or men and women come together in social intercourse. Here we have a photograph of a reception at the Town Hall, a City Council meeting, and another showing the choir of a church after evening service; while dinners, balls, gymnastic displays, amateur theatricals, or concerts, are photographed so constantly that it scarcely becomes a matter of comment when the flash occurs.

And now, to bring this lecture to a conclusion, for I fear the great heat in this crowded room must try everyone severely, may I express the hope that it may be of some slight service in suggesting new fields for the pursuit of financial prosperity—which, after all, is the best wish I can leave you with.

T. C. Turner.

## VISIT TO HOUGHTONS' "ENSIGN" WORKS.

ALTHOUGH it be " wild Walthamstow," as Mr. Edgar Houghton called it, in welcoming the members of the P.P.A. to the " Ensign " works of Houghtons, Ltd., on the Wednesday afternoon of the Congress, the place will have a very pleasant association in future in the minds of the 180 or more who made up the gathering. A special train conveyed the visitors to Wood Street Station, and thence the journey to the works, which are on the borders of Epping Forest, was completed by brakes. The party were in charge of Messrs. E. W. Houghton, C. E. Houghton, E. D. Smith, and Percy G. R. Wright, and these gentlemen were assisted by Messrs. A. F. Loveday, H. V. Cox, E. F. Gilbert, and T. E. Fletcher. A group photograph was taken on arrival, and some daring free-lance also snapped the gathering with an "Ensignette," subsequently making something of a *tour de force* in the way of an enlargement, very successfully, however.

Suitably refreshed after this business, the party separated into groups of ten or twelve and followed guides, who wore " Ensign " badges, round the three factories of which, mainly, the works are made up. The visit to each of these departments occupied an hour, and in the course of the afternoon the visitors glanced at the work of a thousand hands, and were initiated into the mysteries of as many as might be of the 300 mechanically driven machines. With the exception of certain Government contracts, and some scientific instrument making, the whole of this organisation is concentrated upon photographic manufacture.

The Professional Photographers' Congress at the Walthamstow Works of Messrs. Houghtons Limited.

First came the timber yard, where mammoth stacks of wood were ranged in various stages of seasoning. The period necessary for this process varies with the thickness of the wood; generally it is a couple of years, but frequently much longer. The wood was of many sorts—American white wood, teak, ebony, mahogany—and for the most part it was intended for making up into camera bodies. Adjoining was the drying chamber, where, after being " deeped," the wood completed its seasoning at a temperature on ordinary days of 120 degrees. The visitor was next introduced to the huge planing machines, the sanding machines, and the implements used in cross-cutting. Walking down the narrow gangways, one saw enlargers gradually become recognisable, and the frames of cameras grow before the eyes. It was as though the seasoned plank, entering at one end of the factory, and writhing its way through all the processes of combing and dovetailing and rack-cutting and routering and groove-making, could be followed until it reached the other end in the shape of camera bodies and dark-slides, hundreds of which this department turns out daily, or perhaps as camera stands or lantern tables, or cinematograph tripods ten feet high. In an ante-shop was a department where some sixty girls and women were engaged upon the final polishing of the camera wood.

After another brief adjournment to the place of refreshment, the party pursued their way with unflagging interest through the department of metal work. Houghtons appear to make all their own tools, and the highly specialised labour of the men at the various machines was well worth much more detailed study than the company could give to it. Each machine has its allotted task, taking the metal and shaping and turning and drilling it, and grinding its surface, and engraving and riveting, and doing the dozen things that seem to be necessary to bring to perfection even such an article as a focussing plate, or to pierce the holes for a shutter foundation, or to cut out the sheath which is used in a magazine camera. Perhaps the most fascinating thing in the department was the automatic screw-maker. Certainly it possessed a brain somewhere in its mechanism, for, taking up its infinitesimal bit of material, it did the shaping, cut a screw thread, pointed the end and nicked the head, and handed out the tiny screw which is used in a camera like the " Ensignette." Here, too, as the fruit of what Mr. Mantalini would call " a most demnition grind," was shown the making of spool-ends by the million. Where they all go to must ever remain a mystery. In process of time there can be no square inch of the earth's surface that is not covered by one of them. In the same building which sees the metal work carried out from first to last, the cameras also are finished. There were rolls of leather in the rough, ready for the paring, and for that operation which is another mystery—save to the inscrutably smiling worker—namely, the folding of the camera bellows. Girls were stitching the camera straps; boys—artists in black!—spraying black on to those parts of the nearly finished mechanism which required it; others attending the electro-plating, where, in the great tub, the electrical current itself deposited the coat of nickel or whatever it might be; and elsewhere highly skilled workers were putting together the metal fittings and joining the wooden bodies to the metal parts, until, one of many freshly created things, but in bulk the chief of them, stood a 15 x 15 studio camera with its four feet extension.

The last department to be traversed was the mount factory, which was originally carried on by Mr. F. G. Fordham as Fordham and Co. The interests of the Houghton and Fordham firms are now closely allied, but the factory remains under the management of Mr. F. G. Fordham. This department furnished a living picture of the progress of delicately finished mounts from the crude stage of the raw wood pulp. Artistically, this was the most interesting department of the three. The printing and embossing was a wonderfully attractive process. There was a machine which did colour embossing practically automatically; another which gave the mount its desired grain; another which cut out ovals at a speed of 1,800 an hour; others were guillotines for trimming edges, and rotary wheels which could be regulated to "scissor" any length of card. Again, there were the highly skilled workers in this department who imparted the deckled effect, and others who printed in gold. Gold printing cannot be carried out directly; the only thing to do is to print in colour and then bronze over. Gold work has its possible pulmonary dangers for the employees, who are supplied with milk as a prophylactic. A good deal of the work in the mount factory was concerned with the production of Christmas cards, some of which required eight separate printings. The stamping in these cases was done by hand presses, the power presses being unsuitable. And in this department, as in the others, one saw the finished article shape itself out of the raw material, and the skill of hand and machine yield up the tasteful mount and the well-bound album.

In calling for cheers for Houghtons, Limited, Mr. Moffat, the President of the Association, who was supported by Mr. Gill, made a reference to the absence in British Columbia of Mr. Houghton, sen., who, at eighty, was crossing the Atlantic, and recalled the fact that the firm were the oldest photographic dealers in Britain, which was tantamount to saying that they were the oldest in the world. The firm went back to the earliest days of photography, even to the days of Daguerre, for whose process they were the agents. No one could practise photography in those days without obtaining a licence from Houghtons.

A vote of thanks was heartily given with musical honours, and Mr. E. W. Houghton cordially responded. The thanks of the visitors also are due to the staff for the courteous and painstaking way in which they interpreted the various operations.

## DISCUSSIONS ON BUSINESS MATTERS.

The afternoon of Thursday, May 18, was set apart for the discussion of questions affecting the business side of photography, and a company of sixty or seventy members of the P.P.A. assembled for this purpose. Mr. H. J. Rigden introduced the question of Sunday work in photographic studios in reference to the Shop Hours Bill at present before Parliament. He made a very strong appeal for consideration of this question by the Congress. There was no doubt whatever that Sunday business lowered the status of the professional photographer, and it would be to the interest of the profession as a whole that it should be rendered illegal. It was evident from the wording of the Shop Hours Bill that photographers' studios were exempt from its provisions, but he strongly urged that representation should be made for the specific inclusion of photography among the businesses to which the Act applied. He was quite sure that the majority of photographers would prefer not to open, but stress of competition with those who did open on a Sunday compelled others to open also. He was quite sure that the gain by closing on Sunday fully counterbalanced any drawback which resulted from any conditions in the Bill as to overtime and half-holidays for assistants.

Mr. T. Drummond Shiels, secretary of the Edinburgh branch of the P.P.A., gave an account of the active measures which they had taken in Scotland to obtain the application of the Bill to Scottish studios. Until recently Sunday opening of studios was unknown in Edinburgh, but owing to one firm from England opening in that city there were now eight studios which regularly opened. The Edinburgh branch of the P.P.A. had obtained the views of photographers in their own city and in Aberdeen, Dundee, and Glasgow, and there was an almost unanimous consensus of opinion in favour of closing. They had made strong representations through members of Parliament, and they had good reason to believe that a clause would be inserted in the Bill which would render Sunday opening of studios in Scotland illegal.

Mr. Kettle, Scarborough, said that photographers might rely on the power of their local town and district councils to enforce Sunday closing as they had done in the past.

Mr. Drummond Shiels replied that when the Shop Hours Bill became law the Lord's Day Observance Act, under which proceedings were now taken locally, became repealed.

Mr. H. C. Messer, Salisbury, put a formal resolution to the effect that a message should be sent from the Congress to the Government asking that photographers should be placed under the Shop Hours Act.

Mr. Mackie said that when the Shop Hours Bill was first drafted its provisions were very carefully considered by the Council of the Association, and they came to the conclusion that it was a mistake to support legislation which interfered with freedom of action. Photographers should not overlook the fact that in the event of their being included under the new Act they would have to comply with the restrictions both of it and the Factory Act, under which they were at present, and he reminded them of the very irksome restrictions as to the amount of overtime which could be worked and the compulsory half-holiday for assistants which was provided in the Shop Hours Act.

Mr. Drummond Shiels replied that the hours of overtime permitted by the Act were above the normal which photographers would require. It was true that the Act provided for a half-holiday for assistants, but he thought that such provision was already practically universal among photographers.

Mr. Montague Cooper, Taunton, pointed out that there were a number of their poorer brethren in the profession who depended upon Sunday work for their very existence, and he thought no recommendation should be made from the Congress which would press unduly hard upon that class.

Another speaker said they must recollect that in certain classes of business, those in agricultural districts, the great bulk of their customers were at work from dawn to dusk, and it would therefore press hard upon photographers in that class of business if they were compelled to close on a day which was the only one when many of their customers could come to them.

Mr. Frank Brown, Leicester, said he did not wish to appear harsh, but they must admit that the photographers who did the bulk of their work on Sundays, and at other odd times, were a class in the business which must be considered harmful to portrait photography as a whole. The P.P.A. was essentially a trade protection organisation, and he thought that they were not acting cruelly in taking any steps to protect their interests.

Mr. Lang Sims asked members to consider that the question before the meeting had not been notified to the whole body of members, and it should be recollected that the sixty or seventy there present were not authorised to represent the whole membership of 800.

Further discussion then took place with regard to an alternative scheme, under which every member of the P.P.A. should be immediately addressed, asking if they were in favour or not of photographers being brought within the provisions of the Shop Hours Bill. On the amendment being put first it was lost, and the motion of Mr. H. C. Messer, seconded by Mr. S. A. Chandler, was carried by a large majority. On the proposition of the hon. secretary, a small committee was appointed to draft the letter, which should be sent to the Home Secretary; Messrs. F. Brown, H. J. Rigden, and T. Drummond Shiels were appointed.

The meeting then turned to consider the suggestion of the Edinburgh branch of the P.P.A. in relation to the standard size of mount for cabinet photographs, with a view to providing the means of customers including a considerable variety of photographs in an album or portfolio which would allow of the insertion of prints as they accumulated. The question was brought before the meeting in the paper (printed on the next page) by Mr. E. Drummond Young.

At the opening of the meeting on Friday evening Mr. H. J. Rigden asked if he would be in order in referring again to the question of the Shop Hours Bill, a resolution in reference to which had been sent to the Home Secretary.

The President: We have our programme to get through. We dealt with the Shop Hours Bill yesterday.

Mr. Rigden pressed that a further opportunity should be given of discussing the matter, since he felt that the resolution to the Home Secretary had been somewhat unfortunately worded.

The President: Very well, we will take it after the first paper.

On the conclusion of the reading of the paper by Mr. Pirie MacDonald, Mr. Rigden then read the resolution drawn up by the sub-committee on the previous day, and also the letter which had been forwarded to the Home Secretary, in which it was stated that while photographers desired to be brought within the provisions of the Bill as regards Sunday closing, restrictions contained in other clauses of the Bill would be irksome and should not apply to them, their assistants being sufficiently covered by the Factory Act.

Mr. Mackie replied that in wording the letter to the Home Secretary he had sought to express what he thought was the actual feeling of the meeting.

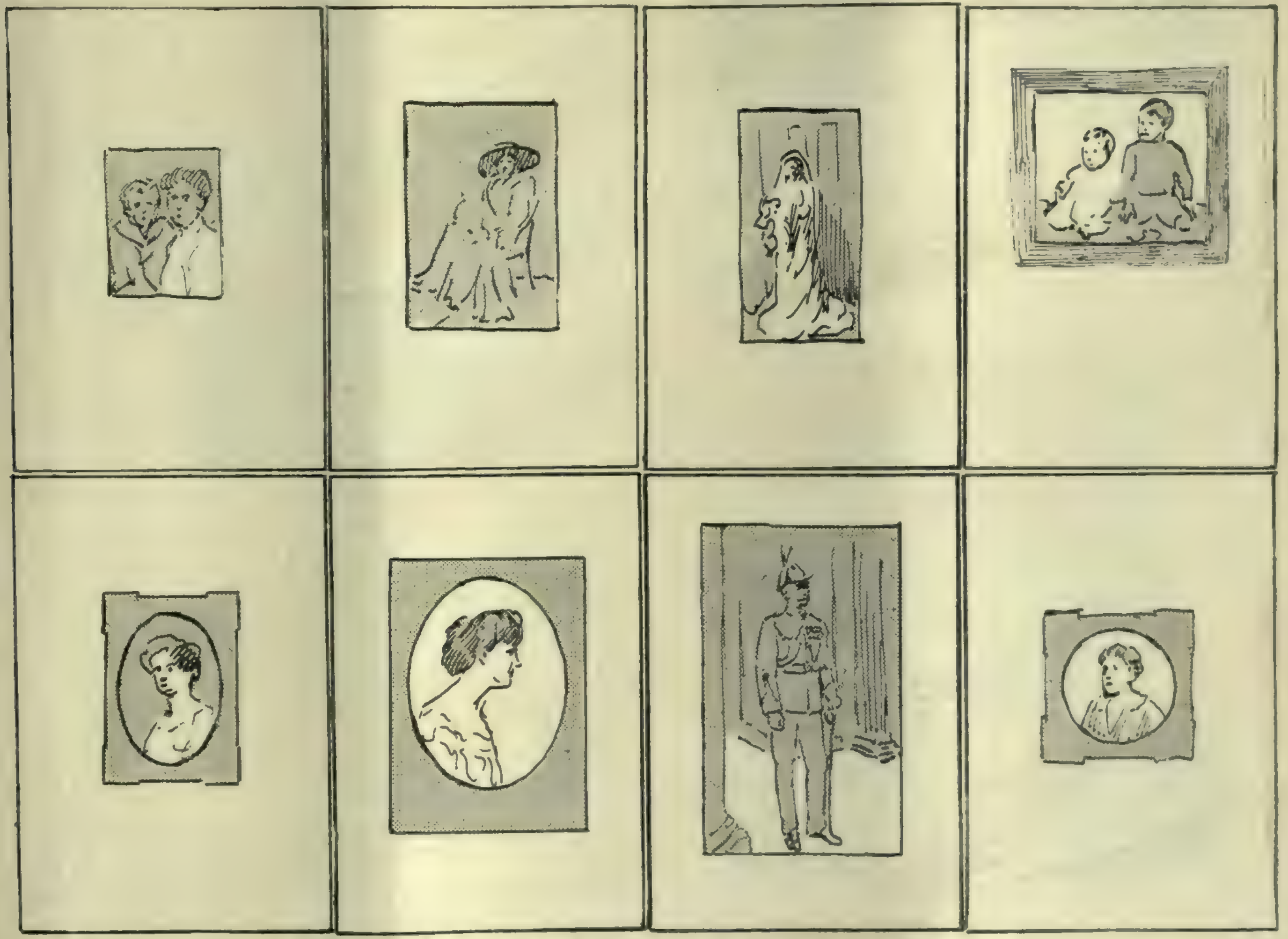
Mr. T. Drummond Shiels said that it was a matter of regret that the letter had been so worded, since the effect would be to nullify its effect. In regard to the Factory Act the suggestion in the letter was not the fact: the Factory Act applied only to assistants under eighteen years of age, and was of no service in providing restrictions such as those contained in the proposed Shop Hours Bill

After some further discussion, in which Messrs. Frank Brown and S. A. Chandler took part, Mr. Drummond Shiels proposed that a circular be sent to all members of the P.P.A. asking them if they were favourable to the inclusion of photographic studios in the Sunday closing provision of the Shops Bill, and further asking them to write to their own members of Parliament, urging them to press the importance of the matter upon the Home Secretary; also begging members to endeavour to secure the co-operation of other local photographers who were not members of the P.P.A.

This proposition, on being seconded, was passed with great enthusiasm.

## A SCHEME FOR A STANDARD MOUNT ALBUM.

A DISCARDED fashion does not mean a bad fashion. In a comparatively recent number of "The British Journal of Photography" there appeared an article on the bad times in photography, and one reason for the bad times given by the writer was the decline of the old-fashioned album. He went on to point out what an excellent institution it was, and what a good friend to photographers, how it kept the photographs in a convenient manner both for their preservation and for showing to friends, and how it came out on every little occasion. I may say that, personally, I have been over-entertained by the said albums. As a young photographer. it was taken for granted that I must be interested in all photographs, and there arise recollections of these entertainments, sitting with three or four ponderous volumes on my knees, trying to take an interest in the different relationships explained by some well-meaning host, while some much more attractive fun proceeded among the other members of the party. But, looking back, I am struck by this family interest, the number of photographs, and the fact that the albums were all full. On reading the article I have just mentioned these things come to mind, and with them many



Rough sketch of different sizes and shapes of prints all mounted on cards 11 in. by 7½ in.

reasons my sitters have given for ordering a small number of their prints, such as, "These big mounts are awfully nice, but they get so soiled"; another, "They take up so much room"; "Can't afford to frame them all"; "They are stuck all over the place"; "Dislike cutting them down"; and a hundred and one remarks in the same strain. It occurred to me that, by introducing a substitute for the old album, we might settle some of these points, with the additional advantage of stimulating the acquisition of photographs to complete the album once started. The great difficulty was the variety of size and shape in the present mounts.

Portfolio showing mounted print in place.

Now, some years ago a lay friend made the suggestion to me of keeping all my mounts of a uniform size—that is, the outside dimensions. This I adopted, and mounted all prints from C. de V. to 8 x 6 on mounts of one size, saving a considerable amount of bother in storing covers, postal wrappers, and frames, as the one size did for all.

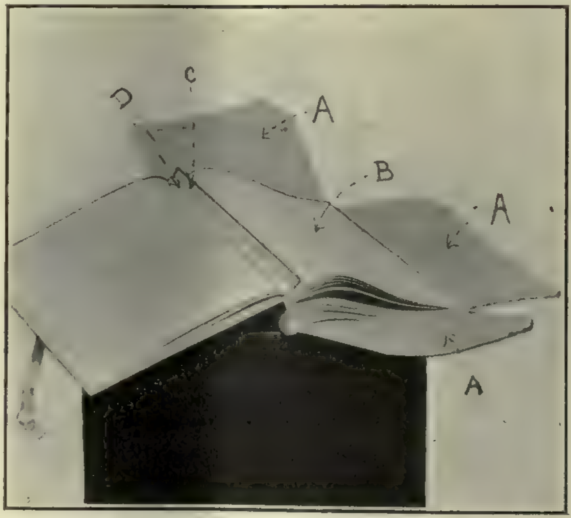
Portfolio.

With this standard size of mount to work to, it would not be difficult to get made an album or combination of book and portfolio which would be very nice for my clients to buy and keep their own portraits and such of their friends as were photographed by me. But this would not bring us much further towards the idea of the old universal album, unless we photographers agreed on a universal dimension of mount.

My idea is that we photographers should adopt a standard outside size of mount with designs, tints, or plate-marks suitable to the different sizes from C. de V. to, say, 8 x 5. Each photographer would incorporate his own pet sizes. I show outlines of the series used by my firm. And here I would say that in adopting this scheme it would not be necessary for the photographer to discard or interfere with any mounts he might be using at present, but he could run this series with the album.

Grant this standard mount, and it is an easy matter to have an album made with a small gummed hinge which only requires wetting, and the edge of the mount placed against it forms a leaf in the album.

The scheme was first broached at the October meeting of the Edinburgh branch of the P.P.A., and at later meetings we had some discussion on the size to adopt. When I first started a uniform mount it was 11in. x 8in. Later I cut it down to 11in. x 7½in., as it was more economical for cutting out of large boards, especially Japanese vellum, of which I used a considerable quantity. It was also a more pleasing proportion for the narrow cabinet panel, but 11in. x 8in. would do for fairly narrow shapes. The long narrow shape is the most important to consider. A surplus of margin at top and bottom in a square shape is not bad proportion, as the surplus margin would be at the sides of a narrow upright shape. The Edinburgh branch having endorsed the idea, we got several trial albums made, and I will give the points necessary to consider. The photograph must be held securely so that there is no play for it to get rubbed. The manner in which it is held must not overlap in front, as that would at once destroy the proportion of the margins. The album must have a flexible back, that it may open easily and lie flat when open. The photograph must not be attached too closely to the guard carrying the gummed hinge, or it will keep the leaves from lying flat. Between each hinged guard there should be an inter-leaf of smooth, stiff paper; this inter-leaf must be stiff enough not to crumple, or it will cease to be a protection to the print, and to keep the flatness it will also need to be hinged. Flaps should be attached to the back cover to keep out dust, and the covers tied or clasped.



A A A—Flaps. B—Interleaf. G—Gummed hinge. D—Guard.

A number of people have objected to the gummed hinge as a method of attaching the prints, but if you try the slip in or slit corners the size of your album increases, your print is not so securely held, and it slips about and gets rubbed. You introduce another border to a print that should be complete as it leaves the photographer's hands. One dissenter suggested that the mount should have an extra piece at the top and two holes punched in it so that it might be tied into the album with a nice bit of pink or blue ribbon, or perhaps tartan! But the extra bit of mount is quite away from the idea that the mounted print as delivered is ready to be kept in the ordinary way, or to be framed, or as it is, form a leaf in this book. It would be advisable if inside the album each photographer pasted in a slip carrying his name and address and stating that he would be willing to insert any photographs clients may get of their friends, free of charge. This would help to keep people coming back, and certainly encourage people to purchase albums.

What we want is nothing like the old and nothing like the new snapshot or postcard albums, but a receptacle for the best in photographic portraiture, the collection and preservation of which is to be encouraged.

Apart from the size, each photographer could carry out his own ideas and taste in the matter of bindings and colour of the inter-leaving, etc., and special bindings could be done for special clients, albums, or portfolios, the better word, set aside for children's photographs alone, for showing specimens, etc.

Can we agree to a standard size? That is the whole question. A size adopted, and there are possibilities, but little good will come if one man has a 10 x 8, another 11 x 9, and a third 11 x 8.

Edward Drummond Young.

Mr. S. A. Chandler said that the suggestion could not fail to be a most valuable one to photographers, since it would remove the complaint, which was so often made by customers, to the effect that they didn't want any more photographs because what they had were "kicking about the place" and they had nowhere to put them. Further than that, it would enable the photographer to reduce the immense stock of mounts which he was now compelled to keep. In reply to a question by Mr. Messer, Mr. Drummond Young said that the cost of the album would be from 2s. 6d. each. Some discussion transpired as to the size of mount to be preferred, and on the question being put to the vote it was taken, as the opinion of the meeting, that a mount of 11 by 8 inches was the most suitable.

We understand that at the meeting of the Congress held on Friday evening, an album, prepared on the lines suggested in the paper by Mr. Drummond Young, was exhibited by Messrs. Houghtons, who had had it made up for the purpose in their own mount works at Walthamstow.

## THE SUNDAY-CLOSING MOVEMENT IN SCOTLAND.

**Those** who attended the congress of the Professional Photographers' Association will still have freshly in their minds the vigorous arguments in favour of the closing of photographic studios as shops under the Shop Hours Bill offered by Mr. T. Drummond Shiels, of Edinburgh. We therefore publish here a few notes in which Mr. Shiels gives an account of the efforts made in Scotland with the object of bringing studios there within the Act.

The Edinburgh branch of the P.P.A. took up the matter of Sunday closing of photographic studios in December last, when the Shops Bill was introduced. Efforts had been made to secure local closing under the previous Shops Bill, which this present measure is to supersede, but legal authorities were not prepared to say that photographers could come within the definition of a shop as given in that Bill. So when this present measure was introduced the Edinburgh photographers organised a petition, copies of which were sent also to Glasgow, Dundee, and Aberdeen, asking that we should be brought clearly within the Sunday-closing provisions of the Bill. Practically every photographer's signature was secured in these towns, except those of the Sunday openers, though one of these who had been approached by mistake gladly signed the petition, showing that many open only in self-defence, and would willingly be closed if all others were compelled to be. This petition was sent to Mr. Winston Churchill, and a copy of it and a list of the signatories were sent to all members of Parliament for the four towns.

The Bill was dropped for a time owing to the General Election, but when it came on again efforts were renewed. This time we invited the co-operation of our English brethren, but their representatives were somewhat suspicious of the Bill, and seemed to think that its burdens would be greater than its benefits. We, however, did not think so, and started a systematic canvass of members of Parliament for Scotland, being greatly assisted by Mr. C. E. Price, M.P. for Central Edinburgh.

The Lord Advocate for Scotland, who had charge of the Scottish section, promised to consider our proposal favourably, and, as all Scottish members had supported us, things looked all right.

However, the Bill was referred to a Grand Committee of about eighty members, in which we were dismayed to find that there were only seven Scottish members, and that our two strongest Parliamentary supporters—Mr. C. S. Price, M.P., and Mr. G. B. Esslemont, M.P., of Aberdeen—were not included. However, the Right Hon. Scott Dickson, M.P. for Glasgow Central, kindly agreed to look after our interests. We had the seven Scottish members solid. Mr. Esslemont got on the Committee, and we got others who were not on the Committee to use what influence they could. And now we are glad to say that, while nothing can be said with certainty, yet there is every prospect of studios, in Scotland at least, being closed on Sunday after the Bill becomes law.

The difficulty of what seems to be a comparatively simple matter is that a photographic studio is both a factory and a shop. Under the Factory Acts printing, retouching, etc., may not be done on Sunday, but men over eighteen are not affected by these Acts nor are receptionists who do not retouch or spot. But we have pointed out that if a hairdresser is to be considered a shop there is no reason why the front saloon and actual studio of a photographer should not also be entitled to be called a shop.

That point is now practically conceded, and the only reason why English photographers are not likely to be included is that the Government understand that they do not wish to be. Whether a strong evidence of desire for inclusion now will be effective is, perhaps, doubtful in view of the limited time there is for redrafting the Bill; but the effort is worth making, and even though it is not successful it will pave the way for another effort in the future, as there is little doubt that in the case of such a complicated Bill there will be a revisal and alteration of some of its provisions at no far distant date. And the best wishes of all Scottish photographers will be with their English brethren in their efforts to stop a seven days' week, which is degrading to the status of photography as a profession, and which encourages the worst type of camera-exploiter and gives him power to regulate the hours and prices of bona-fide photographers.

Mr. F. P. Moffat, F.R.P.S., President of the Congress this year, as Hon. Secretary of the Edinburgh P.P.A., had a considerable amount of work in connection with this matter, and several members of his branch assisted him in his labours. Mr. Fred J. Hardie, of Aberdeen, did splendid work in his town, and among others who assisted greatly were Mr. Wm. Crooke and Mr. Swan Watson, of Edinburgh, Mr. Craig Annan and Mr. Whyte, of Glasgow, and Messrs. Valentine, of Dundee.

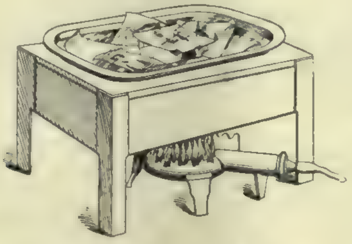
# New Apparatus, &c.

**The Hydraulic Plate Washer. Sold by H. Frederick, 11, Brynland Avenue, Bishopston, Bristol.**

In this new pattern of negative washer, the vendor, who is also the designer, has embodied certain ideas, the practical effectiveness of which he has proved to his satisfaction during many years' use of the washer in his own work. These characteristics of the washer may be briefly stated as follows:—1. The space within which the plates are contained is small, e.g., in the washer for a dozen quarter-plates, 6½ by 3½ by 2½ inches. This means that the volume of water to be replaced in providing each complete change is reduced to the minimum. 2. Large inlet and outlet tubes: In the quarter-plate washer before us the inlet tube is ⅜-inch internal diameter and the outlet ¼-inch; and 3, the lid of the washer is held down water-tight on the part of the apparatus which holds the plates, so that the current of water passes through the apparatus under pressure.

Further, the stream of water obtaining access to the plates is effectively broken up into a number of small currents by passing through a perforated plate. The net outcome of these features, in Mr. Frederick's experience, is that plates are freed from hypo in about fifteen minutes. While we have not made tests in confirmation or otherwise of this claim, it is evident that the washer provides very thorough change of the washing water, and the construction of the apparatus would seem to bring plates under the conditions wherein MM. Lumière have found that practically every trace of hypo is removed in less than a quarter of an hour. The washer is made—and we would say very well made—in zinc, with stout brass fittings for the water supply. It is sold direct by the vendor at the price of 7s. 6d.

Hypo-Alum Toning.—Messrs. Thomas Illingworth and Co., Willesden Junction, London, N.W., have for some time past been supplying materials and apparatus for the hypo-alum toning of bromide and gaslight prints which merit the close attention of all those who have occasion to undertake hypo-alum toning, particularly upon a large scale. The material is the hypo-alum mixture made in accordance with the customary formula, but "ripened" ready for use. As anyone knows who has done any hypo-alum toning, it is some little time before the bath gets into proper working order. Until it does, it is liable to reduce the depth of the print, whilst it fails in yielding the admirable purplish tone which the process will give. Messrs. Illingworth supply the toner of "best old stock" in earthenware jars at 2s. 6d. per gallon, half-gallon 1s. 6d.



The apparatus consists of the "boiling pan" shown in the illustration, the construction of which allows of the dish holding the solution to be kept at a constant temperature by the use of an ordinary gas ring. In testing the ripened toner, we used for the purpose a number of prints on the Illingworth bromide papers, and chiefly the Press Brand of bromide, the ability of which to stand forcing in development or errors in exposure has doubtless been the cause of its wide adoption among press photographers. The bath toned these and other of the bromide prints excellently, without showing the evils of a freshly-prepared solution, and we can recommend both the hypo-alum mixture and the pan for use with it supplied by Messrs. Illingworth. The prices of the latter range from 10s. 6d. to 26s.

### CATALOGUES AND TRADE NOTICES.

The "Soho" Reflex.—Messrs. Marion and Co., 22 and 23, Soho Square, London, W., have just issued a new booklet of the reliable "Soho" reflex camera, the patterns of which and the accessories which can be fitted, are very fully illustrated in its pages. We are glad to see that certain important points in the design of the reflex are plainly emphasised in the booklet, the text of which does not overrate the features of the "Soho" camera. We advise all those intending to purchase a reflex camera to write for the "Soho" booklet.

The Leto Handbook.—A useful piece of photographic literature has just been published under this name by the Leto Photo Materials Co., Ltd., 1, Crutched Friars, London, E.C., by whom it is sent post free on application. It contains a good deal of useful information on the working of the Leto papers. Mr. W. L. F. Wastell writes on P.O.P. printing and on the new "Phœnix" plate; Mr. M. Arbuthnot on "Seltona"; whilst in a number of other articles the working of the Leto collodion, gaslight, and bromide papers are dealt with, and there is a chapter on the making of prints with an artistic plate-mark by the "Boardoid" method.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

Saturday, May 27.

Liverpool Amateur Photographic Association. Excursion to Wepre.
Derby Photographic Society. Outing to Normanton-on-Soar.
Southampton Camera Club. Outing to Winchester.
Hackney Photographic Society. Excursion to Ayot.'
South Suburban Photographic Society. Excursion to Holmwood and Redlands Wood.
Halifax Camera Club. Ramble to Sowerby and Fieldhouse.
Balham Camera Club. Field Instruction Outing Coulsdon Common.
Darwen Photographic Association. Inter-Club Photographic Alliance Outing to Preston.

Monday, May 29.

Bournemouth and District Camera Club. Members' prints, negatives, or slides for criticism.
Bradford Photographic Society. "Vignetting by Chemical Means." A. Bracewell.

Tuesday, May 30.

Hackney Photographic Society. Short Lectures by several members.
Manchester Amateur Photographic Society. "Carbon Printing." W. Johnson.

Wednesday, May 31.

North Middlesex Photographic Society. Lecturette and Print Competitions.
Sale Photographic Society. Return of Sale Folio.
Croydon Camera Club. Discussion and criticism of pictures in the House Exhibition.
Balham Camera Club. Members' Night.
West Surrey Photographic Society. "Experiments in Toning Bromides." V. Serin.

Thursday, June 1.

Chelsea and District Photographic Society. Dark Room.
Midlothian Photographic Association. General Meeting, Election of Office-Bearers and Councillors, and Suggestions from Members to New Councillors. Final Exhibition of Successful Prints.

# Commercial & Legal Intelligence.

## NEW COMPANIES.

Richard Marsden and Son, Ltd.—This company was registered with a capital of £2,500 in £1 shares. Objects: to take over the business of an optician, dealer in photographic materials, etc., carried on by R. Marsden, at 115, Church Street, Preston. First directors, R. Marsden, J. D. Marsden, Miss A. Marsden, and Miss A. H. Marsden (all permanent). Qualification, £500. Registered office, 115, Church Street, Preston. Private company.

# News and Notes.

Photographing in Court.—The following notice was displayed at Bow Street Police Court a day or two ago: "Photographing in Court is strictly forbidden. The officers have instructions to eject from the Court anyone taking or attempting to take photographs."

A Stolen Photograph.—The secretary of the Royal Photographic Society writes:—"I shall be glad if you will kindly mention in your columns that a picture, 'Bulrushes,' No. 98 in the catalogue, by Mr. Philip Oyler, has been stolen from the Society's Exhibition at Prince's Skating Club. By kindly publishing this notice you will assist in preventing the thief from having open enjoyment of it."

A Tourist Guide to the Continent.—The useful guide to the chief cities and pleasure districts of the Continent issued each year by the Great Eastern Railway Company reaches our table. It deals briefly but very usefully with touring in Holland, North and South Germany, the Tyrol, Belgium, and Switzerland, and includes a useful vocabulary in English, French, and German of phrases which really are of some service to the traveller. The "Tourist Guide" is issued from 30, Fleet Street, London, E.C., price 6d.

Holiday Places in the South and West Country.—The London and South-Western Railway Company have just issued their directory of hotels, boarding houses, and apartments in the holiday resorts of Dorsetshire, Devonshire, Somerset, and Cornwall, and other districts on their system. In addition to giving these particulars in very concise form, the publication contains some interesting pages on the chief resorts, a list of golf links, and many illustrations of places rendered accessible by the speedy and comfortable service of the South-Western line. The list may be obtained free on applying to Mr. Henry Holmes, Superintendent of the Line, Waterloo Station, London, S.E.

R.P.S. Lectures.—The following lectures will be delivered at Prince's Skating Club, Knightsbridge, at 8.30 p.m.:—

Saturday, May 27.—"History in Caricature and Satire." By A. H. Blake.

Monday, May 29.—"Seen with the Eye of a Fish." By Dr. Francis Ward.

Tuesday, May 30.—"Curiosities of Clothing." By Wilfrid Mark Webb.

Wednesday, May 31.—"Days in Merrie Sherwood, with Glimpses of Ivanhoe Land." By Dr. J. W. Ellis.

◆

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## ASSISTANTS' HOURS AT BLACKPOOL.

To the Editors.

Gentlemen,—May we ask for space in your valuable paper respecting the times now being worked in Blackpool? We are working at the least eighty-four hours per week and no Sunday off. Could not something be done to remedy these unreasonable hours?—We are, Sir, yours respectfully, Workers.

◆

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photographs Registered:

J. C. Ruddock. 2, Belvedere Terrace, Alnwick, Northumberland. *Photograph of Sir Edward Grey, Bart.*

W. H. Warburton, Harris Promenade, Douglas, Isle-of-Man. *Photograph of "Home Office" Committee appointed to inquire into the Petition of the House of Keys, and the Constitution of the Isle-of-Man.*

J. A. Stelling, 60, Peckham Road, London, S.E. *Four Photographs of the Rev. J. W. Ewing, M.A., B.D.*

F. J.—We can only say that Vancouver is one of the most rapidly growing towns of the Pacific coast, and in common with many other towns in Canada, is offering many opportunities for business openings.

F. Cock.—Each single component may be used as a single lens of long focus. Each is about double the focus of the whole lens, and requires to be used with a small stop. It is best to use the single lens behind the diaphragm.

Situation in France.—Having family reasons for taking a situation in France, I should like your advice as to the best paper over there in which I could see advertisements and insert one myself. Can you tell me what the cost would be?—Albus.

The paper is "Photo-Revue," 118, Rue d'Assas, Paris. Send them a postcard for a specimen copy and their tariff for prepaid advertisements.

Photographic Books.—Can you advise me as to the best quarter in which to enquire for some of the older text-books on photography—*e.g.*, those dealing with Daguerreotypes and the early days of wet collodion?—Lecturer.

State your wants to one or two of the second-hand booksellers, such as Messrs. Sotheran, Strand, W.C., or Mr. Tregaskis, Little Turnstile, High Holborn, W.C.

Black-and-White Finishing.—Will you kindly inform me where I can get a book on black-and-white finishing for quite a beginner? As it is very inconvenient for me to attend the Polytechnic classes, I should feel greatly obliged if you could name a book which I could attempt a start from.—A. Speakman.

"Retouching Negatives and Prints," by R. Johnson (Marion and Co. 2s.). This is the only book on the subject.

Mounting P.O.P.—The best method of mounting glazed P.O.P. prints so as to preserve their gloss? I have not a dry-mounting machine.—Hypo.

You require to apply a waterproof backing paper to the prints while the latter are almost dry on the squeegee glasses. Such papers are made by the Birmingham Photographic Co., Stechford. You will require to use a strong mountant, such as a commercial dextrine paste, or gelatine used hot.

Registering an Invention.—1. Can anyone "register" a treatment in the manufacture of bromide or any other paper, whereby the working of it is made perfect and free from markings in the finishing? 2. Can any photographic emulsion or suchlike formula be "registered," and does a registered formula have the same protection as a patent?—Cantuar.

No, you cannot register an invention or formula. You must apply for protection by patent in the usual way.

Plush Blocks.—Could you tell me through your paper the name and address of a firm where I could get some cheap plush blocks for mounting views on? I have sent to —— ——, and —— Co. Also could you tell me what would be a reasonable trade price for whole plate, ½, ¼, per doz.?—Seeker.

Plush blocks are now rather out of date, but we believe can be obtained of Mr. J. Fallowfield, 146, Charing Cross Road. If you want large quantities, any fancy box-maker would make them for you.

Book on Poses.—Would you kindly inform me through your valuable paper if there is a book published illustrating different poses of photography (portrait), as I am interested?—W. G. Wooding.

A very good little book is the "Pose in Portraiture," No. 2 of the "Photo Miniature," out of print, but obtainable by advertising. The best book we can suggest is "Art Principles in Portrait Photography," by Otto Walter Beck, published by B. T. Batsford, High Holborn, 12s. 6d.

Developers.—Could you inform me, through the medium of the "B.J.," what are the relative advantages of a metol-hydroquinone and a paramidophenol developer (single solution) for tank development of plates, the bulk of solution to be used several times, with strengthening additions from stock?—Hard Para.

We should say that the relative advantages would be largely a matter of personal choice. As regards results, there should be nothing to choose, but the metol-hydroquinone would be cheaper to make up, and this may be a valuable consideration. We are much obliged for your correction. Certainly we did not mean "non-stainless," but "non-staining."

Pyro-soda Development.—Will you kindly inform me the temperature co-efficient of the pyro-soda developer (the "B.J."

formula). given on page 735 of this year's "B.J. Almanac," which I am anxious to use for time (dish) development? Also, do you consider it suitable for tank development?—Wm. Bleasdale.

You will see in the "Almanac" that the time is given as four to six minutes at normal temperature. With this as a guide you can determine the right time of development for the effect you want and the plates you use. We cannot give a temperature coefficient. This would vary with the plates, and could only be determined by trial. It should be well suited to tank development if not diluted too much.

Touring.—I am going on the Continent—Holland, Germany, Belgium, and France. Is it necessary to get (1) permits to photograph (hand-camera work chiefly) in these countries? If so, can you give addresses of the various authorities? 2. Are sensitive photo plates to be used on tour subject to duty? 3. Can you give the equivalent in three languages of "Photographic plates only, not to be opened in daylight"?—Continental Travel.

1. No, it is not necessary, but you must avoid even the appearance of photographing near military establishments of any kind. 2. No, so long as a moderate personal supply only is carried. 3. In German, "Photographische Platten: Nicht bei Tageslicht zu öffnen." In French, "Plaques photographiques: craint la lumière." In Dutch, "Droge Platen: Schlechts in sene donkere Kamer te openen."

Glazing Postcards.—1. Is there any method or solution, or other chemical to be had, and if so, from whom, whereby glossy bromide postcards can be dried and peeled from the glass in, say, an hour's time or less? The usual way, by allowing them to dry in a dry, cool place takes too long, although they are blotted. I require them off and out for delivery in as short a time as possible. 2. What is the best substance to put into methylated spirit which has been used for "spiriting negatives" and has become cloudy, in order to absorb the water and to "renovate" the spirit?—T. H.

1. The commercial method is to use French chalk for the glasses and to dry by artificial heat in drying cupboards supplied with a current of warm air. The average time is an hour. 2. Dry potass carbonate, previously heated on a shovel if there is any doubt of its actual dryness.

Passport.—I should be very much indebted to you if you could give me information on the following point. I recently made a tour with a camera in the Alps which lie along the Austrian and Italian frontiers. The regulations regarding photography in some fortified regions were very troublesome, particularly in one case, where a trip over the frontier was made impossible because of a prohibition to even have a camera in one's possession. I wish to repeat my tour this year on a bicycle, and it will be a physical impossibility to avoid crossing and re-crossing the frontier. I believe that a special passport can be got which makes things much easier. Can you help me on this point?—Spion.

We do not know of any special passport, but you would certainly be unwise to go without an ordinary one, which might be of considerable assistance in the case of trouble arising.

Sensitising Plates.—1. Will a zinc tank be suitable for bathing dry plates in pinachrome, or will a German silver one be advisable? I do not want the expense of the latter if unnecessary. 2. Is there any objection to using only methylated alcohol for the dye solution (to secure quick drying)? Von Hübl gives a formula containing one-third alcohol, two-thirds water. Is the water necessary? 3. What would be the result of using a double strength solution—1 : 25,000?—E. Carr.

1. We do not know whether a zinc tank will spoil the plates bathed in it, but we should think it extremely probable. Why not use porcelain, which is always found satisfactory? 2. It is probable that methylated alcohol will not permit of such satisfactory sensitising. Even the one-third mixture does not give such good results as water alone. 3. The optimum strength of the bathing solution has been very carefully determined, and checked by several independent experimenters. Doubling the strength will only have the effect of rendering the sensitiveness less.

Various.—1. Wanted, addresses of backing paper for glazing which can be attached to the print without the aid of paste or gelatine, failing which, backing papers that are already gummed would suit. 2. Which firms supply mounts used as the —— studios; enclosed is a sketch. English houses as Marion, Houghton's, Butcher's, etc., don't supply them. 3. In hot weather I do wet mounting of P.O.P. prints, using blotting paper, and when the whole lot is done, burnish them, but find that photos are bone-dry and refuse to burnish, whereas in weather of about 80 to 90 F. I get a nice glaze. The temperature now is about 106 degrees, and will go up to 115. Is there any remedy or uninjurious paste that will give temporary moisture to the prints, as it is the slight moisture that helps the glaze. Already tried castile soap, candle, encaustic paste. Afraid the enquiries are too many for one week.—S. Dhunjeebhoy.

1. Birmingham Photographic Co., Stechford, Birmingham, England. 2. We think this particular variety may be got from the Tress Co., 4, Rathbone Place, London, W. 3. We can only suggest placing prints in a box with a dish of water so as to cause them to absorb a certain amount of moisture.

Studio Blinds.—I should be much obliged if you could help me in giving some hints re the fixing of spring-roller blind in studio. I am adopting the principle of two blinds in each section, one from the top and one from the bottom, both with regard to the side light and top light. This is to enable me to have light anywhere I want it; but I suppose you are familiar with this style. My difficulty is as regards the light coming in between each section. Can you tell me how to avoid this? If it is done by overlapping the blind. Should be glad if you will give me working instructions that a practical man would understand. You see when you overlap you get four lots of ends of rollers together. Would there be any trouble about the blinds catching each other when they got about in the centre? As this work is in progress I should like an answer very quickly. If you would do this through the post it would be a great help. If there is an illustrated book on this principle I would like to have it. I trust I am not asking too much. As a regular patron of your journal every week for the last twenty-two years I should like to offer my congratulations on the smart and up-to-date style you keep same.—Pyro.

We think that your own blind maker would be the best able to advise you as to the fixing of the rollers, etc., as only by seeing the actual roof or a careful drawing can it be satisfactorily settled. The arrangement you suggest is not a common one, and must necessarily cause a complicated arrangement of wires. In the first place, in order that the blinds may overlap, each alternate roller must be placed lower than its neighbour, that is to say, rollers 1, 3, 5, 7, may be screwed direct to the ridge timber, but 2, 4, 6, 8 must have a batten rather thicker than the diameter of the blind and roller, so that it will run clear. Then each blind must have two tightly stretched wires, with eyes to run upon them to prevent sagging. The bottom blinds will, of course, require separate wires at different levels to allow them to clear. Please note that this only refers to one colour of blinds. If you want both light and dark it will all be duplicated unless the set with the rollers at the eaves be the light ones.

⁂ Notice to Advertisers.—*Blocks and copy are received subject to the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.*

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2665. Vol. LVIII. FRIDAY, JUNE 2, 1911. Price Twopence.

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## SUMMARY.

The Professional Photographers' Congress.—In continuation of the report of the recent highly successful Congress, we give, on page 415, the proceedings at the annual dinner of the Association.

On the afternoon of Friday, May 19, the members of the Congress visited the works at Penge of the Platinotype Company, where they were shown the coating and other rooms and were entertained at tea by Mr. W. Willis, who delivered a short address on the history of his company. (P. 416.)

The first part of the paper by Mr. Drinkwater Butt, on "The Studio: Its Construction and Decoration," is given in this issue. Mr. Butt traced the development of the photographic studio from the tunnel-pattern of Monkhoven, through the models adopted by Colonel Stuart Wortley, T. R. Williams, O. J. Rejlander, and Valentine Blanchard. He showed diagrams, here reproduced, of the chief distinctive types of studio, pointing out the advantages and drawbacks of each. (P. 417.)

An appeal to professional photographers to support the P.P.A. in reference to the resolution passed at the recent Congress in reference to the Shops Bill, is made in a letter by Mr. H. J. Rigden on page 427.

Another correspondent writes in favour of freedom to open on Sundays. (P. 427.)

At a meeting of Aberdeen photographers, 19 out of 23 present were in favour of a resolution to close at 7 p.m. (P. 426.)

At a meeting of the Council of the Professional Photographers' Association, held on Friday last, it was resolved to hold the third Congress in 1912 in connection with the photographic trade exhibition at the Horticultural Hall. (P. 425.)

Some hints, both technical and commercial, to those purchasing photographic apparatus second-hand are given in a leading article on page 414.

It would seem that incomplete mixing of developers may be more largely the cause of defects in negatives than has hitherto been supposed. (P. 413.)

### "Colour Photography" Supplement.

An American colour worker, Mr. H. E. Blackburn, has given an account of the latest developments in the Ives' "Tripak" process of three-colour photography. (P. 41.)

A French Autochrome worker, M. Chataux, recommends the use both of pyro and metoquinone in the development of Autochromes. (P. 43.)

A correspondent, Mr. C. Hankins, draws attention to the excellent results, in monochrome, which may be obtained from Autochrome transparencies. (P. 44.)

## EX CATHEDRA.

**Standard Mounts.** The proposal for the establishment of a standard size for portrait mounts, which was discussed at the recent P.P.A. Congress, seems to have caught the fancy of photographers. We have received numerous suggestions and queries upon the subject, some of which are worthy of serious consideration. One correspondent asks whether the thickness of the mount as well as its linear dimensions is to be uniform or nearly so, or whether it is proposed to bind up anything from an eight sheet board to Japanese vellum in the same book. Another wishes to know whether it is suggested that already mounted photographs may be pasted bodily upon the standard leaf, pointing out that the oval and circle on p. 407 appear to be on small fancy mounts, while still another suggests the advisability of a second and smaller standard mount suitable for travellers, and those who keep their family portraits locked up in a desk or bureau. These are all points which should receive due consideration before the official P.P.A. mount is issued. There are probably others, and we shall be very glad to hear more from our readers upon the subject. One thing which must not be lost sight of is the opportunity for advertisement which this introduction will give to photographers. Every photographer who depends upon a private clientele would do well to circularise his best customers announcing the advent of the new mount, submitting prices for photographs and albums, and suggesting re-orders from previous sittings as a nucleus for a complete family record. To a select few a sample picture might also be sent. It would also be worth while to point out that copies of old pictures —not necessarily photographs—could also be made for such a collection.

* * *

**The Mixing of Developers.** Irregular markings are often produced on negatives by the application of imperfectly mixed developing solutions, and probably few photographers realise how long a time is sometimes required for perfect mixing. The hydroquinone and caustic soda developer is an example of one that mixes slowly, and though the average worker simply adds the soda solution to the other, and then pours the result over the plate, he should shake up the mixed developer vigorously for several minutes before starting work. Rocking the dish during development is, of course, a partial remedy for the initial imperfect mixing, but it is safer not to rely on it for this purpose. The solution should be properly mixed first, if all danger of irregular development is to be obviated, and rocking should be left to fulfil its proper function of replacing exhausted developer by fresh. The application to a plate of an imperfectly mixed developer means that different parts of the plate are acted on by developer of differing degrees of concentration and reducing power. The effect may not always be visible in an ordinary negative, but in a uniformly exposed plate it will be easily observed. In experimental work which involves the measurement of density or of developer action it is a common source of trouble, and perfect mixing is recognised as a most important matter in all scientific work. We incline to the belief that many of the strangely marked negatives submitted to us from time to time for advice as to cause and remedy have been produced by badly mixed developers.

* * *

**Glass-Testing.** One can hardly go to any photographic exhibition without noticing the carelessness of some exhibitors in selecting the glass for their frames. On a wall covered with frames one piece of bad glass shows up so prominently that its badness is accentuated, and some conspicuous examples of this fact were to be seen at the R.P.S. Exhibition. Though glass of the finest quality is not necessary for picture-framing, yet it should be of a certain standard, not merely free from bubbles, which are intolerable defects, but also reasonably flat on its surfaces. To test for the latter quality it should be held obliquely, so that the reflection of a straight line can be seen on its surface. The reflection will not be perfectly straight by any means, but if it shows a decidedly wavy appearance the glass should be rejected. If readers will only try this simple test they will probably be astonished at the distortions to which such a straight line is subjected in many specimens of the sheet glass that is commonly used for framing. Of course, a perfect reflection will only be produced with a quite plane surface, and the truth of a plane is generally tested in a similar fashion, though rather more carefully.

* * *

**Glass for Light-Filters.** Parallelism of the two glass surfaces is of no importance in picture-framing. We only want two reasonably plane surfaces free from defects. For filter-making, however, perfectly plane and parallel surfaces are wanted, and parallelism can be tested in a somewhat similar fashion by reflection. If we look at the reflection of a near object in a piece of fairly thick glass we shall see two images, one reflected from the front of the glass, and the other, much fainter, from the back. If we repeat the test on a distant object, then only one image is seen, if the surfaces are parallel, while the appearance of two images shows that the surfaces are not parallel. With the near object two images are always visible, but if they remain in the same relative positions while the glass is turned in its own plane, then parallelism is shown. These tests are often useful, and it is instructive to try them on a cutting shape made of thick plate-glass. As a rule, such shapes to the uninitiated appear to be made of glass that is quite parallel-sided, but the test will show that they are almost invariably wedge-shaped. Even if the thickness on one edge is only one-hundredth of a millimetre more than the opposite edge, the test is so delicate that it will reveal the want of parallelism quite distinctly.

## SECOND-HAND APPARATUS.

With most of the old photographers, amateur as well as professional, there was a kind of sentimental regard for any piece of apparatus which have done them good service, and they would no more have dreamed of sending one of their old cameras or lenses to the auction-room or second-hand dealer than the fox-hunter would doom his favourite mount to the shafts of a "four-wheeler." This feeling is now, however, in a fair way to become extinct. Improvements and modifications succeed each other so rapidly that the progressive worker has hardly time to become attached to a piece of apparatus before it is more or less out of date and has to be superseded. A glance at our advertising columns will show on what an extensive scale this changing of apparatus goes on, and a few words of caution and advice may be acceptable to many of our readers. In the first place, it should be remembered that even the best of apparatus cannot be used for any considerable amount of work without requiring a thorough overhauling, and a would-be purchaser should always make a point of having every article examined by a skilled workman before closing the bargain. As an actual instance of the necessity for this precaution, we recall a case in which a photographer paid a good price for a half-plate focal-plane camera, which he required for press work. A close scrutiny did not reveal any defect, and a trial plate or two gave satisfactory results; he was quite satisfied—for a short time. At the end of a fortnight some of the slides became leaky, and on submitting them to a camera maker it was found that the light-traps, which were of metal, were so corroded that they were practically crumbling to pieces. These had to be renewed at considerable cost, and again all seemed well. Not long after this the shutter slowed down in an unaccountable manner, and on returning it to the makers it was found necessary to fit a new mainspring, the old one having lost its resiliency, though, temporarily tightened up for the purpose of sale, it appeared to be in good order. Altogether these repairs cost over two pounds, to say nothing of the loss of time and the inconvenience to the owner. The expert overhauling would have transferred this loss from the buyer to the seller, who probably would have been quite willing to pay for repairs which were proved to be necessary. In the case of lenses by makers of repute, and for which a fair price is asked, it is advisable that they be submitted to their makers for a report on their genuineness, and also their present condition. Most makers will render this service for a very small fee. If the purchaser relies upon his own judgment, he should not forget to examine the surfaces, to see if the polish is intact. If this is in any way dulled, it will cause a general fogging of the negative, which is more noticeable in bright weather than in dull.

At the risk of being tedious, we must repeat the caution against sending money to strangers who advertise bargains in apparatus either in our own or other columns. Without any intention to be dishonest, the seller is apt to describe his goods in too glowing terms, and the camera "in condition as new" may be found to be well worn, though serviceable. But besides these, there are actual swindlers who have no goods to send, and the hardly less reprehensible ones who have "just sold" the article advertised, and send as near a substitute as possible. To recover a remittance from these gentry is, in the words of the proverb, "like getting butter out of a dog's mouth." However, anyone who is defrauded in this way has no claim for sympathy, as all reputable journals with "apparatus-for-sale" columns arrange to hold money on deposit until the goods have been accepted as satisfactory. In the case of photographers, the ordinary references to their stock dealers may be exchanged, and some such precaution should always be taken.

The L.C.C. have accepted the following tenders for the annual supply of photographic plates, paper, and materials:—W. Butcher and Sons, Ltd., estimated value of contract £57; Houghtons, Ltd. (quantities not given for certain items), £5; Hunters, Ltd., £40; Ilford, Ltd., £61; Newton and Co., £10; W. Watson and Sons, Ltd., £38; Wratten and Wainwright, Ltd., £32.

# THE PROFESSIONAL PHOTOGRAPHERS' CONGRESS

## III.

Pressure upon our space last week compelled us to hold over the report of the Congress dinner, held at the Criterion Restaurant on May 18, and also the visit to the works of the Platinotype Company, which took place upon the succeeding day. These proceedings of the Congress we report below. The remaining papers to appear in our columns are those by Mr. Drinkwater Butt, Mr. Pirie MacDonald, and Mr. Edgar Clifton. In reference to the paper by Mr. Butt, on "The Construction and Decoration of Studios," a number of those who were present at its delivery have begged that we might reproduce as many as possible of the diagrams shown as lantern slides. To this request, with the assistance of Mr. Butt and of those for whom he has erected studios, we are glad to accede so far as considerations of space will permit. We publish in this issue the first part of Mr. Drinkwater Butt's lecture, and we hope to complete it and to publish the two other papers, by Messrs. Pirie MacDonald and Clifton, in the "B.J." for next week.

### THE ANNUAL DINNER.

The annual dinner of the Association was held on Thursday evening, May 18, at the Criterion Restaurant, Mr. F. P. Moffat, President, in the chair. In addition to members of the Association a large number of those in the photographic trade supported the function. Among these were Messrs. Gerald Bishop, Edgar Houghton, Charles Houghton, Percy G. R. Wright, Hubert Elliott, Howard Elliott, A. Catford, S. V. Haus, E. A. Robins, O. Sichel, T. Illingworth, M. Rous, L. Trapp, F. E. Jones, É. von Arx, Walter Pearce, C. F. Lan-Davis, and J. Sherwood.

Mr. Lang Sims acted efficiently in the character of honorary toastmaster. The toast of the Association was given by Mr. George E. Brown, Editor of "The British Journal of Photography," who said that the Association might look back with considerable satisfaction on the period of 10 years which had elapsed since its formation on the night of March 28, 1901. The Association had not been very long in existence before its early decease was prophesied, but a meeting such as the dinner at which they were then taking part was a sufficient proof that the foundations on which the Association had been reared were solid and stable ones. Photographers at that time, and during the period which had elapsed, had been harassed in various ways—by the "soap" and "cigarette" enlargements, by the introduction of the picture postcard, which had done incalculable harm in giving a false impression of the cost of a photographic portrait, and by the fraudulent canvasser with his "free" enlargements. But the business of portrait photography had withstood these attacks upon it from outside, and that very largely as the result of the persistent labours of the Association. He instanced in particular the aid which was now granted by the general Press in exposing the fraud of the portrait canvasser, a state of things which might be said to date from the vigorous campaign against this form of illegitimate competition which was undertaken by the Hull branch by Mr. T. C. Turner. If one compared the present position with that of 10 years ago the most obvious conclusion was that the dangers which threatened photographers were from within their own ranks—the evils of cut prices against each other, and of adopting a method of business which practically amounted to cadging. He instanced a case in which his concern in a ceremony, which was announced in a London paper, had led to his receiving letters from a number of West-End photographers, assuring him that they already had requests from editors in the illustrated Press for his portrait, and would be glad to offer him a "free sitting" for that purpose. He thought that every right-thinking person would regard such offers as these as pure "bunkum," and, in consequence of them, would take a low view of professional photographers. In coupling the name of the toast with that of the president, Mr. Moffat, and of the hon. secretary, Mr. Mackie, Mr. Brown suggested that in considering the means which might be taken to give photographers a professional status, they might very well begin by adopting a professional attitude towards each other. If they did that the effect upon the public would inevitably be felt. They wanted a standard of etiquette such as governed the actions of doctors or lawyers, and this they could get without any Act of Parliament, such as was often suggested as the present necessity of the craft. He might give one instance of what he meant. With such a standard of etiquette, a photographer who was asked by a customer to make copies of photographs taken by another photographer in his neighbourhood would refer the customer back to the studio where the negatives were made.

Mr. F. P. Moffat, in responding to the toast, said he was pleased to say that the Association was growing in membership, that its membership had increased by over 300 in the last two years, and that they might trace that very largely as the effect of the Congress. He had on a previous occasion spoken of the benefits which photographers derived from membership of the Association, and he was still just as firmly convinced of the advantages individually and collectively of supporting its endeavours.

Mr. A. Mackie said that there was one branch of the work of the Association to which he might refer, and that was the service in the way of arbitration which it was frequently able to render between its members and photographic firms or individuals with whom they did business. Frequently their members found themselves in acrimonious relations with photographic dealers or manufacturers, largely as the result of both sides being slightly in the wrong. The Association, he was pleased to say, had been able to deal most effectively in many such instances.

Mr. Lang Sims proposed the toast of the photographic manufacturers and dealers with whom, he was pleased to say, professional photographers were hand in hand. Their relations were thus of mutual goodwill, since they felt that their interests were common. They had never forgotten the visits which they paid to the works of Messrs. Marion, the Autotype Company, and Messrs. Griffin, where they went in quite as strangers, but separated as fast friends. In like manner they had greatly appreciated the opportunities of visiting the factories of Messrs. Kodak and Houghtons—they were to see the Platinotype Company the next day—and he thought he was expressing the opinions of all the members when he said that, sumptuous as was the hospitality of these firms, the thing which they as photographers desired was the simple feeling that they were welcome. They did not expect, nor desire, elaborate entertainment, but they did most heartily appreciate the opportunity of meeting with the heads of the firms upon whom they so largely relied for their equipment.

Mr. A. Catford expressed the pleasure with which his firm, Messrs. Kodak, Ltd., had received their visitors at Harrow.

Mr. Edgar Houghton said they had been extremely pleased for the Association to go over their factories at Walthamstow. He himself had reason to consider he was on friendly terms with large numbers of professionals, since when he was younger in their business he travelled among studios in all parts of the

Kingdom, and he looked back with pleasure upon the many friends which he had made on those journeys. He knew that travellers' visits were not always regarded with favour, but he felt that photographers were in the wrong when they refused to see travellers, as they could frequently learn something from them. Mr. Houghton referred to the tour of the world, in the interests of his firm, from which he had just returned, and thanked those present for coupling his name with the toast.

The toast of "The Visitors," proposed by Mr. S. H. Fry, was seconded by Mr. W. White, in a humorous speech, and by Mr. H. B. Hemmons.

Mr. T. C. Turner, in proposing the toast of "The Press," said that in the photographic Press photographers had a guide to which in many matters it would benefit them to give heed. He was glad to see at times the evil of the invitation sitting the subject of comment in the Press. He himself had long held, and every day his conviction was strengthened, that such a system of doing business continually brought photographers into contempt.

Mr. George E. Brown, in responding, said he was most pleased to be associated in that toast with his old friend, Mr. H. Snowden Ward, to whom he owed his connection with photographic journalism.

Mr. H. Snowden Ward said that he was quite in agreement with an earlier speaker, who had alluded to an invitation to a free sitting, which is now so prevalent, as "bunkum." Unfortunately, there were so many people who did not think it was "bunkum": who felt sufficiently flattered by the invitation, even though, as they subsequently discovered, they were not getting something for nothing. He had recently had the opportunity of meeting many photographers in the United States, and he was interested to find that their desires over there were to support, by whatever means were possible, the co-operative efforts of professionals in this country and in France.

Mr. W. A. Sims, in representing the "Photographic Dealer," said that they had greatly appreciated the interest which the professional photographer had taken in the large variety of goods displayed in the exhibition.

Mr. T. Drummond Shiels, in proposing the toast of "The Council of the P.P.A.," referred to the efficiency with which the executive work of the Association was done. He felt sure that photographers in all parts of the country, even though they were not fully informed of what the Council was doing, nevertheless had confidence that their actions were directed in the interests of the members.

Mr. Alfred Ellis, in replying, said that he would take that opportunity of impressing upon the members, in the event of a succeeding Congress, to let the Council know promptly whether they would attend. The inconvenience which many of them had experienced in consequence of the smallness of their meeting room was simply the result of a great many postponing their intimation of taking part in the Congress until the last moment.

## VISIT TO THE WORKS OF THE PLATINOTYPE COMPANY.

On Friday afternoon members of the Congress were the guests of the Platinotype Company. A party of over 100 were met at Victoria Station by Mr. E. A. Salt of the company, and on arrival at the works at Penge were welcomed by Mr. William Willis and Mr. E. J. Humphery. Under the guidance of Mr. W. H. Smith (works manager), Mr. C. Robinson, Mr. W. Mansfield, Mr. E. A. Salt and others, the visitors in parties of twenty made a tour of the factory. They had an opportunity of seeing the elaborate manufacturing plant which has gradually been evolved by Mr. Willis and his colleagues for the commercial manufacture of the paper invented by Mr. Willis over 30 years ago. The whole of the air supplied to the coating, drying, packing and other rooms where the paper is handled is first filtered to rid it of all suspended impurity and then dried by refrigeration. The most modern plant for thus ensuring the absolute purity of the atmosphere in which the paper is manufactured has been laid down at Penge, and every visitor was impressed by the spotless cleanliness of every nook and corner of the rooms through which the paper passed. For the first time in the history of the firm visitors were shown the coating rooms, and the methods adopted by the Company for preserving the paper in an absolutely dry condition up to the instant of sealing it within the tubes in which it is sent out. It was explained that this absolute dryness of the paper was found to be a necessary condition of its retaining its properties unimpaired for a long time. In the storage room was seen a number of cast-iron vessels (provided with heavy covers) from which the air was completely exhausted. The manufactured paper was stored in these vessels whilst waiting cutting up into the various sizes. Visitors could not fail to admire the mechanical arrangements by which the series of receptacles was manipulated by the girls in charge of the room. The storage rooms for raw uncoated paper, and for the iron solution used in making the sensitising baths, were likewise shown. The Company works upon a grand scale in holding stock of both paper and solution, and is thus enabled to manufacture a product which marks the highest degree of perfection, not only in its intrinsic quality, but in the uniformity with which that quality is maintained from batch to batch. An important department is that for the recovery of platinum from the residues of solutions, clippings of paper, etc. Platinum, at its present price of between £8 and £9 per ounce, is a most costly "raw material," and the Company make it a regular rule to return a batch of paper, in any way defective, to the residue-recovering department rather than to endanger the reputation they have achieved by issuing material falling below their own high standard. In the packing department long rows of sealed tins arranged on shelves represented, each, a sample of the batch, which sample was kept for from six months to a year, and again tested after the expiration of the time.

The company also showed the department recently installed for the making of platinum prints from customers' negatives, as also of enlargements. Printing is done entirely by mercury-vapour lamps, the intensity of which, as arranged, is equal to full summer light. By adjusting the strength of the current the light is kept so uniform that printing is done almost entirely by time, and a batch of prints from a single negative thus turned out with a high degree of uniformity. In this department was also seen a large apparatus by means of which enlargements on the paper are made directly from the negative. The illuminant is a powerful arc lamp, which, in conjunction with an objective of aperture F. 3.5, allows of an enlargement being made with an exposure of about three hours. In cases where a number of enlargements are required from one negative within a short time, the usual method of preparing a transparency and enlarged negative would require to be used, and a special room was set apart for such work. But naturally, where only one enlargement was demanded, the advantage of working directly from the original negative was one which could not fail to retain all the quality of the latter.

Mr. Willis showed his guests over his own experimental laboratories, and the party were then entertained at tea in one of the works stock-rooms, which had been cleared and decorated for the purpose. At this function Mr. Willis expressed the pleasure which he and his colleagues felt at the visit of the Congress. He said it was the first time that any party of visitors had inspected their manufacturing process. In fact, with one exception, no individual outside the firm had been taken through their coating rooms. He felt that many of them would be surprised at the complexity of the plant which was necessary to produce a product the manufacture of which in principle was an extremely simple matter. Anyone could apply the sensitising solutions to paper, but no two sheets would be alike. The difficulties in coating by machinery were of a kind which no one except those who had experienced them could realise. They had to consider that a batch of paper all made from the same lot of pulp exhibited differences from roll to roll, and all the improvements which they had made in their plant were directed towards ensuring the absolute uniformity of the paper. Mr. Willis alluded to the technical assistance which he had in Mr. W. H. Smith, Mr. Robinson and others, and concluded by again expressing the pleasure which the visit of the Professional Photographers' Association had given them all.

Mr. W. H. Smith, on being called upon, said he could add nothing to what Mr. Willis had said. It was to him that they owed all their success, not only for his scientific and technical skill, but for his forbearance and constant courage through the difficulties which, in the past, they had had to face. Throughout the thirty years during which he had been associated with Mr. Willis, he could not remember one occasion on which he had been discouraged or even cross.

The President, Mr. F. P. Moffat, in proposing a vote of thanks to Mr. Willis, remarked that they had been most interested in everything they had seen. They had marvelled at the exquisite cleanliness maintained at every stage of the process, and he felt sure that every one of them would go away grateful for having had the opportunity of seeing for themselves the extraordinary thoroughness with which every detail in the making of platinotype paper had been worked out.

Mr. William Gill, in supporting the vote of thanks, said that not only had they seen the final word in the manufacture of a delicate product—such as platinotype paper, but they had had the opportunity of appreciating the labours of Mr. Willis as a scientific chemist and organiser, and, even more than that, his qualities as a man.

The vote of thanks, it is needless to say, was carried with the utmost enthusiasm.

## THE STUDIO: ITS CONSTRUCTION AND DECORATION.

Mr. President, Ladies and Gentlemen,—When it was first suggested by our mutual friend and fellow member, Mr. S. H. Fry, that I should talk to you at this Congress upon the subject of "The Studio: Its Construction and Decoration," I was in considerable doubt on two points. The first was as to whether I could have anything fresh or novel to say to a body of professional men, whose experience in both the building and use of photographic studios is probably, in many cases, equal to, or greater than, my own; and the second as to whether in the not too great amount of leisure at my disposal I could get together a sufficient amount of material, more especially in the matter of lantern slide illustrations, to afford that amount of interest which would distract your attention from my own personal shortcomings in the way of public speaking and lecturing.

The first-named of these doubts still remains with me, and, in consequence, I will ask you to regard me rather as a person who has arranged and put into order some few of the principal facts and theories relating to the subject, rather than as addressing you ex cathedra, or as one having authority.

Who, indeed, am I, that I should instruct my brethren in their own mysteries?

With regard to my second doubt, that has been solved, and more than solved; first, by the action of the committee in appealing to the members of the association to contribute for inclusion with my talk, such pictures of their places of business as they might consider would be of interest to their fellow-workers; and, secondly, by the generous response which has been made to that appeal by the ladies and gentlemen whose names appear in the syllabus. As the request for slides thus made has been interpreted in the widest sense, so that the pictures sent in include not only views of the studios, but also of many artistically decorated reception rooms, and other portions of photographic premises, I have got altogether about enough material to furnish forth at least two such talks as it is possible to give in the time at our disposal; and, therefore, in view of such an embarrassment of riches, I have found it necessary to select, and keep as much as possible within the limits of my original title, "The Studio: Its Construction and Decoration"; but, with the permission of the contributors, should like to retain the slides which I have not been able to use this time, with a view of working them into a discourse on photographic premises generally, which (that is, if I do not bore you too much on the present occasion), I may, on some other, have the pleasure of placing before you.

In any case, I wish to offer to all who have so kindly assisted to make my task so much more easy than it would otherwise have been, and who, in doing so, have provided what will prove the more interesting items of the evening, my very sincere and grateful thanks, in which I am sure also that their fellow members will join when they have seen the capital series of slides I am thus able to show. With this preliminary I will now address myself more particularly to the subject in hand.

From the earliest days of photography, when, by the way, it was usually called the "glass house," the studio proper has been a matter of the greatest concern with those who have had to use it, and a very large amount of thought and trouble have been given, sometimes in mistaken directions, it is true, to its design and construction. The earliest illustration of a photographic studio which I have been able to come across is in the form of a woodcut by George Cruickshank, which appears in his periodical publication, "The Omnibus," for the year 1844. It is interesting to note that, in view of the long exposure required by the Daguerreotype process—then, of course, the only one in existence—the sitter is placed upon a raised platform to bring him as close as possible to the source of light, which, apparently, is the whole of the roof; while the presence of the head-rest to enable him to keep steady is also thus early to be noted. That the modelling and lighting also received some amount of attention, though it was probably subsidiary to the desire for plenty of light to shorten the exposure, is shown by the provision of the opaque head screen, and what looks like a transparent one suspended from the roof. The camera is either one or both of the boxes on the shelf, beneath which is seen the operator with a plate-box in one hand and in the other the watch by which he is timing the endurance of the victim in the chair. Not much of the 400 H. and D. and the quick shutter about this, is there? The individual on the right is polishing the plate with the buff stick, and those on the left apparently examining finished specimens through hand glasses. Beyond is the developing-room, in which is to be noted the burning spirit lamp and other apparatus of the Daguerreotype process, and behind the operator are two more victims awaiting their turn.

In the magazine the woodcut is accompanied by some lengthy verses, entitled "Photographic Phenomena, or the New School of Portrait Painting," the humour of which is, however, so much that of a bygone age that they would only be tedious in quotation.

Another early form of studio is that of Monkhoven (Fig. 1). This, as will be seen, had the same high and front light from the north, but with the addition of lighting areas at the sides as well, so that either side of the face could be illuminated at the will of the operator, and although it was still not possible to obtain any great variety of lighting, it was a step in advance, and was in some ways well suited to the needs of the wet-plate men who used it, and who were more often occupied with the difficulties of the process and the avoidance of all its defects of spots, pinholes, comets, and oyster-shell markings, about which our friend, Mr. Chapman, could probably tell you a good deal more than I can, than with the artistic lighting of their subjects. The chief point of interest about this studio, is, however, its provision of what was known as the "tunnel," or dark portion in which the camera and operator were placed. The idea of this was partly that, the camera being in comparative shade, the operator could focus without the aid of a cloth, and also that the eye of the sitter looking into darkness might be less dazzled by the strong top front light, and the consequent contraction of the pupil be to some extent counteracted. It was also contended that this helped to produce a "restful" expression on the part of the sitter, though many photographers eventually found that the looking into a dark tunnel where a brown-fingered professor of the "black art" performed mysterious evolutions in the gloom, was not exactly conducive to cheerfulness of expression on the part of ladies and children. Not even, I think, would the modern East-end photographer's injunction to "'Arriet" to "think of 'im." have been of much avail under such circumstances!

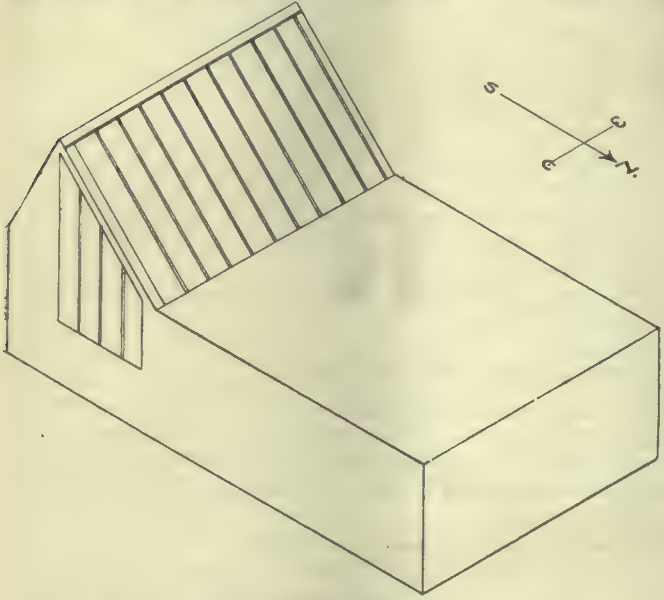


Fig. 1.
Monkhoven's Original Tunnel Studio. Isometric Projection.

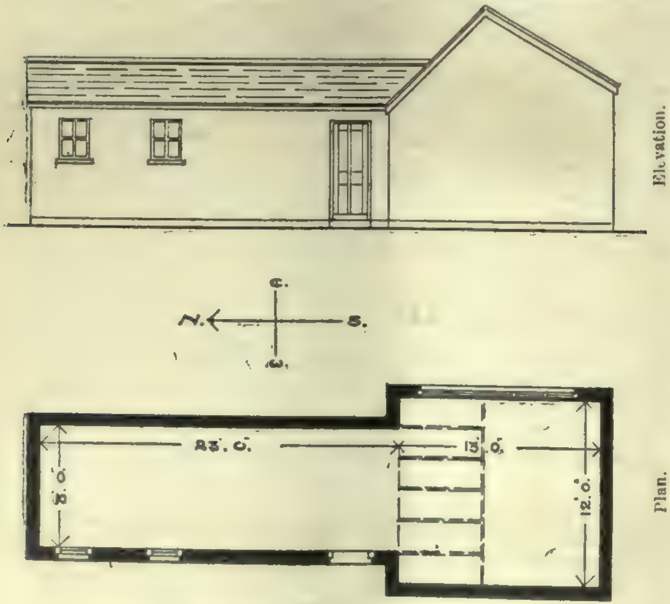


Fig. 2.
Col. Stuart Wortley's Studio.

Many variations of this form of studio were tried, including some with the tunnel made so low, in order not to interfere with the large front north light, that the operator had to stoop all the time; and among these one of the most successful was that of Colonel Stuart Wortley (Fig. 2). The studio portion proper was about 12 ft. by 13 ft. on plan, with an unlighted portion extending from it some 23 ft. in a northerly direction. The sloping front light was of clear glass, and the further side of the studio, that is, the opposite one to the elevation shown, was glazed with corrugated glass to 7 ft. from the ground, and from thence to the roof with clear glass.

The building, like most of the early studios, was merely a light wooden structure with a felted roof, and, as was also usual, quite devoid of any attempt at internal decoration. It had, what was then also a notable improvement, two sets of blinds over all the glazed portions, one black and the other white. It cannot have been altogether an easy form of studio to work in, and to get a well-lighted head considerable knowledge of the use and effect of the blinds must have been necessary, and when good modelling had been obtained the difficulty of too little light, and consequently too long exposure, must always have been present. The only thing that the tunnel studio can have really been suitable for, it appears to me, would have been copying, and for that purpose certain modifications of it are in use to the present day.

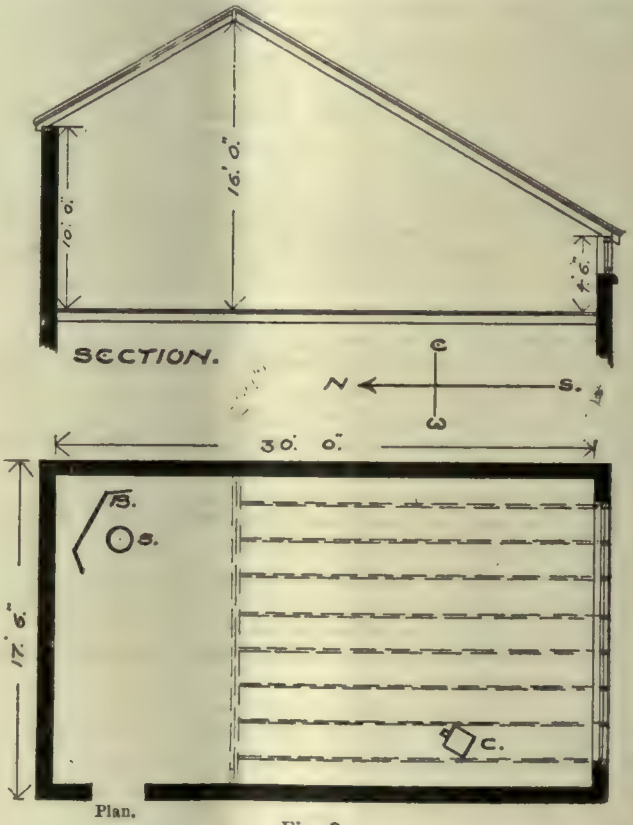


Fig. 3.
Studio of T. R. Williams, Regent Street.

Another early studio (Fig. 3) that must have been also difficult to work in was that of T. R. Williams, of Regent Street, which was simply made by removing part of the roof of the house and replacing it with glass, which was a common practice, especially in the days of the carte-de-visite mania, when photographers were springing up everywhere, and glad to get into good positions to share in the fashionable boom, and when £3 3s. per dozen C.-de-V.'s was a not uncommon price, and sitters as thick as leaves in Vallombrosa. This studio, as will be seen from the sketch plan and section, was about 30 ft. by 17 ft., the glazing of the roof facing nearly due south. This was fitted with three sets of blinds, one above the other, one set being of dark blue calico, the second of thick white calico, and the third of thin jaconet muslin. The position and shape of the studio could scarcely have been more awkward, and the complication of three sets of blinds must have been difficult to manage, and yet under these conditions was produced some of the finest work done up to its date, with delicacy, soundness, and perfect modelling which were the envy and admiration of all the competitors of its producer, and which would be hard to beat even at the present day. If you look over the old family carte-de-visite albums of fifty years ago and find some specially fine specimen of old work, and turn it over, you will probably find the name of Williams on the back. It is, of course, just another instance of the fact that it is the man that matters rather than the materials with which he works. In the course of my own photographic and artistic avocations I get about a good deal, and when I come across a man with a brand new camera, fitted with every possible contraption and contrivance for saving trouble and brainwork, or a sketcher with a complicated easel which takes about half an hour to set up, and an immaculate colour-box, I generally put him down to be an incompetent amateur, who is going to "show 'em how it's done, don't cher know," and whose final output is generally a fogged negative which he will tell you is a Salon picture in embryo, or a daub of colour which he thinks is the last word in post-impressionism, or whatever other ism is the artistic shibboleth of the moment.

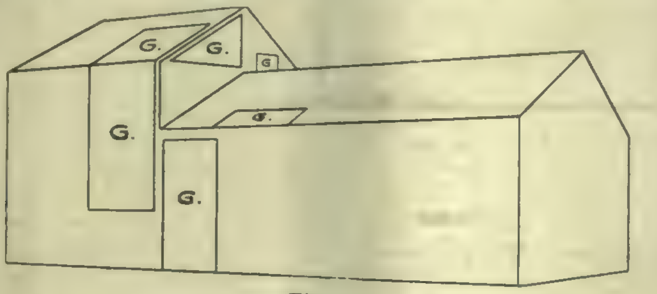


**Fig. 4.**
Rejlander's Studio. Perspective Diagram.

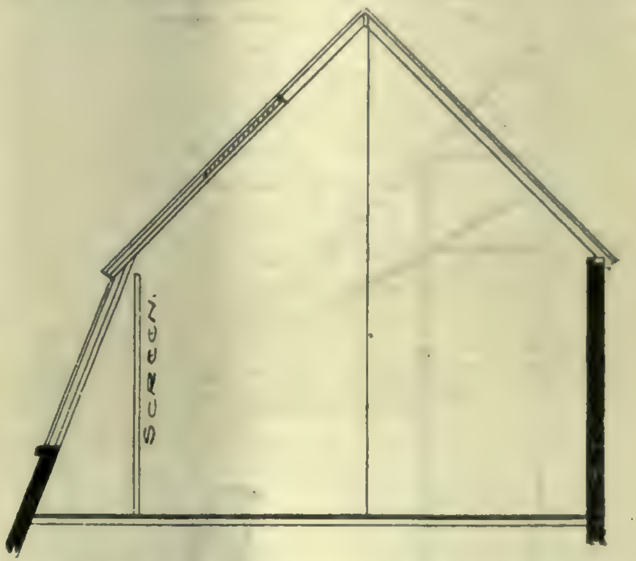
On the other hand, I know an eminent pictorial photographer whose camera case looks worth about eighteenpence, and a Royal Academician whose palette is only a little less filthy than his colour-box, but who "thinks in thousands" when the price of his work is talked about.

But this is a digression, and to return to Williams's studio we may note that his general method and direction of working was, as shown on the plan, diagonally across the studio, and that he employed a background with side wings which could be used either to cut off direct light or to act as reflecting screens as required. Williams's success led, of course, to many imitators of his methods and of his studio, and to a revival of the tunnel form as an adjunct to his large amount of front direct light. All sorts of modifications of these forms were also tried, some succeeding well in the hands of competent men capable of producing good work under almost any conditions, others merely leading to loss of time, temper, and money, and in the end most of the costly experiments were abandoned, and the oblong room under a ridge or lean-to roof became established much as we know it to-day.

On most of these experimental studios of the past it is unnecessary to waste time, but any sketch of the history of studio building would be incomplete without some notice of the celebrated one of Rejlander, in which his well-known pictures, "Two Ways of Life," and many others, were produced.

To the early training of a graphic artist Rejlander added many years of study as an artistic photographer, and in designing this studio (Fig. 4) he was as much influenced by the one art as the other, and made his arrangements so as to obtain if possible in his photographs the painter-like effects of lighting for which his work is remarkable.

The building, which was of corrugated iron lined with matchboarding, was about 30 ft. long, the portion devoted to the sitter being some 10 or 11 ft. square. The light was obtained from the spaces marked G on the diagram, which were all, including the door, glazed with clear plate glass. On the side not seen in the diagram there were no lights at all, but the interior was painted white to secure reflection on the shadow side of the figure. The three smaller lights were generally covered with partially transparent blinds, their object being not to get direct but diffused light to soften the shadows. The sitter was,



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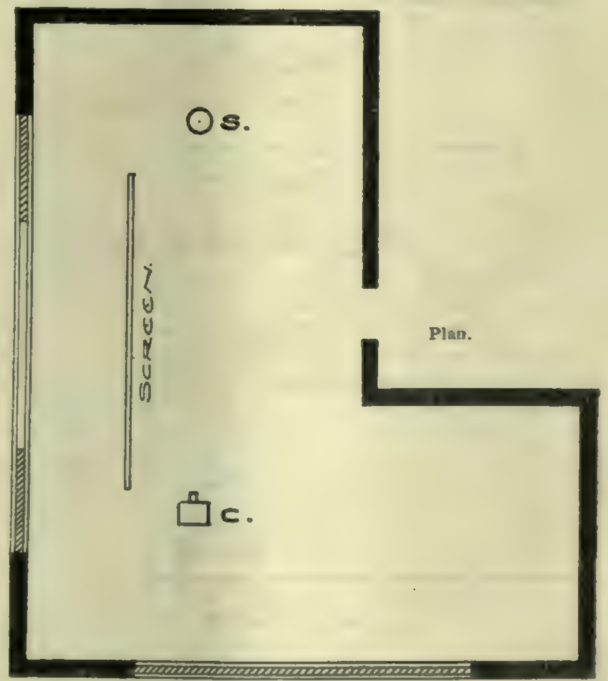

Plan.

Fig. 5.
Valentine Blanchard's South-light Studio.

therefore, mainly lighted from the top and side top, front and direct vertical light being avoided. This studio must have been a good deal easier to work in than some of its predecessors, but, again, owed much of its success to the skill of its user, as was shown by the fact of imitators trying to use similar places, but getting far inferior results.

To come next down to more modern times, I will close what we may call the historical part of the subject by showing you a sketch of another studio (Fig. 5) used by an eminent photographer, the late Valentine Blanchard, which I have chosen for illustration because it affords another instance of how genius not only overcomes difficulties, but often turns them into positive advantages. Having, for reasons of position, etc., chosen premises in which the only available light for the studio must come from the south and east, Mr. Blanchard put up a studio for working mainly by the south light, and his plan, as shown on the screen, may be of interest to photographers faced with a similar predicament. The solid black in the diagram shows the opaque portion of walls and roof, the shaded parts indicate where the glass was covered with papier minéral.

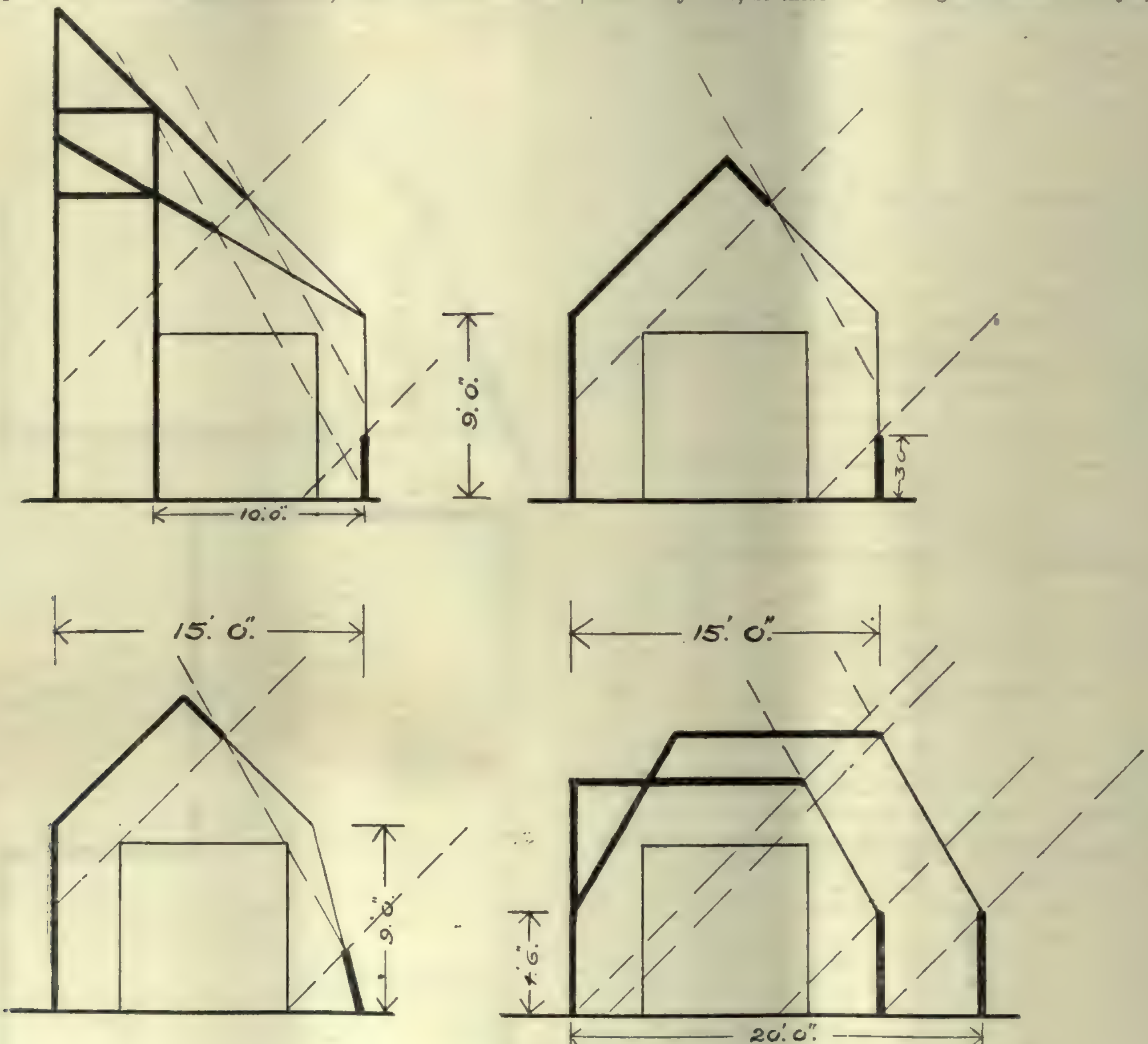

Fig. 6.
Studio Sections.

In front of the clear portion of the window Mr. Blanchard placed, as will be seen, a screen to intercept the direct rays of the sun. The ordinary positions of sitter and camera are shown on the plan, but could, of course, be reversed to the opposite ends of the studios in order to light the other side of the face when required. The east window was generally kept curtained, and had little or nothing to do with the ordinary lighting of the sitter.

In Mr. Blanchard's own description of the place he said: "The sitter cannot see the side of the screen upon which the sun's rays fall, so there is no sunlight to dazzle the eyes, and for ordinary work one screen is sufficient. As the sun travels westward the screen can be drawn to the east to admit more light if necessary. In fact, whether working with the sitter either at the east or west, the screens can be moved about readily, according to the time of day, and yet give the sitter all the light required."

Writing again in the winter of 1877-78, Mr. Blanchard further said: "A year's experience, embracing as it does all the variations between the oblique light of winter and the almost vertical light of midsummer, only confirms the high opinion then expressed. The gain in rapidity of the south over the north is at
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once apparent to anyone who has the means of trying both. During the past gloomy months I have made pictures that would have been absolutely impossible with a north light. I find, now that I have it well under control, that those beautiful, luminous, yet delicate effects frequently seen in photographs from Italy and America, and due to the penetrating power of pure, intense light, are readily obtained with this south illumination."

Here, again, we have, as I have said, genius turning difficulties into opportunities, and the example here shown may perhaps not only encourage some light-starved London photographer, but also offer food for thought when similar difficulties arise.

Having thus glanced at some of the studios of the past, we will now proceed to consider the studio of the present, which generally takes one of the four forms shown in Fig. 6. It will be noted that for the sake of more easy comparison I have drawn all the four sections in the first place of the same width, adding only in the first and fourth cases outlines of less and greater width respectively. The first is, as you see, of the ordinary lean-to construction, the thick lines showing the opaque walls and roof, and the thin ones the glazed portions of the same. With a width of 15 ft. and a pitch of 45 degs. to the roof, it will be seen that the latter becomes somewhat long, and consequently costly, a defect which may be slightly reduced both in that case and in the one in which the studio is shown ten feet wide only, by making the upper portion a flat, which, in positions in which it was accessible, might occasionally be useful for printing or other similar purposes. The cost and size of the roof may also be reduced by making the pitch only 30 degs., but that, again, has its disadvantages, inasmuch as snow would lie upon it much more easily than on one of steeper pitch, and the light be made slightly more vertical in its incidence upon the sitter than in the former case. This question of pitch also depends largely on the position of the studio and its surroundings, and in these diagrams I have assumed, for purposes of comparison, that the glazed sides are facing north. Theoretically, this is, of course, the ideal position (though we have already seen how widely it can be departed from), but practically it is best to make a studio, if possible, face a little to the east of north in order that the sun may be off it earlier in the afternoon, which is the time of day during which one gets most sitters in good class businesses. The question of pitch is also governed by the fact that the maximum altitude of the sun in summer is a little over 60 degs. above the horizon, and that, therefore, unless the roof of the studio approaches that angle in steepness, or is protected in some other way, the sun will shine over the ridge into the studio at mid-day, in midsummer at least. On these diagrams I have endeavoured to make this clear by the dotted lines to the left, which show the meridian altitude of the midsummer sun, and how it would shine into each form of studio depicted. In the case of the lean-to, however, we may fairly assume that this section would not be chosen unless there was already some building in existence for it to be built against, and that, therefore, it would be probably protected from the south, in which case we could afford to have our roof flatter in pitch. From the foregoing facts, then, we may conclude that the lean-to form of studio is best adapted for buildings of somewhat narrow width, certainly not over 12 or 14 ft., and which are protected from the sun by others on the south side, while a suitable pitch for the roof is about an angle of 45 degs.

Next we come to the ridge form, in which, as you will presently see by the photographs of existing studios, by far the largest number of present-day ones are built. Its advantages are that its familiar form makes it easy of construction by the ordinary builder; almost any width can be covered by it; it gives plenty of head room for the moving of backgrounds, etc., inside (apropos of which I may say that the square shown in each diagram represents an 8 ft. background), and its roof may be almost of any pitch desired. That in the diagram is shown at an angle of 45 degs., in which case, however, unless erected in a sheltered position, it would require a vertical sun screen for a while in the middle of the summer to shut out the direct rays of the sun, which would, as shown, then shine into it.

By making the slope of the roof 60 degs., and placing a flat on the top, as in the fourth diagram, this could be avoided; but, in that case, I think the single slant form shown in the latter would be preferable. One of the defects in the ridge roof form of construction, and which it shares with the lean-to, and the ridge and slant, is that, as ordinarily constructed, there is generally a necessity to make the wall plate at the eaves of such dimensions that it becomes an absolute obstruction to the light, and thus very often produces a double high-light in the eye of the sitter, which must either be taken out by the use of the knife on the negative, or that of the brush upon the print. This has sometimes been avoided by the use of curved iron sash bars, as in the case of a certain American studio; but, in any case, in either the lean-to, the ridge form, or the ridge and slant form, as shown in the third diagram, there is the necessity for two complete sets of blinds, which, when both light and dark ones are used, as is now almost universally the case, produces a great complication of wires, cords, pulleys, etc., which distract the attention of the operator from what should be his principal work in the posing of and obtaining a good expression in the sitter. Taking all these points into consideration, my own preference, both as an operator in and designer of studios, runs very largely in favour of the single slant form, as shown in the fourth diagram now on the screen, and in some other designs and pictures you will see later on. Here, in the first place, by the pitch of sixty degrees, we are freed from the undesired attentions of our best friend and enemy, the sun. There is no trouble with snow, nor in a properly constructed roof with rain either; the glass easily is cleaned inside and out, and with opaque blinds pulling down from the top and up from the bottom, and a series of transparent ones running on wires within, we have every possible control of the lighting, and the reasonably intelligent operator can obtain every variety of it he will ordinarily require. Had I thought of it in time I would have prepared some slides showing portrait work done in single slant studios, in the same way that Mr. Gill has done in a slide which reproduces on a larger scale the head of the figure shown as a sitter in the view of his studio, which we shall shortly have the pleasure of showing you. Of course, like all other subsolar things, the single slant studio is not absolutely perfect. Sometimes it is not easy to obtain quite all the top light one requires, and unless it is wide enough for one to work across it, it is not altogether a good studio for copying. It is, also, more suitable for fairly wide studios than for very narrow ones, on account of the extra head room (as shown by the diagram) obtainable in the former; but the absence of a wall plate, and the easy working of its blinds, render it a capital studio for average portraiture, and those I have designed in this form have, I believe, given every satisfaction to their owners.

Before passing from this series of diagrams, I may call your attention to the diagonal dotted lines at the right, at an angle of 45 degs., the lower of which encloses between itself and the base line, the space within which adjacent buildings on the north side will but little or not at all obstruct the lighting of the studio. The upper ones show how the upper portions of the backgrounds, when in the positions shown, might be slightly in shadow. It must not, however, be inferred from this that all light enters a studio at an angle of 45 degs., or that it does so, as many photographers often appear to suppose, at right angles to the surface of the glazing. The existence of this latter fallacy in many minds is all the more incomprehensible when the very persons who entertain it in theory daily disregard it in practice; and, as nearly everyone knows, the actual light which illuminates the sitter is that which reaches him in straight lines from the whole of the illuminating surface, or open glass area, which he is able to see from his position in the studio.

DRINKWATER BUTT.

(*To be continued.*)

## Photo-Mechanical Notes.

### The Possibility of Combination.

It has often been suggested that the engraving trade should make some arrangement whereby prices may be increased, or at least maintained. It is thought that this might be done by agreements as to prices, involving a penalty if broken, or by the formation of every photo-engraving business into a trust. Either of these propositions entails the consent of all concerned, which it is difficult to imagine could be obtained. It is improbable that those firms which are doing well (and many firms apparently are) would be inclined to take any risk in binding themselves. But supposing that consent of all had been obtained, it is still more difficult to imagine any sort of combination long maintaining prices above their natural level, which is that fixed by those firms who are content with a moderate profit, using every item of good management to secure this, while at the same time keeping their prices at a minimum. No firm can sell below cost for long, nor does the customer expect it. What he does expect is to get his article with as little burden of added profit as capable undertakers are content to accept. As the ability to make half-tone blocks cannot be made a monopoly, and as the plant is not very expensive, at all events for a commencement, a combination making any profit above the minimum for which it would not be worth while to combine will always be liable to incursions of competitors who would undercut, and it could only starve these out at a cost which would probably be ruinous to itself.

### Another Direct-on-Metal Process.

L. Villemaire, in the current number of "Le Procédé," describes another method of getting the print on metal in the camera, which is perhaps the simplest so far discovered, and available to any photo-engraving studio without the use of anything but the common materials. A piece of metal is cut of the required size, and is coated with shellac varnish on the back and the edges. It is then prepared in the usual way with the enamel solution. After this is dry, it is lightly talced, dusted with a camel-hair brush, and then coated with a rubber solution, similar to that used in stripping. The plate is now used exactly as if it were a glass plate, and a negative made on it by the wet-collodion process. The shellac varnish on the back and the rubber on the surface prevent any damage to the silver bath. The negative is made in every respect as usual, exposed, developed, reduced, and intensified. After drying, the plate is now exposed to the arc lamp to insolubilise the enamel under the transparent spaces of the negative. After the exposure is made, the plate is plunged into benzole, which will remove the collodion negative and also the rubber film, and the enamel film can now be developed in cold water, dyed, and burnt in, as though the print had been made in the ordinary way. The advantages of the process are :—No mirror or prism is required, as the negative must not be reversed; shortening of exposure in printing, because the plate can be placed very close to the lamp; and increased sharpness by reason of the absolute contact of the negative with the enamel film. The disadvantages are :—The necessity of exactitude throughout, because the negative is destroyed in course of the operations, and the difficulty of after-treatment of the negative in intensification and reduction, because it is not on a transparent base. These disadvantages, however, apply to all direct-on-metal processes.

### A Simple Reversal Process.

The same authority gives a simple reversal process as follows :—The metal plate is first coated with sensitive bitumen, and then with the ordinary enamel solution. Exposure and development are done as usual, but the dyeing-up of the glue-film is as strong as possible, because, after this is done, the plate is exposed to the arc in order to insolubilise the exposed bitumen, the dyed glue serving to prevent the light from affecting the bitumen under it. The glue film is now removed with hot water, and the bitumen developed as usual in turpentine. We think it would be preferable to make an albumen print, and, after development, dust the ink image over with bronze powder. This ought to be more opaque to light than a dyed glue film.

### Chromotypogravure.

M. Villemaire also gives the details of a method whereby, instead of using resin dust, or shading mediums, to procure grain-colour prints, the ordinary cross-line screen is used. This simply consists in making three negatives through the screen suitably angled so as not to give a pattern, and making enamel prints from them, and then transferring the key, stopping out where necessary, and etching just as in the usual grain methods.

## Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between May 8 and 20:—

PRINTING MASKS.—No. 11,142. Masks for photographic contact printing. Thomas Clarkson Ormrod.

VIEW-FINDERS.—No. 11,147. Combined view-finders and telemeters for photographic purposes. John Talman and Charles Henry Watson.

FILM-CHANGING DEVICE.—No. 11,611. Device for removing changed films from the packets. Hans Tonnies.

APPARATUS. — No. 11,660. Photographic apparatus. Arthur Augustus Brooks.

COLOUR PHOTOGRAPHY.—No. 11,664. Colour photography. William Robert Penrose.

PRINT WASHER.—No. 11,734. Washer for photographic prints. Francis George England.

FLASHLIGHT APPARATUS.—No. 11,783. Flashlight apparatus for photographic purposes. George Barker, for James Henry Smith, United States.

TRIPOD HEAD.—No. 11,858. Form of head for metal telescopic tripods for cameras. William Edward Billington.

PROJECTION APPARATUS.—No. 12,042. Automatic picture or like projection apparatus. Joseph Guerzoni.

CINEMATOGRAPHS.—No. 12,064. Producing films for cinematograph, and method thereof. Richard Harrison and Alfred Riley.

CINEMATOGRAPHS.—No. 12,146. Apparatus for and in connection with exhibiting cinematographic and other objects by solar light. George Robson.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

DIAPHRAGM SHUTTERS.—No. 8961, 1910 (April 13, 1910). The invention relates to improvements in photographic shutters of that form which are used close to, or between the lens combinations, and generally known as between-lens, or front-lens shutters. The invention has for its object the providing of a shutter of this kind, which will give the usual movements for "time" exposures, and also a wide range of instantaneous exposures, of short duration, owing to the exposing plates, or blades, being continuous in one direction during their opening, and closing, of the shutter aperture, together with the method employed to operate them. The essential part of the invention is the rigid connecting of the exposing blades, to pivots formed of toothed pinions, about which pivots the blades turn, and the meshing of the pinions to an internal rack, cut on the inner edge of a revolving flat ring, or capstan. This revolving ring is placed between two plates, which form the bearings for four pinions, equally spaced round, and in gear with, the rack cut on the inside edge of the revolving ring, which by means of a raised part, fitting recesses in the plates, is capable of being revolved smoothly and easily between the plates. The exposing blades, made from thin metal, are firmly attached, each to a pinion, the blades sliding over each other. The blades, and their pinions, and the revolving ring, are thus all contained between the plates forming the base of the shutter, these base plates having a central aperture of suitable size. It will be seen that by turning the revolving ring, the blades will move over the aperture of the shutter, the shape of the blades being such, that when they are moved in unison, at the commencement of an exposure, they present an opaque portion over the shutter aperture, but as the ring is further revolved, a cut away, or reduced part of the blades (which is not capable of covering the shutter opening), is moved across the shutter opening, thereby allowing light to pass, and make an exposure. By continuing the movement of the ring the opaque part of the blades again covers the shutter opening, and completes the exposure.

It will be seen that the blades are again in the position they occupied at the commencement, and that one complete revolution of the blades is required to make and complete an exposure. It will be seen from this that the number of teeth on the pinion decides the distance it is required to move the revolving ring, in making an exposure, and that a similar movement of the ring in the same direction will make a second exposure, the motion being continued for further exposures, the duration of the exposure depending upon the strength of the driving force applied to revolve the ring. To effect this, a strong helical spring is positioned to a part of the shutter box by one end, and connected by the other to a sliding plate, operating and moving it across part of the shutter base. To this sliding plate is fixed a movable pawl, which engages with ratchet teeth, or projections, formed on the outer edge of the revolving ring. The action being that when the sliding plate and pawl is pushed over (against the tension of the spring) to one side, and held by a suitable detention pawl, the spring is under tension, and is tending to force the plate back to its normal position, the pawl fixed to the sliding plate having become positioned behind one of the teeth in the ring. It will be seen that when the retaining pawl is released, the pawl fixed to the sliding plate will move with the plate, and push the revolving ring forward, and so effect an exposure. The distance the sliding plate, and the pawl, travel across is just sufficient to advance the ring the required distance to revolve the blades one complete revolution. To reset the driving mechanism, the sliding plate is again drawn over to the set position, the pawl, by reason of its shape, and the aid of a spring, slides, or turns, out of action, and does not engage with the teeth on the ring, when moved to the "set" position. Suitable means are provided to tension the driving spring, by stretching same, so as to increase or decrease the rapidity of the exposure, and a pneumatic valve, or other retarding mechanism, can be arranged to check the progress of the sliding plate, and pawl, or the revolving ring. It will be seen that the movement of the revolving ring is always in one direction, and that the pawl, or driving mechanism, which operates the ring, is not permanently connected to same, so that it is possible to reverse the direction of the revolving ring by other driving mechanism working in the opposite direction, the driving mechanism being conveniently positioned elsewhere on the shutter, to engage with the ring, when required to operate same.

To focus, the revolving ring is pushed forward by hand sufficient distance to allow the blades to uncover the shutter aperture, and afterwards returned to the "set" position, and if the driving mechanism has been previously "set," an exposure can now be immediately made without further operations to the shutter mechanism, other than releasing the releasing pawl.

For "time" exposures, suitable catches are arranged on the sliding plate, and the revolving ring, to arrest and hold same, when the blades have uncovered the opening, and the catches are so arranged that on releasing same the ring becomes free to continue its movement of closing the shutter aperture. These catches may be operated by a pneumatic plunger, or valve, connected to a ball, and tube, or "Bowden" wire mechanism, or other suitable means may be employed to operate same. The working parts may be encased in an aluminium or other metal casing, the necessary movements required to be made to the mechanism being accomplished through apertures, or slots, cut in the case. The case can be utilised to carry the lens cells by forming central tubes on same suitably threaded to engage the lens cell screws. The pinions to which the exposing blades are attached may be geared to other toothed wheels, which in turn are geared into the rack, cut in the revolving ring. By this means the distance the revolving ring has to travel to effect an exposure can be considerably reduced. Instead of connecting the blades by means of a gear rack, or wheel, a chain working over toothed drums attached to the blades may be employed, or a flexible cord twisted round and made firm to the exposing blade pivots may be used, the chain, or cord, being connected up to a plate, or ring, and operated in the manner as described for the geared ring.

It is an advantage in some instances that in making an exposure the blades open quickly to full aperture, and after remaining at full aperture the maximum time, again close quickly. To effect this, it may be arranged that the point at which the driving force is applied to the revolving ring is not a fixed position, but one whereby the driving force is applied to, and from, the centre. This may be effected by allowing the pawl, or like member, to move towards and from the centre, during an exposure, or a lever, or other member, may be interposed between the ring and the driving mechanism, to transmit the motion, and arranged so that the driving force is moved towards, and from, the fulcrum of the lever, thereby increasing and decreasing the speed of the blades during an exposure, although the pressure of the driving force is in itself a constant factor. The same effect can be obtained by allowing the first part of the pawl to disengage from the revolving ring, just as the full aperture is reached, and then after an interval, for a second part of the pawl to maintain the revolving of the ring and close the aperture. Frank Philip Whitehead, of F. Whitehead and Co., 34, Pickets Street, Balham, London, S.W.

## New Trade Names.

MALLATYPE.—No. 332,486. Drawing and photographic papers, maps, photographic, and other reproductions and similar goods included in class 39. Albert Edward Mallandain, 51, Cheapside, London, E.C., manufacturer. April 3, 1911.

EVANITE.—No. 332,369. Chemical substances used in photography. Evans, Sons, Lescher and Webb, Ltd., 56, Hanover Street, Liverpool, and 60, Bartholomew Close, London, E.C., wholesale druggists and manufacturing chemists. March 30, 1811.

MATTWOLETTE.—No. 332,574. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Arthur Holden and Sons, Ltd., 218 and 219, Bradford Street, Birmingham, manufacturers of varnish, paint, and colours. April 6, 1911.

PHOTOSTAT.—No. 331,806. Photographic cameras for making photographic copies of the pages of books, drawings, applications for life insurance, and the like. Commercial Camera Co., 323, Banigan Building, Weybosset Street, Providence, Rhode Island, U.S.A., manufacturers. March 11, 1911.

STROUD AND RENDELL (DESIGN).—No. 332,309. Optical science lanterns. Reynolds and Branson, Ltd., 13, Briggate, Leeds, and 14, Commercial Street, Leeds, manufacturers. March 28, 1911.

HORSESHOE (DEVICE).—No. 330,761. Cinematograph films for exhibition purposes. Benito Nichols, 45, Gerrard Street, London, W., merchants. February 6, 1911.

GALILEI.—No. 332,066. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. A. Liebetruth and Co., G.m.B.H., 21, Hasstrasse, Nuremberg, Germany, manufacturers. March 20, 1900.

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EASTMAN KODAK CO. OF NEW JERSEY.—In addition to the usual quarterly dividends payable on July 1, the directors of the Eastman Kodak Co. of New Jersey have declared an extra dividend of 5 per cent. upon the Common stock, also payable on July 1, to stockholders of record on May 31.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Waxing Glass for Squeegeeing.

The best method of waxing glass to which P.O.P. prints are to be squeegeed (says a writer in "Photography and Focus" for May 30) is to dissolve 1oz. of the best white wax in a pint of benzine. The solution should be complete and of a water-white colour. It is kept in a well-corked bottle. The best pad for applying it to the glass is made from an old cambric handkerchief that has often been washed, as it has no tendency to part with any "fluff." A little of the wax solution is poured on the handkerchief and at once rubbed all over the glass, which is then polished with another fluffless cloth. The glass should have a semi-glazed look when it is polished, and should be perfectly free from any signs of streakiness. The prints should be formalined and allowed to dry after fixing and washing. They should then be soaked for at least a quarter of an hour in clean cold water, laid on the glass with plenty of water, a piece of sheet rubber put on the top, and the whole gently squeegeed with a flat, not a roller, squeegee. The last operation is to look at the back to make sure that there are no airbells between the print and the glass. There should be none, but if any are visible the print must be stripped off, soaked for a few minutes longer, and again squeegeed. If this procedure is followed there will be no complaints of prints refusing to peel from the glass, or of dull specks on the prints from imperfect contact.

### Pyro Stains on the Fingers.

It seems a great drawback (writes Mr. Stanley Roberts in the "Amateur Photographer and Photographic News" for May 29) to the use of what is probably the best all-round developer, that one's fingers should be made to look unspeakable, and it occurs to me that others will be pleased to know of a method I follow, which ensures a complete immunity from stain. I have developed several hundred plates in pyro-soda—ordinary formula—during a week-end, and finished without any trace of discoloration. I think it should be agreed this is a quite sufficient test.

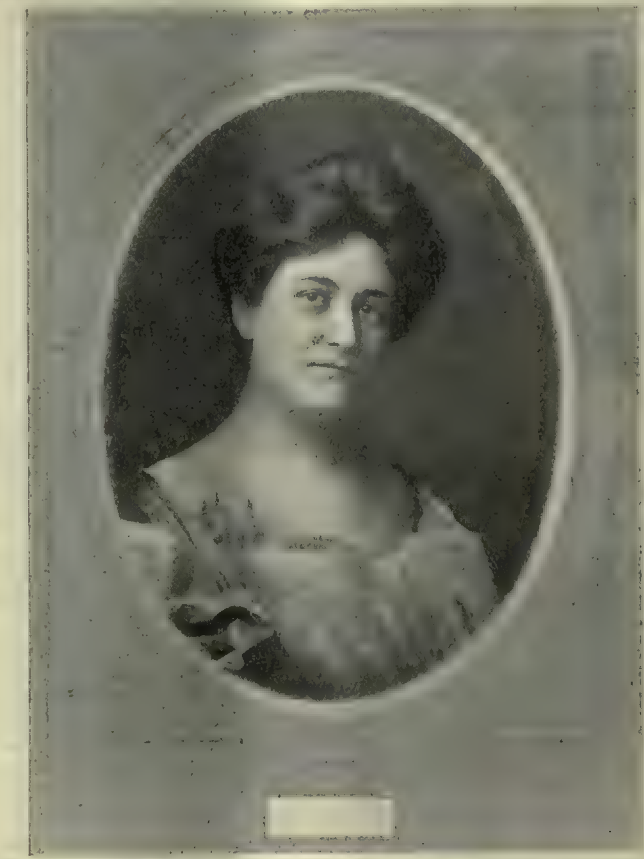
The method is simple. During development keep the tap running, and have by the side of the developing dish a bowl containing a weak solution of hydrochloric acid (about 1 in 50). Now observe the following: Never, never dip dry fingers in the developer; rinse both before and after, and immediately the plate is immersed in hypo, rinse the fingers again, and dip them in the weak acid. That is all. I have developed hundreds of plates in pyro, and never had my fingers with the suspicion of a stain since following the above method; the acid, being so very dilute, did not have any deleterious effect on the skin.

# New Materials, &c.

"Devule" Developers.—We have received from Messrs. Oppenheimer, Son and Co., Ltd., 179, Queen Victoria Street, London, E.C., samples of developing powders put up in a quite new form which allows of the chemicals being prepared in finest powder form, yet at the same time absolutely encloses them from the action of the air. The powders are, in fact, enclosed in a gelatine shell or casing. This latter is readily torn open with the finger nail and the powder collected on a sheet of paper. It will be found that within the shell is an inner compartment containing the smaller constituent of the developer; for example, the metol in a metol-hydroquinone preparation. This is dissolved first in the water, and the larger quantity of the chemicals added after complete solution.

It will thus be seen that this method of preparing packet developers, etc., allows of the substances being sent out in the finest powder, and, therefore, allowing the most rapid solution, whilst at the same time the chemicals are perfectly protected from light and air, and the developer proper in each formula also placed separately from the alkali. We should judge that this very ingenious method of issuing packet chemicals will find favour with the amateur worker. Certainly, as issued by Messrs. Oppenheimer, the preparations are highly efficient photographically, and are evidently made from the purest materials. At present the following developers are issued: Pyro-soda, metol-hydroquinone, glycin, and amidol. Dealers should apply to Mesrs. Oppenheimer for trade terms, "Devules" allowing a substantial margin of profit to the retailer.

"Paragon" Border Negatives.—When recently reviewing, in the Colonial Number, the series of "Paragon" Border Negatives now being supplied by Messrs. O. Sichel and Co., we were unable to give an illustration doing justice to the artistic nature of these negatives for border printing. We now reproduce a photograph made with one of the "Paragon" negatives, which shows fairly well the quiet yet decorative design which is adopted. An illustrated price list of the negatives may be obtained from Messrs. Sichel, 52, Bunhill Row, London, E.C.



### CATALOGUES AND TRADE NOTICES.

"The Sinclair Signpost" for May deals with the leading pieces of apparatus shown by Messrs. Sinclair and Co. at the R.P.S. Exhibition. It contains a page of highly practical hints on the overhauling of apparatus. The "Signpost" is obtainable free by customers of Messrs. Sinclair on application to 54, Haymarket, S.W.

A Barnet Handbook of Exposure.—Messrs. Elliott and Sons, Ltd., have just issued a neat pocket booklet of sixteen pages, which contains tables of exposure for the Barnet plates under all conditions of light and subject. The booklet, which is supplied gratis under the title of "The Barnet Handbook, No. 5," also contains some useful notes on the time of development of Barnet plates at various temperatures.

Second-hand Lenses and Cameras.—We have just received the current list of second-hand apparatus issued by Mr. Arthur Spencer, 41, Harrow Road, London, W. Mr. Spencer specialises in the supply of high-class second-hand lenses and cameras, and, with very few exceptions, every item in the long lists of objectives and cameras represents the production of a leading maker. The list is particularly strong in high-grade anastigmats, portrait lenses, and telephoto attachments. In cameras, Mr. Spencer's offers range from the massive 20 x 20 "Studio" to the tiny "No. 1 Blocknote," between which extremes photographers of the most diverse requirements should surely be able to obtain what they want. The list, we would add, is most conveniently arranged according to a scheme based on the size of plate for which a lens or camera is intended.

**Orthochromatic Photography.**—Under this name the Imperial Dry Plate Co., Ltd., have just issued a booklet which very usefully describes the principles and practice of colour-correct work in reference to the use of the Imperial orthochromatic plates and light-filters. The publication includes some excellent reproductions showing the advantage of using a colour-sensitive plate with a suitably adjusted light-filter in landscape and other branches of photography. The booklet is obtainable free on application to the Imperial Company.

**Studio Decoration.**—Messrs. Marion and Co., Ltd., have just issued a booklet entitled "First Impressions," which should be of immense interest to professional photographers, since it deals with the decoration of reception-rooms and studios in reference to Messrs. Marion's recently established department for carrying out such work as the erection of shop-fronts, show-cases, window fittings, etc., as well as general decorating work in studios and reception-rooms. The booklet gives a number of examples of Messrs. Marion's taste and skill in thus adding to the attractiveness of photographers' premises. We have no doubt that those contemplating any alterations will apply to 22 and 23, Soho Square, for a copy of the booklet. If they do so, they will assuredly be induced to obtain a quotation for their own requirements.

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# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, June 2.

Liverpool Amateur Photographic Association. Excursion to Canterbury (Whit Week-end).

### Saturday, June 3.

South Suburban Photographic Society. Excursion to Shoreham and Otford.
North Middlesex Photographic Society. Week-end outing to Benfleet.
Borough Polytechnic Photographic Society. Outing to Amersham (Whitsuntide Week-end).
Southport Photographic Society. Excursion to Ingleton.
The United Stereoscopic Society. Outing, Oxford and District (Whitsuntide Week-end).

### Monday, June 5.

Chelsea and District Photographic Society. Outing to Guildford.
Halifax Camera Club. Ramble to Cawthorne.
Sutton Photographic Club. Excursion to Gatton Park and district.

### Tuesday, June 6.

Royal Photographic Society. Opening of House Exhibition of Prints by the Oil transfer process. Robert Demachy, Hon. F.R.P.S. An Address by Mr. Demachy will be read.
Handsworth Photographic Society. Excursion to Oxford.

### Wednesday, June 7.

North Middlesex Photographic Society. Lantern Slide Competitions.
Edinburgh Photographic Society. Fifty-first Annual Meeting.
Balham Camera Club. Bromide and Gaslight Paper Printing Competition.

### Thursday, June 8.

London and Provincial Photographic Association. "Sulphide Toning: Some Causes of Failure." Ernest Human.

## THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A meeting of the Council was held at the Royal Photographic Society on Friday, May 26. Present, Messrs. H. Gordon Chase, Alex. Corbett, C. F. Dickinson, Alfred Ellis, S. H. Fry, F.R.P.S., W. E. Gray, F.R.P.S., George Hana, Lang Sims, Rich. N. Speaight, Knights Whittome, and Alex. Mackie, hon. secretary. Mr. Alfred Ellis in the chair.

The hon. secretary was instructed to write letters to Messrs. Kodak, Ltd., Houghtons, Ltd., and the Platinotype Co., to Messrs. T. C. Turner, Drinkwater Butt, Pirie Macdonald, and Edgar Clifton, to Mr. A. C. Brookes, secretary of the Photographic Arts and Crafts Exhibition, to the Editors of the "British Journal of Photography," and to the Council of the Royal Photographic Society, thanking them cordially for their assistance in making the past Congress a success.

Certain accounts were passed for payment. It was resolved to hold the third Congress of the Association next year in connection with the Photographic Arts and Crafts Exhibition at the Royal Horticultural Hall, Westminster.

**Croydon Camera Club.**—Four lecturettes were announced for last week's meeting, but two of these had to be postponed owing to the unavoidable absence of the authors. Dr. Mees kindly stepped into the gap with a most interesting account of some research work he and Mr. C. Welborne Piper were engaged upon, unfortunately not fit for publication owing to its present incompleteness. Mr. J. Noaks showed Autochromes in the lantern, many of which were favourably commented on.

Mr. S. T. Tayler gave a short paper, illustrated by slides, on "Photography for Profit," quite a model example of what a lecturette ought to be. His particular method of selling prints had always been to cater for the requirements of editors, the profits out of press illustration being far and away the highest that the amateur is likely to realise. Fees vary with different journals; some pay according to space occupied, others a fixed sum of so much per print, varying from 5s. to 10s. 6d., but whatever the price paid, it generally represents a generous return on outlay, even including "time," for one's spare time cannot be regarded as being worth a great deal monetarily, seeing that, as a rule, nothing is made out of it. Last year, employing Saturday afternoons alone, he cleared enough to cover the cost of a £16 camera and a little over, reckoning actual fees for prints, and not payments for literary matter accompanying them.

The first thing to ascertain was the subjects that appealed to editors, not to the readers, for the simple reason that the latter do not know in the least what appeals to them. As an instance of this, the editor of "Cycling" had more than once tried to stimulate the supply of photographic illustrations by offering a guinea each week for the best print, and ordinary fees for other photographs used. It was an extraordinary thing, but this offer hardly ever resulted in anything being submitted that was worth printing, either for technical or scientific interest. The lecturer here showed some slides from a set of twelve prints published by the paper alluded to, the result of two Saturday afternoons, and which brought in £3. The set was entitled "The Enthusiastic Novice," and represented the trials and tribulations experienced in acquiring the art of riding a bicycle. The assistance of friends was requisitioned, one of whom (the novice) was generally depicted prostrate on dusty or muddy roads. In answer to a question, the lecturer stated that the share of the emoluments which fell to the lot of this amateur contortionist was a set of prints, which gave great gratification. Personally, we should rather fight shy of accompanying Mr. Tayler on photographic expeditions, if, say, falling into duck-ponds, colliding with chimney sweeps, and the like, were a condition precedent to the pleasure of his society. Neither can we consider "Art for the sake of cash to others" particularly alluring, but this may be a selfish view to take, and remembering Carlyle's famous dictum, the possibilities opened out may not be so restricted as might, at first sight, be supposed.

Another set, involving very little trouble (to the lecturer presumably), illustrated different methods of mounting and dismounting a bicycle, and afforded forty shillings, and a further fee for a short article accompanying. The ingenuity of the modern amateur with financial proclivities was also well evidenced by a picture of a road under repair, with a steam-roller and other appurtenances. The average photographer would have passed by the scene without giving it a second thought, but not so the artful Mr. Tayler, who immediately scented cash in the air. A halt was made and the passage of a motor car awaited. Luckily the motorist stopped to ask his way, and as the attitudes of the driver and roadmen looked very much like an altercation in progress, the resulting "snap" was entitled "Mutual Recriminations," and duly appeared in a motoring journal.

**The Montreal Amateur Athletic Association Camera Club** held its fifth annual exhibition in the life members' room of the Association, from April 17 to 22. There were close upon 200 pictures hung, including entries from various parts of Canada, the United States, and England, many of which displayed artistic qualities of a high standard. The exhibits were classified and awards made as follows:—

Open Class A, for figure studies, first prize, W. S. Fife, Toronto, "Simple Life in Toronto"; second prize, H. Y. Summons, London, Eng., "Salome—The Head." Open Class B, for all other subjects, first prize, A. W. Bryson, the M.A.A.A. Camera Club, "Solitude"; second prize, B. F. Langland, Milwaukee, "Evening Landscape."

Club Class, first prize, W. R. Allen, "The Willows"; second prize, A. M. Bryson, "November." Green prize (Club), Chas. Adkin, "On Paul's Cray Common." The prizes were silver plaques for firsts and bronze plaques for the others. In addition to the above, the following received certificates of honourable mention: Wm. Armbruster, Jersey City, "Grazing"; Jno. Dove, Philadelphia, "Sunlight and Shadow"; B. F. Langland, Milwaukee, "A City By-Way"; H. Mackie, Toronto, "Lily Waiting Time and Tide"; G. A. Melville, M.A.A.A. Camera Club, "The Student"; Mme. Poloquin, Montreal, "A Country Woman"; and A. Van, Toronto, "Sparrows."

The club held its annual meeting on April 28, in the club house, Peel Street, when the following were elected to office:—President, W. R. Allen; Vice-President, G. A. Melville; Recording Secretary-Treasurer, Chas. Adkin; Corresponding Secretary, P. S. Robinson; Executive Committee, M. Barford, Arthur McNally, and Arthur M. Russell.

During the past year the club premises have been remodelled and extended, which has doubled the working accommodation.

All communications should be addressed to the Corresponding Secretary, 250, Peel Street, Montreal, Canada.

Worthing Camera Club.—At the recent annual meeting of the Club it was decided to establish a record and survey section and to issue a monthly circular.

## Commercial & Legal Intelligence.

Legal Notices.—A receiving order has been made in the case of Samuel Hodge, photographer, etc., Spohr House, Fore Street, Sidmouth, Devonshire. The first meeting took place on June 1, and the public examination is to be held on June 14, both at Exeter.

Liabilities amounting to £451 14s. 11d. and assets estimated to realise £4 10s. 9d. are disclosed by the statement of affairs in the bankruptcy of Thomas Page Swaine, of 41, High Street, Broadstairs, photographer. The causes of failure as stated by the debtor are:—"Loss of approximately £400 as a result of a fire at my premises in 1903, since which time I have always been handicapped for capital, and moreover of recent years I have had considerable competition to contend with." The Official Receiver's observations are as follows:—

The receiving order was made on the petition of the debtor, who was adjudged bankrupt the same day on his own application.

The debtor (aged forty-seven years) states that he had been engaged as a manager for about two years by a photographer at Broadstairs, but left that employment about sixteen years ago and commenced business on his own account as a photographer at St. Peter's. It appears, however, that in view of an agreement he made with his former employer he was precluded from commencing business in that locality, and proceedings were instituted in the High Court for an injunction restraining the debtor trading at St. Peter's and damages were claimed. As a result, he states that damages were awarded against him for £100, and that the costs in connection with the proceedings amounted to £50 odd. For nine months subsequently he was out of occupation, and being absolutely without means he alleges that certain friends of his purchased his former employer's business at Broadstairs. The restriction as to trading having been removed, the debtor was apparently engaged as manager. He states that the purchase price of the business was fixed at £400. It appears that the business was purchased in the name of two friends of the debtor, who provided the purchase money, although the business was carried on in the name of Swaine and Co., the arrangement being that when the debtor had paid the full amount of the purchase price, with interest at 4 per cent., the business should become his own property. The debtor states that the business was very successful, and thirteen years ago he removed to more commodious premises—41, High Street, Broadstairs. The whole of the purchase price of £400 was repaid some years ago, and the business was transferred to the debtor. He states that in the year of 1903 he sustained a considerable loss as the result of a fire at his premises, when the whole of his stock, cameras, etc., were destroyed. He alleges that he was insured in respect of the stock to the extent of £200 only, and estimates a loss of £400 in consequence of the fire and temporary discontinuance of his business. Since then he states he has been considerably handicapped for working capital, and, furthermore, that during the past four or five years his turnover in the photographic business has been much reduced owing to the competition in the sales of photographic appliances and also to the general use by the public of their own cameras. About eighteen months ago he had recourse to professional moneylenders, and admits that during the past six months he had paid, with the assistance of his friends, a number of judgment summonses. He admits that he discovered his insolvency about two years ago, but hoped in time, by continuing his business, to retrieve his position. He does not appear to have kept an accurate record of all his receipts and expenditure. The deficiency account is incomplete and is of no value as an account. Further information will be required on this point. All the debts appear to be trade and domestic debts, with the exception of four loans, amounting together to £115 11s. 10d., of which sum £56 10s. is due to a professional moneylender.

### NEW COMPANIES.

Baryta, Ltd.—£150,000 (£1). To carry on the business of manufacturers of and dealers in photographic paper, photographic and scientific appliances and chemicals, publishers, printers, lithographers, stationers, makers of advertising novelties, posters, and fancy goods, etc., and to adopt an agreement with the London Venture Corporation, Ltd. The signatories are: H. R. Ireland, Norfolk Villa, St. Clement's Avenue, Leigh-on-Sea; J. M. Young, 21, Gospel Oak Grove, N.W.; C. J. S. Toneham, 61, Chepley Street, New Cross, S.E.; A. Dudley, 26, Elton Road, Kingston Hill; J. G. Botheridge, 34, Steedman Street, S.E.; F. Smith, Oak Villa, Codrington Hill, Honor Oak, S.E.; H. A. Nutland, 47, Wandle Road, Upper Tooting, S.W. (one share each). Private. First directors (not less than two nor more than seven): H. Aspden, S. Barber, and C. L. Bemrose. £250. £150 each per annum (£100 extra for the chairman) and a percentage of the profits. 5, Moorgate Street, E.C. (115,959.)

## News and Notes.

Changes of Address.—Mr. J. Rudochoff, trade enlarger, notifies us of his change of address from Coram Street, Russell Square, to 63, Swinderby Road, Wembley, N.W.

Mr. E. J. Thom has removed from 63, St. Paul's Churchyard to 29, Ludgate Hill, London, E.C.

Barnet Showcards.—Messrs. Elliott and Sons, Ltd., Barnet, Herts, send us a selection of the showcards, window-bills, and shelf-slips which they have just prepared for the current season for issue to photographic dealers. These items of advertising literature are most admirably produced, several of them being printed on the Barnet bromide papers, but all, without exception, provide "bold advertisement" for the Barnet products.

An Ideal Press Secretary.—The numerous Press photographers and reporters employed at the R.N. and M. Tournament at Olympia feel their grateful appreciation of the active and practical co-operation of the Press Secretary, Captain Owen Wheeler, of telephoto and lens-hood fame. His genial manner and extensive knowledge of photography has been of the greatest assistance to the illustrated Press, not only in securing a fine set of pictures, but a wide advertisement for this deserving charity.

Early Closing of Aberdeen Studios.—It is expected that in the near future a closing order for the photographic trade in Aberdeen will be in operation. At a meeting of photographers, held a few days ago, nineteen out of twenty-three present were agreeable that photographers should close at seven o'clock, and a committee was appointed to fix the hours of closing, with the view of securing a closing order.

The committee have decided on the following hours of closing:—Seven o'clock on the evenings of Monday, Wednesday, Thursday, and Friday; two o'clock on the afternoon of Tuesday; eight o'clock on Saturday; and closed all day on the May and July holidays. The above hours are subject to the following exemptions:—From

November 1 to the end of February the closing hours of Monday, Wednesday, Thursday, and Friday to be eight o'clock.

This will allow of the Christmas work and evening engagements being overtaken.

The recommendations are at present under the consideration of the photographers, and if they are approved of, steps will immediately be taken to have a closing order framed.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## ARC-LAMPS IN PROCESS WORK.

To the Editors.

Gentlemen,—In reference to the mention of our name in the article on artificial lighting in the "Journal" for the 26th inst., we should like to point out that the lamps which we use are the "Westminster" arc-lamps, and not the Cooper-Hewitt lamps (the latter only being used in the case of photographic copying). You mention our address is Chancery Lane, but our new address is Milford House, Milford Lane, Strand.—Yours faithfully,

Anglo Engraving Co., Ltd.,
E. H. Stoll.

## SUNDAY CLOSING.

To the Editors.

Gentlemen,—The enthusiasm which marked this discussion at the Congress, and your sympathetic comments in this week's "B.J.," prompt me to ask to be allowed to supplement your résumé of the provisions of the Shops Bill, for the benefit of those photographers who have not studied the question.

Now, it is not certain that photographers will be allowed to come under the Bill for the purpose of Sunday closing only, and so the disadvantages of the whole Bill must be faced. Undoubtedly, the overtime clauses would be irksome in their present form. Photography is a business which in most places comes in rushes, and if an assistant is employed and paid his or her full wages during the whole year, many months of which are decidedly quiet, it is only reasonable that during the busy season overtime should be worked ungrudgingly for the benefit of the employer; and the State should not put obstacles in the way, especially if the normal hours are below the maximum allowed by the Bill, viz., sixty. Now, I put it that fifty-six hours per week, exclusive of meal-times, is a reasonable maximum in normal times for a business which claims to be both an art and a profession, and I would suggest to the Government that in such a case there should be a considerable extra allowance of overtime, say 100 *extra* hours per annum. This would remove the objections of a good many traders as well as photographers.

Then again, there is the question whether, if the Bill applies to photographers, it would be illegal to accept a casual appointment out of doors on a Sunday. Possibly it would; but against this may be set the fact that it would also be illegal for the semi-amateur to do his little bit of business on that day.

These are the objections to the Bill, and what do they amount to, as the price of the boon of a free Sunday, and fair play for all? I venture to appeal to photographers throughout the country to follow the lead given us by Mr. Drummond Shiels and his fellow workers in Scotland, and, if they have not already done so, to write at once in the terms of the P.P.A. circular to their Members of Parliament.

I had not the slightest idea when I decided to introduce this subject at the Congress of the interest it was going to evoke. Can there be better proof (if proof be needed at all) of the usefulness to the profession of such a body as the P.P.A., with the opportunities it gives for us to meet together and exchange views? And the present (at the conclusion of a second most successful Congress) seems a fitting time to invite those who have hitherto stood aloof to come in and swell the growing membership of the Association, and so be in the movement for a free Sunday, if for no higher reason, in order to show that Britons will not be slaves, and that our business shall exist for our benefit, instead of us existing just for the sake of carrying on a business.

Bowes Park, N. H. J. Rigden.

To the Editors.

Gentlemen,—I think Mr. Cooper, of Taunton, deserves a word of thanks for his remarks in defence of those who had neither the leisure nor the money to spend on listening to speeches advocating the Government to place restrictions on our trade.

In my own case, I have a business in a Lancashire industrial town, and do the best work I can, getting postcards, 5s. per dozen, and a fair amount of carbon work. That is not "trade of the cut-price order," is it?

To meet the convenience of customers, I open Sundays 10 to 5. If I did not open Sundays, my customers would either not be photographed, or would wait for their "wakes" holiday at the seaside, and patronise the man there. Even if the cable was outside the door (which it certainly is not), why should I be compelled to fall back on artificial light, because of the prejudice to Sunday work existing in the minds of those who (in some cases) are better off without Sunday opening, all towns not being alike?

How, Mr. Editor, would you like to work in a cotton mill from early morn till eve, and then be told you had arrived at the happiest hour for obtaining your sweetest expression? But I shall be told there is Saturday afternoon. Yes, there is; and what photographer is there, who has not appreciated the difficulty of taking twins on a dull November Saturday afternoon at 3.30 p.m., when a far better result could have been obtained the following morning, at less cost of material and temper?

It is not overwork, but underwork, we are suffering from, and if we turn trade away from our doors on the one day when the working-class people are dressed and feeling fit, what shall be said of us? Generally a better spirit exists as to Sunday to-day.

We have Sunday concerts in parks and halls, opening of museums, railway excursions, extra trams, etc. All honour to the men who devote their services to making the Sunday of the working toilers brighter and happier. Lancastrian.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

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S. Hart, C. E. Franck, and Others.—In our next.

Mirrorscope.—Could you oblige me with the address of Messrs. Carr Bros., whose machine, the "Mirrorscope," you noticed in your paper some weeks ago?—Argee.

11, Queen Victoria Street, E.C.

X-Rays.—Will you kindly inform me where in London a client of mine could have an injury to his shoulder photographed by the X-rays? Would he have to go to one of the big hospitals, or are there firms who undertake this work?—Beejaypeeite.

Harry W. Cox, 1a, Rosebery Avenue, London.

Book on Calculus.—In your issue of March 17, 1911, on page

190, you refer to a text-book on the calculus entitled "The Calculus Made Easy," by F.R.S. I should be very glad if you would furnish me with the name of the publishers of this book and its price.—Thomas Petty.

The publishers are Macmillan; the price, 2s.

**Copying Process.**—I shall be glad if you will let me know which you consider to be the best copying method on the market. I want one for copying circular letters in connection with the above business.—Copy.

We would refer you to the Roneo Co., 26, Holborn Viaduct, London, who are specialists in circular-letter producing machines.

**Book on Portraiture.**—Will you kindly inform me who are the publishers of the book "Artistic Lighting in Portraiture," which you recommended a short time ago?—F. A. Josland.

We believe this book (by Inglis) is out of print, but try Geo. Routledge and Co., 68, Carter Lane. The most modern book on the subject is "Art Principles in Portrait Photography," by O. W. Beck (B. T. Batsford, 12s. 6d.).

**Misrepresentation.**—A member of a "free enlargement" firm has called upon (at least) one customer of mine and procured an order from her on the representation that he was in partnership with me. Have I any legal remedy? If not, what would you advise me to do in order to protect myself and my customers from the dishonourable tactics of this firm and other firms like it?—A Many Years' Subscriber.

It is an indictable offence to represent partnership or agency where none exists, but the question for you is whether the people are worth powder and shot. We should advise you to find out who they are before spending money in lawyers' fees on them.

**Camera for Large Lens.**—Where could I get a suitable field camera for half-plate *f*/4.5 Busch "Omnar" anastigmat lens, as the ordinary ones are unsuitable, the front and blinds not being large enough? Any time will do, when you have space, as I take the paper every week.—J. G.

Any of the square-bellows pattern of camera will take the lens, or can easily be made to do so; but between these and the very conical-light patterns you can get several the fronts of which will accommodate your objective. We advise you to write to one or two of the leading makers of field cameras named on page 1,139 of the current "Almanac," stating the outside diameter of flange of lens.

**Acid Fixing Bath.**—Do you advise using an acid bath for hypo? I have seen it stated in a text-book that acid should never be added to hypo, as it decomposes it, and causes sulphur toning. Does this apply to negatives, or only to prints?—R. M. B.

There is no objection in adding sulphurous acid to hypo, and the most convenient way of doing this is to add potass. metabisulphite, which supplies the free sulphurous acid and also the proper quantity of potass. sulphite for taking up any sulphuric acid which might be formed by oxidation in the bath. Add about half to one ounce of metabisulphite to each pint of fixer containing four ounces of hypo. This is the best bath you can make for negative plates, bromide or gaslight papers, but for P.O.P. prints it is best to use a solution of plain hypo.

**Smoking in the Dark-Room.**—During the last week or two I have had some little trouble with the negatives. I find they are all somewhat flat and veiled, in some cases really foggy. I have tried all possible causes, but without success, excepting that it has come to my knowledge that one of the assistants, the dark-room hand, has been making a practice of smoking cigarettes whilst loading the dark slides and developing plates. Can you give me your opinion as to whether this would in any way account for the inferior quality of the negatives?—Employer.

It would not have any effect at all, unless, of course, a cigarette was kept quite close to the surface of a highly sensitive plate, when, particularly in the case of an ortho' plate, local fog might be caused. We have heard of this happening in the case of an extremely short-sighted worker, who was also an habitual cigarette smoker.

**Indentures.**—A pupil is indentured for a term of years; part of which time receives salary; no premium paid. Pupil is often ill, staying away two, three, and four days. Last time three and a half weeks. Time lost, progress stopped. Is employer legally justified in stopping salary for absence and adding that period of absence to end of term, paying then the rate of salary due when the absence occurred? Or should the salary be paid during absence, but time made up end of term, without salary? Is position altered if premium is paid by pupil? If so, in what way? Has length of absence any control?—Pupil.

The questions you ask should be covered by the terms of the indentures, which should make provision for all such contingencies. The employer would not be justified in stopping salary for absence owing to sickness, and certainly could not add to the term specified in the indentures unless that document contained a special provision to that effect. The solicitor who drew up the indentures would be the proper person to give advice on the various questions raised, as everything depends on the precise terms agreed upon.

**Studio.**—Would you be kind enough, through your "Correspondence," to tell me if I could get decent photographs with a studio that I am going to buy, which faces south? Would it be better if I had it facing north? What kind of stuff should I require for blinds for same? And please tell me the best book to get on studio photography.—W. Mandir.

Good work can be done in a studio wth a south light, but it is more difficult to control and more subject to variation than a north light. Mr. Valentine Blanchard worked with great success in a south-light studio for many years. He used in addition to the ordinary blinds, light frames made of laths and covered with papier minéral. These were placed as near as possible to the glass; or the papier minéral may be pasted directly upon the glass—inside, of course. We would recommend you to have curtains running on wires stretched from end to end of the studio. Dark green sateen and white nainsook or jaconet answer well as blind materials. They are inexpensive, and the white blinds are easily washed. Robinson's "Studio, and What to Do In It," Bolas on the "Studio," and Duchochois' "Lighting in Photographic Studios" are all reliable books.

**Photography of Illuminations, etc.**—In view of the approaching Coronation festivities, I feel sure there are many of your readers who would appreciate a few hints as to how to get the best results in photographing such things as, say, torchlight procession, bonfire, fireworks. If you do not think it worth while to give an article on the subject, perhaps you will oblige with a reply in "Answers" column?—Jollification.

The various subjects you mention will require somewhat different treatment. For the first two a very fast lens and rapid orthochromatic plate will be desirable, as shutter exposures will be necessary. An exposure of one-fifth second with an aperture of *f*/4.5 might give a good result on a very rapid ortho. plate. Fireworks may be dealt with just like ordinary illuminations, giving a time exposure, with an aperture of about *f*/8 or *f*/11. About twenty seconds at *f*/11 will usually give good results for illuminations, but you should make some experiments first with the plates you propose to use. Fireworks fix their own exposure, like lightning flashes, and you must regulate the size of the stop with reference to the speed of the plate. An *f*/6 stop will probably serve with an extra-rapid plate.

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THE BRITISH

# JOURNAL OF PHOTOGRAPHY.

No. 2666. Vol. LVIII. FRIDAY, JUNE 9, 1911. Price Twopence.

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## SUMMARY.

The conclusion of the lecture by Mr. Drinkwater Butt before the Professional Photographers' Congress is given on pages 431-436. Mr. Butt here deals with a number of studios designed and decorated by himself, pointing out the convenience which can often be secured when erecting studios on premises which at the commencement are not well adapted for a photographic establishment.

In the paper by Pirie McDonald, read before the Congress, the author pleaded for mental sympathy with the sitter, for admiration of his best qualities, and, as regards "photography of men," for consideration of the fact that most portraits of men are taken for women. (P. 436.)

The Congress paper by Mr. Edgar Clifton on "The Lens in the Studio" dealt with the chief classes of objectives which are of service in portrait photography. (P. 437.)

A few of the advisable measures which should be employed in taking photographs of articles of manufacture, etc., for catalogue illustration, are mentioned in an article on page 430. Such work is in growing demand, and should repay the attention of professional photographers.

Some further correspondence on Sunday closing in reference to the Shops Bill, now before a Parliamentary committee, will be found on page 445.

Messrs. Robinson and Son, of Redhill, record the recovery of residues to the value of £25 from £233 worth of platinotype paper. (P. 446.)

We quote some hints on photographing Coronation festivities from our Newcastle contemporary, "The Red Lamp." (P. 438.)

A correspondent gives a hint on keeping measures clean in the dark-room. (P. 445.)

The patent specification of the Ives "Tripak" camera will be found under "Patent News." (P. 440.)

A cause of fogged negatives, which we endeavour to locate, is the subject of a letter from a troubled correspondent. (P. 446.)

An appeal is being made to photographers in Kent to take part in a photographic survey of that county. (P. 438.)

Improvements in intaglio printing, machine etching, and "make-ready" are mentioned under "Photo-Mechanical Notes." (P. 440.)

## EX CATHEDRA.

**Warm Weather Fog.** As usual at this time of the year we are receiving quite a number of complaints with regard to foggy negatives, and there is no doubt that the present spell of warm weather is the responsible agent. Dark-rooms are not as a rule any too well ventilated, and it is not at all unusual for the solutions kept in them to attain a temperature well above the normal. The remedy is either to keep the temperature under control or else to give up the use of developers which are seriously affected by temperature. Hydroquinone is a developer which is very sensitive to temperature, and therefore it is as well to avoid its use either alone or in conjunction with metol. Pyro-soda is less sensitive and is far more likely to give clean results in exceptionally hot weather. Attempts to control the temperature are not likely to be successful unless great care is taken, for it is more difficult to keep temperature down in hot weather than it is to keep it up in the cold season. The best method to adopt involves the use of the cold-water tap, for the water supply is the one thing that keeps a fairly constant temperature. Certain precautions are, however, necessary.

* * *

**Cooling the Water Supply.** Water that has been standing in the service pipe for some time is much warmer than the water in the supply pipes and the mains; therefore when starting work the taps should be allowed to run for a few minutes to get rid of the warmer water. After this the taps should be left dripping slightly during all the working time, so as to keep the water continually in movement. The developer to be used should be put in a glass flask and placed under a running tap, so that the water may flow over the body of the flask. This is one of the best possible ways of cooling a solution, and a method that is frequently employed in the laboratory, though photographers generally do not seem to think of it. While the developer is being cooled down the measures and dishes to be used should be filled with cold water and allowed to stand, so that the vessels to be used may be of the same temperature as the developer. Finally, the dish should not be held in the hands during development. If it is to be rocked it should either be put on a board or in a bigger dish, and this extra support alone should be touched. The extent to which warm hands raise the temperature is perhaps hardly realised, but in cold weather we frequently warm up the developer by simply putting it in a test tube, which is held in both hands. In one minute the temperature may rise something like two degrees, and if a thermometer is put in the tube this is a very simple method of adjusting the temperature to some exact degree.

**Controlling the Temperature.** We have mentioned the desirability of letting taps drip during the working hours so as to keep the water in motion in the pipes. The water thus kept running need not be wasted, as it can be utilised to make a cold support for the dishes and measures. The tap can be connected to a piece of compo piping that is coiled into a flat spiral, and the continual flow of water through this piping will keep it cool, together with any vessels that may be placed upon it. In this way we can form a cold mat that will be eminently useful in hot weather and that can be turned into a warm mat in winter by simply connecting it to a hot-water tap. If hot water is laid on, as it should be if possible in every dark-room, a barber's tap is a very desirable convenience, as with it the temperature of the water supply can be adjusted to a nicety. This tap is supplied from both the hot and cold water pipes, and it controls the relative quantities of hot and cold water delivered, so that any desired mixture can be obtained. Water of mean temperature can then be obtained at any time in either summer or winter, which is a very great convenience in photographic work.

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## CATALOGUE WORK.

In the majority of cases the present day photographer cannot depend as his predecessors did upon keeping up his returns upon portraiture alone. At the end of Mr. T. C. Turner's P.P.A. paper there is an allusion to the use and value of flash-light for certain classes of work which the majority of photographers allow to pass into other hands, either because they do not appreciate its importance or because they are incapable of executing them in a satisfactory manner. One of the principal of these is the photographing of comparatively small articles for catalogue and other trade purposes. It is difficult to persuade the average operator that anything more can be done with a lot of china ware, silver-plate, jewellery, or fancy leather goods than to stick it up in front of the camera and "fire away." A manufacturer may be very desirous of having his goods photographed at the nearest studio, where his assistant can wait while they are done and take them away with him, but if the results are not comparable with those which can be obtained by the process people, he has, at considerable inconvenience and expense, to send his goods where the best work is done. It is not necessary here to go into the various methods which have been recommended for photographing bright metal goods, cut glass, and the like, but it may prove useful to many whose work is confined to portraiture and architecture if we indicate the directions in which a move should be made by those desirous of getting a share in what is now becoming an important branch of photographic work.

In the first place, suitable plates and light-filters must be employed, and in the majority of cases Panchromatic plates used with properly adjusted screens will amply repay the additional expense and trouble attendant upon their use. We have in our mind the name of a firm which, from a moribund state while dependent upon ordinary work, has rapidly reached a flourishing condition by availing themselves of the facilities which the plate-makers have placed in their hands, their services being sought by both manufacturers and printers, as well as by private owners of "objets d'art." Proper provision must also be made for the display and arrangement of small articles, so that an undue amount of time is not wasted in preparation. A few boards covered with cloth of various tones ranging from black to white, each with a miniature "continuous foreground," supplemented by a little platform a few inches wide and high, over which the foreground can be stretched when necessary, will serve for very many kinds of goods, while a "vertical" camera stand is almost a necessity. By this we mean a stand which will allow the lens to be pointed down upon a horizontal board, on which the articles are grouped. For example, if a collection of silver watch chains has to be shown upon a dark background, they are simply laid in suitable curves upon a board covered with black velvet, while if a light background is ordered they are laid upon a sheet of plate-glass, a few inches below which is a sheet of very light grey card or paper. This, of course, obviates the shadow which so often confuses the outlines of objects laid directly upon a light surface. A long focus lens should be employed whenever possible, especially when taking objects with rectilinear outlines. Jewel- and cash-boxes, dressing-cases, and similar articles are frequently almost entirely re-drawn by an artist, on account of the violent perspective of the photograph. Even a telephoto lens may be employed with advantage, one well-known illustrator testifying to the value of the Adon, by means of which the amount of hand work was reduced to the minimum.

One word of caution is necessary to those new to the work. Never tamper with any object sent to be photographed. We read of dabbing silver ware with putty, filling glasses with coloured liquids, sponging paintings over with stout, etc. Our advice is to avoid all these practices most religiously, if you want a second order from the same customer. Get your results by the skilful management of light. You may have to put your silver ware into a little tissue paper studio, to enclose your polished goods in a dark screen with a hole cut for the lens to peep through, but do not tamper with the object. A final caution is always to use backed plates. In a few cases they may not be absolutely necessary; in the majority of cases they are indispensable. With Panchromatic plates the backing is an invaluable guide when filling the slide in absolute darkness, which should always be done, even if a "safe light" is used for development, although for this purpose the tank method is greatly superior.

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Night as a Background.—Mr. Ward Muir writes to "Country Life":—I have found that many subjects—fruit-blossom is a case in point—suffer from what we photographers call a spotty background, and that such subjects, if taken at night, not only have a curiously decorative (if not necessarily quite natural) effect, but stand out with beautiful distinctness because there is nothing, or next to nothing, visible behind them. They emerge from a mere blank of vague blackness, and are thus isolated from distracting surroundings which would have spoilt them utterly if they had been photographed in the full glare of day. Ordinary flashpowder is used, and, of course, the light "carries" only a very short distance, so that close-up subjects must be chosen or they will not appear on the plate.

The Copyright Bill.—Copyright in engravings and portraits was discussed by the Grand Committee on the Copyright Bill on May 30, Mr. Buxton stating that the Government had come to the conclusion that where there was no agreement between artist and engraver the original author should be the first owner.

Mr. John Ward said that during the Stoke election a photographer took his photograph, and his election agent used the block on his polling cards. He (Mr. Ward) naturally thought he was the owner of his own face and figure, but the photographer demanded toll, and succeeded in getting it.

Sir John Simon said if Mr. Ward submitted himself willingly to the photographer as a favour, the copyright would belong to the photographer. For this purpose he was taking a photograph of a public building or other work. (Laughter.) In such a case it would be hardly fair that the man who went to the expense of taking the photograph should not have the copyright.

An amendment providing that an author should be free to make what contract he could during lifetime and for a period of twenty-five years after death, but that during the second period of twenty-five years after his death the copyright should revert to his estate for the benefit of his descendants, was adopted.

# THE PROFESSIONAL PHOTOGRAPHERS' CONGRESS.

### IV.

In the following pages we bring to a conclusion the report of the recent Congress of the Professional Photographers' Association. In the case of the paper by Mr. Drinkwater Butt, many of the photographers, views of whose studios were shown on the screen, were themselves present, and were able to reply to questions relative to the features of their studios put to them by those present. The paper by Mr. Edgar Clifton likewise depended for much of its interest on the numerous lantern illustrations used in conjunction with it, and the printed report, which will be found on another page, is necessarily the result of very considerable abridgment.

Among the proceedings which took place at the annual dinner of the Association there was one which we are sorry to find was omitted from our report of last week. This was the presentation to the retiring president, Mr. William Gill, of a gold replica of the president's badge. Mr. F. P. Moffat's few words of thanks to Mr. Gill for his services during his year of presidency were most enthusiastically received, and Mr. Gill, in replying, expressed the pleasure which the souvenir afforded him as the token of the members' feelings that he had endeavoured to serve them to the best of his ability during his year of office.

## THE STUDIO: ITS CONSTRUCTION AND DECORATION.

The introduction of the next few slides here, before I proceed to show you those of the studios contributed by the body of members already referred to, will also enable me to bring before you some of the points necessary to be observed in the design of such structures, as exemplified in my own practice.

I may just premise that if you do not find these next slides particularly good from the photographic point of view, it is to be remembered that they have not been made from specially prepared diagrams, but are merely copies of working architectural drawings, some not too carefully executed as regards finish, and some also the worse for wear. They have also lost a good deal on account of the great amount of reduction necessary to get them on to lantern slides.

The first one (Fig. 7) shows the drawings for a studio erected for a wealthy amateur in Wales. Like many of those designed for professional use it takes the form of an addition to an already existing building, being, in this case, practically the addition of a story to the back part of a large country house. In the original drawing the old work is shown in black and the new in red; but the extent of the additions can be seen even on the slide by noting the dotted lines showing the old roof in the elevations.

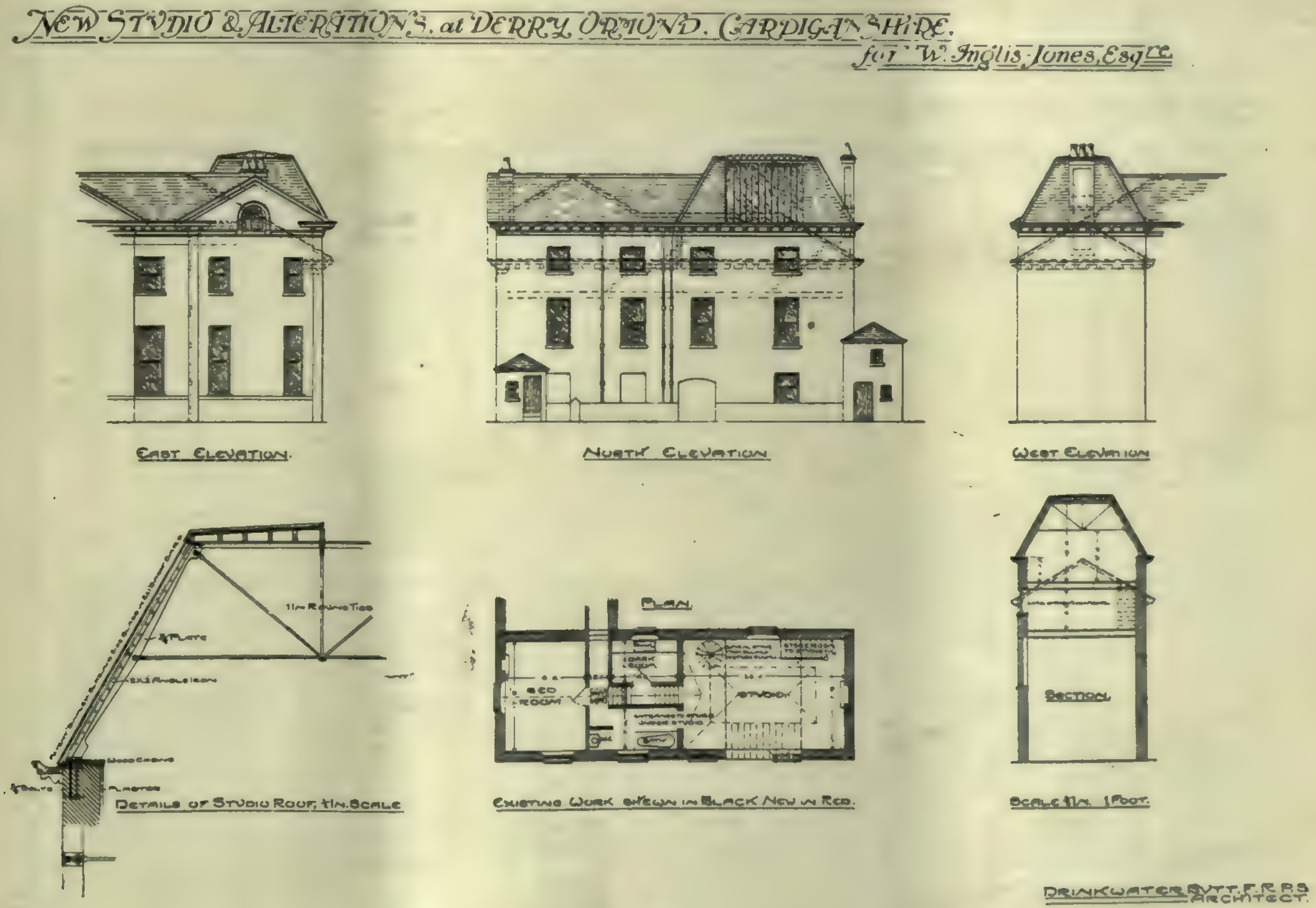

New Studio & Alterations, at Derry Ormond, Cardiganshire.
for W. Inglis Jones, Esqre.
East Elevation.
North Elevation
West Elevation
1½in. Round Tie
¾ Plate
Angle Iron
Wood Casing
Plaster
Details of Studio Roof, 1in. Scale
Plan.
Bed Room
Dark Room
Studio
Existing Work shewn in Black New in Red.
Section.
Scale ⅛in. 1 Foot.
Drinkwater Butt, F.R.P.S.
Architect.

Fig. 7.

Reference to the plan shows that the new accommodation pro-

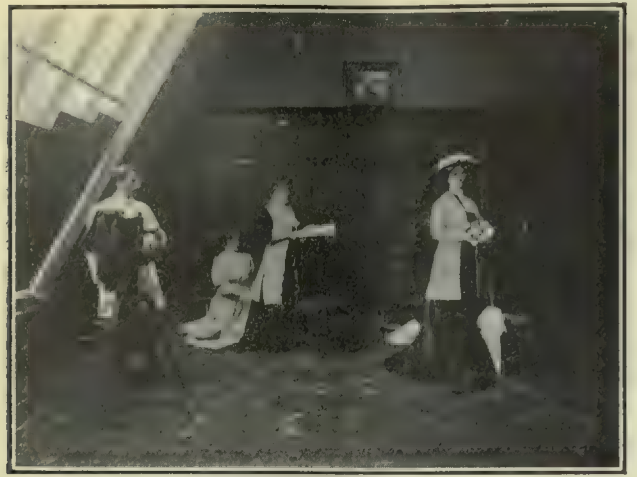


Fig. 8.
Studio, Irish Lace Depot, Dublin.

vided consists of a new bedroom and bath-room, both intended for the use of servants, and a dark room and studio for the master of the house, with a store room for apparatus, etc., under the latter apartment. On a lower floor is an already existing billiard room, from which the studio is approached by a spiral iron stairway, which was the only possible means of access in the limited space available. The studio itself is some 26 ft. by 17 ft., quite large enough for the general work of an amateur, and, indeed, larger than the studios possessed by many less fortunate professionals. Reference to the right-hand section shows the studio to be of the single slant form, with the light commencing at 4 ft. from the floor, and going right up to the 13 ft. ceiling, and the north elevation how the studio is roofed as a slated mansard, with a zinc flat on the top, to harmonise with the style of the already existing building. The detail of the studio roof shows part of one of the steel principals by which it is carried, the tie-rod of which is sufficiently high to permit of strained backgrounds being moved about under it. The glazing was executed on the well-known "Simplex" system, without putty, in which the glass is fixed to the wooden sash bars by lead fillets, which form a weathertight casing, and yet permit of the easy removal of any chance broken panes. I should have liked to have shown you a view of the interior of the studio, which is principally furnished with things selected by myself from the show-rooms of Messrs. Liberty and Co., but Mr. Inglis-Jones's social engagements, which are many at the opening of this London Coronation season, have prevented his taking and supplying me with the necessary negative.

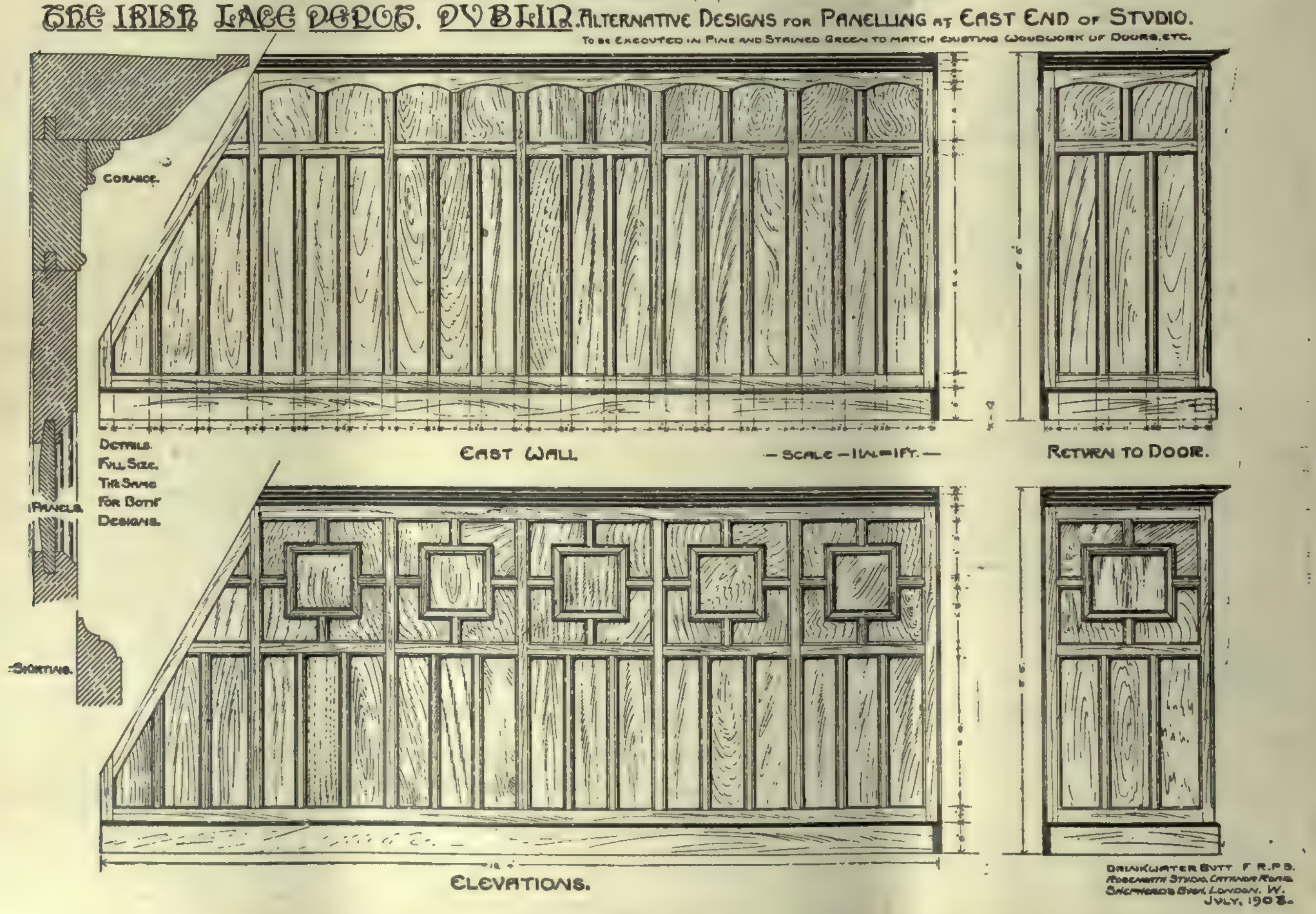

THE IRISH LACE DEPOT, DUBLIN. ALTERNATIVE DESIGNS FOR PANELLING AT EAST END OF STUDIO.
TO BE EXECUTED IN PINE AND STAINED GREEN TO MATCH EXISTING WOODWORK OF DOORS, ETC.
CORNICE.
DETAILS. FULL SIZE. THE SAME FOR BOTH DESIGNS.
PANELS.
SKIRTING.
EAST WALL.
— SCALE — 1IN. = 1FT. —
RETURN TO DOOR.
ELEVATIONS.
DRINKWATER BUTT F.R.P.S.
ROSENEATH STUDIO, CATHNOR ROAD,
SHEPHERDS BUSH, LONDON. W.
JULY, 1908.

Fig. 9.

The next drawing, reproduced in Fig. 8, however, shows the interior of a studio which I designed two or three years ago for the Irish Lace Depôt, of Dublin, where it forms part of their new premises in Molesworth Street. Its main purpose is the photography of the goods in which they deal—that is, lace of Irish production in all forms, from the smallest specimens up to complete and costly costumes. To show the latter they often want groups of many living models, and so I have given as large and roomy studio as the space at command will allow, with a single slant north light, beginning about 18 ins. from the floor, and going to a height of some 14 feet. You may, in passing, just note the panelling at the back, which is of dark green stained pine to match other already existing woodwork, as I am able also to show you a slide of my original drawing from which it was executed (Fig. 9). As you will see, two designs were prepared, of which the upper one was selected. The comparative costs of the two are noted in the right-hand margin, and may be interesting to anyone contemplating similar work.

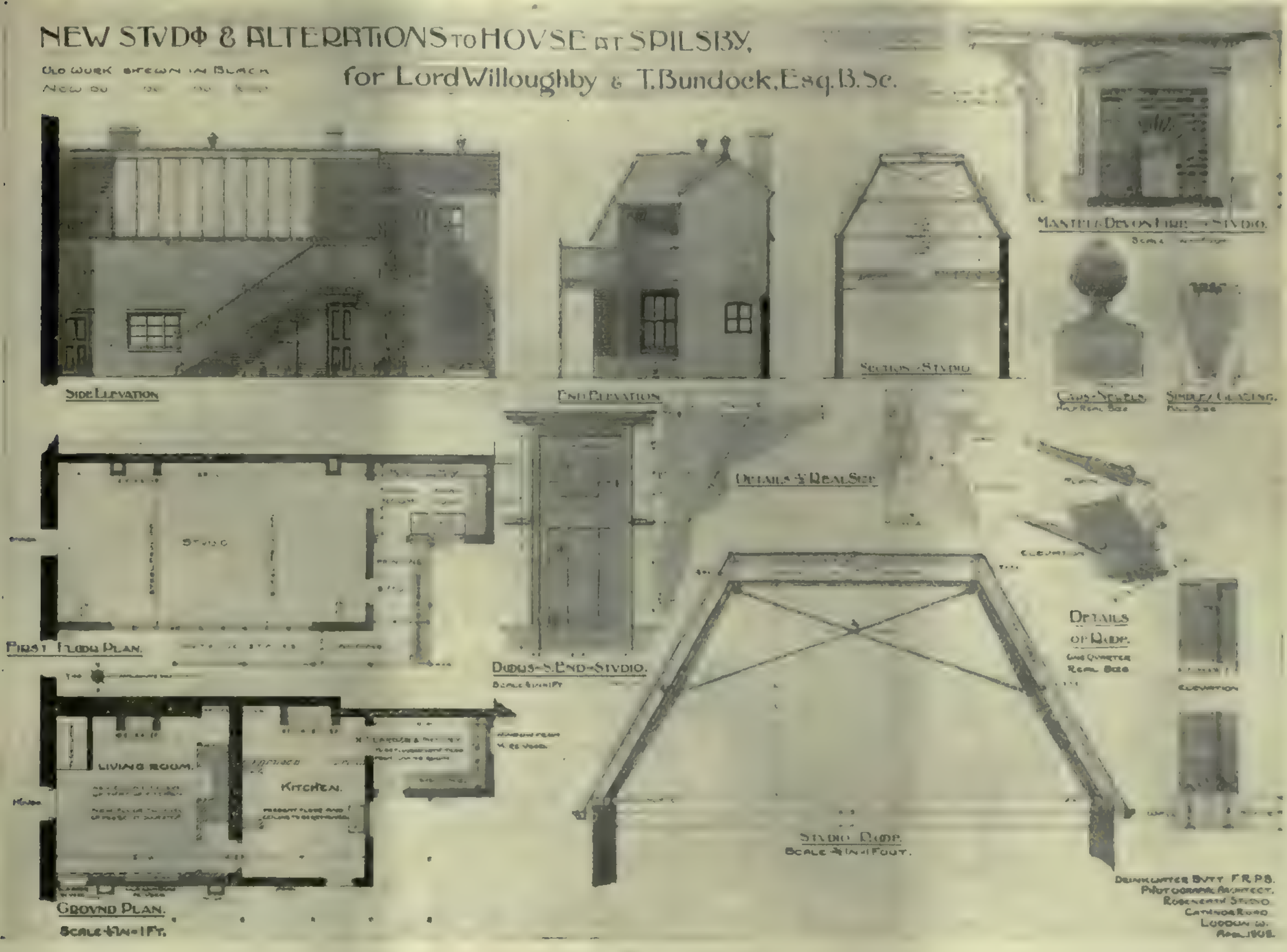


Fig. 10.

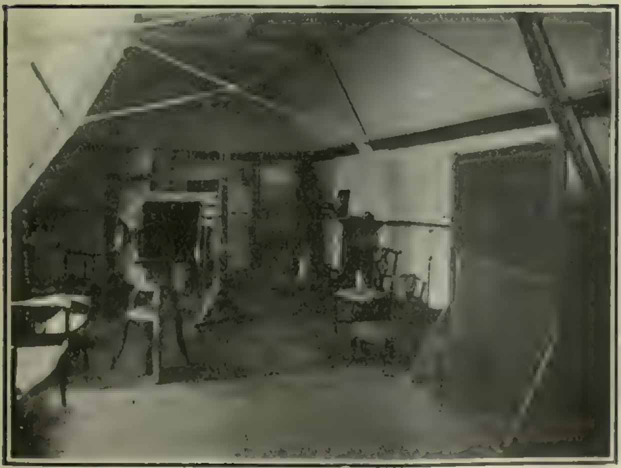


Fig. 11.
Studio of Mr. T. Bundock, Spilsby.

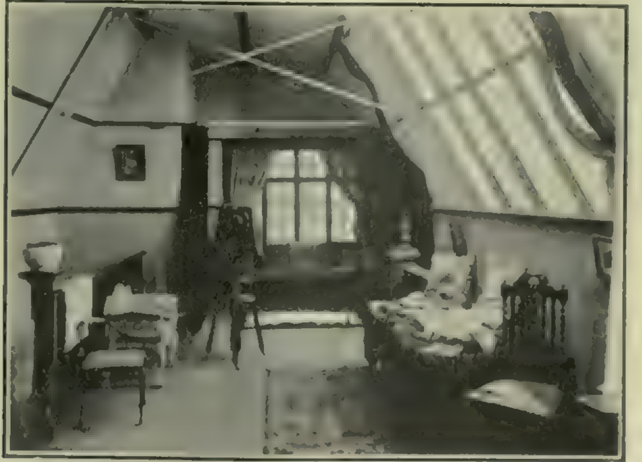


Fig. 13.
Studio of Mr. Hugh West, Cobham.

Fig. 10 shows the drawings for a small studio for one of our members, Mr. Bundock, of Spilsby, where it was erected for him by his landlord, Lord Willoughby, as an addition to already existing premises. It is approached by sitters, as will be seen, by an outside staircase, which also gives access to the printing-shed, toning-room, and dark-room, as shown on the plan. The studio itself is also reached from the private part of the house by a door at the east end. The size of the studio, 27 ft. by 14 ft.,

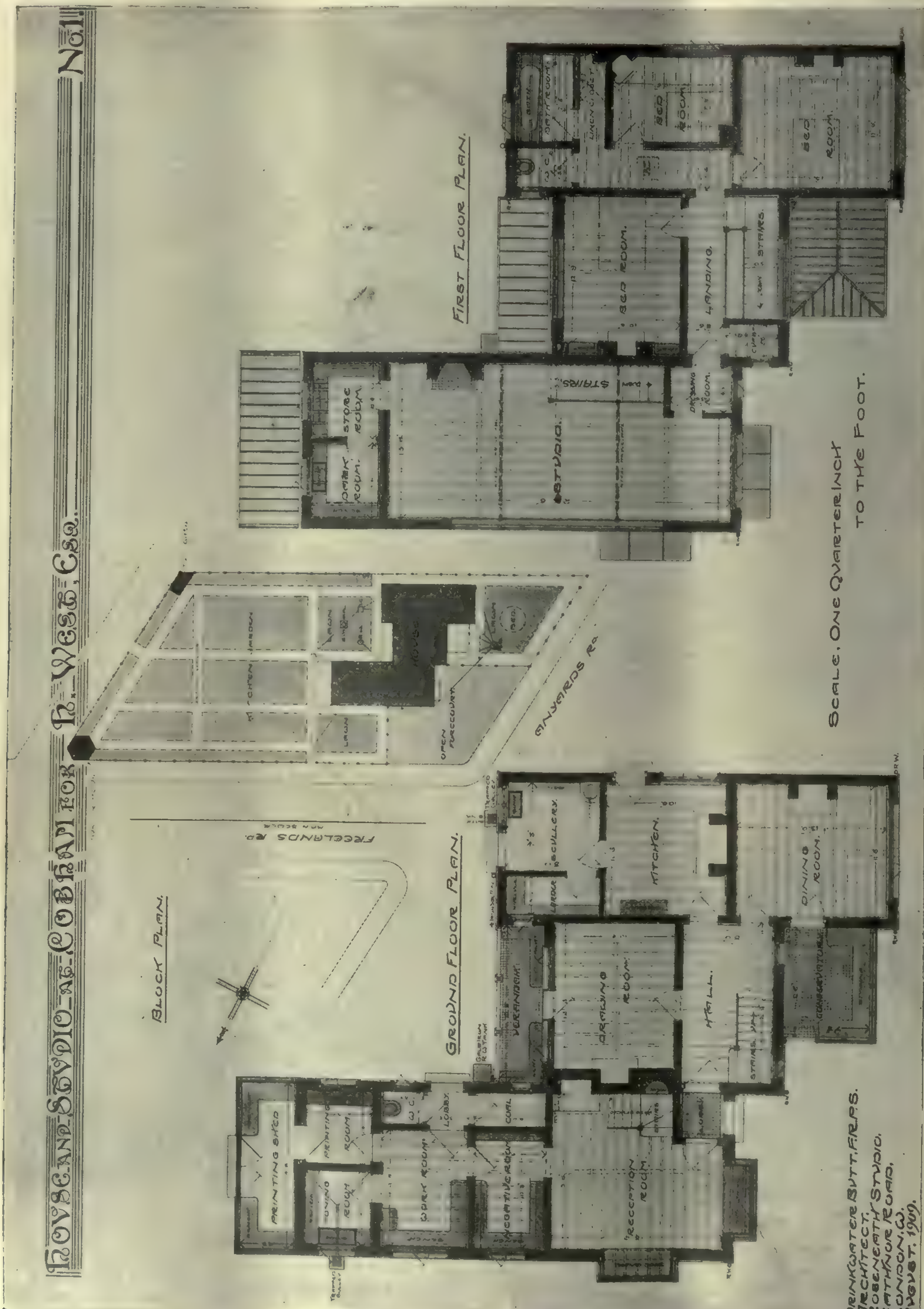

House and Studio at Cobham for R. West, Esq.
No. 1.
First Floor Plan.
Bath Room
Bath
W.C.
Linen Cupd.
Bed Room
Bed Room
Bed Room
Landing
Stairs
Cupd.
Store Room
Dark Room
Studio
Stairs
Dressing Room
Scale, One Quarter Inch to the Foot.
Kitchen Garden
Lawn
House
Open Forecourt
Anyards Rd.
Freelands Rd.
Block Plan.
Ground Floor Plan.
Scullery
Larder
Kitchen
Dining Room
Drawing Room
Hall
Stairs
Conservatory
Verandah
W.C.
Lobby
Coal
Printing Shed
Printing Room
Toning Room
Work Room
Negative Room
Reception Room
Drinkwater Butt, F.R.P.S.
Architect,
Roseneath Studio,
Cathnor Road,
London, W.
August, 1909.

Fig. 12.

was, of course, governed by the already existing building below, of which it now forms the first floor. The roof section is much the same as in the studio of Mr. Inglis-Jones, and the same method of glazing, of which a detail showing the principle is here shown under that of the fireplace in the top right-hand corner of the sheet. Mr. Bundock has kindly supplied me with a view of the interior of the studio (Fig. 11). It may be noted that the roof principals, which are painted white, do not afford any obstruction either to the light or the movements of backgrounds, etc.

Following this I have the pleasure of showing you plans (Fig. 12) and interior and exterior views of a house and studio which I have recently completed for one of our members, Mr. Hugh West, of Cobham. The building stands at the corner of the Freelands and Anyards Roads, in that place, and, as will be seen, is adapted for both business and residential purposes. In planning it I have endeavoured to keep the two parts practically separate, and yet in close touch with each other. Going into the entrance porch we have the business entrance to the left and that of the house to the right. Going into the former we enter the reception-room, with two show windows looking towards the open forecourt which has been left at the corner of the site to permit of the inspection of the windows from the roadway.

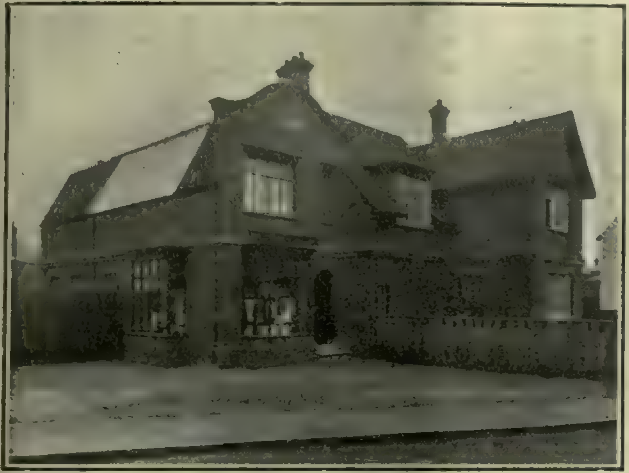
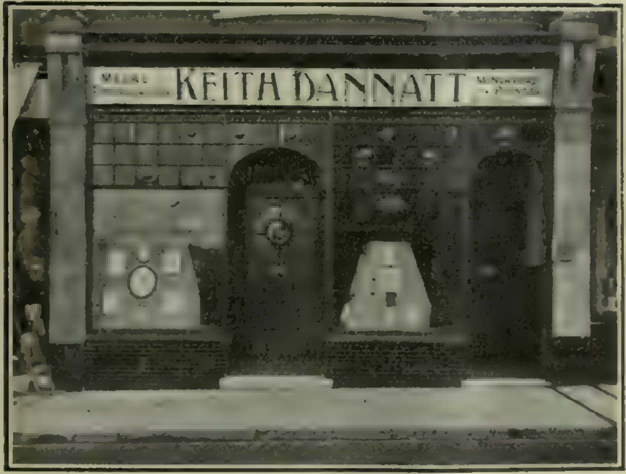


Fig. 14.
House and Studio for Mr. Hugh West, Cobham.



Shop front for Mr. Keith Dannatt, Woking.

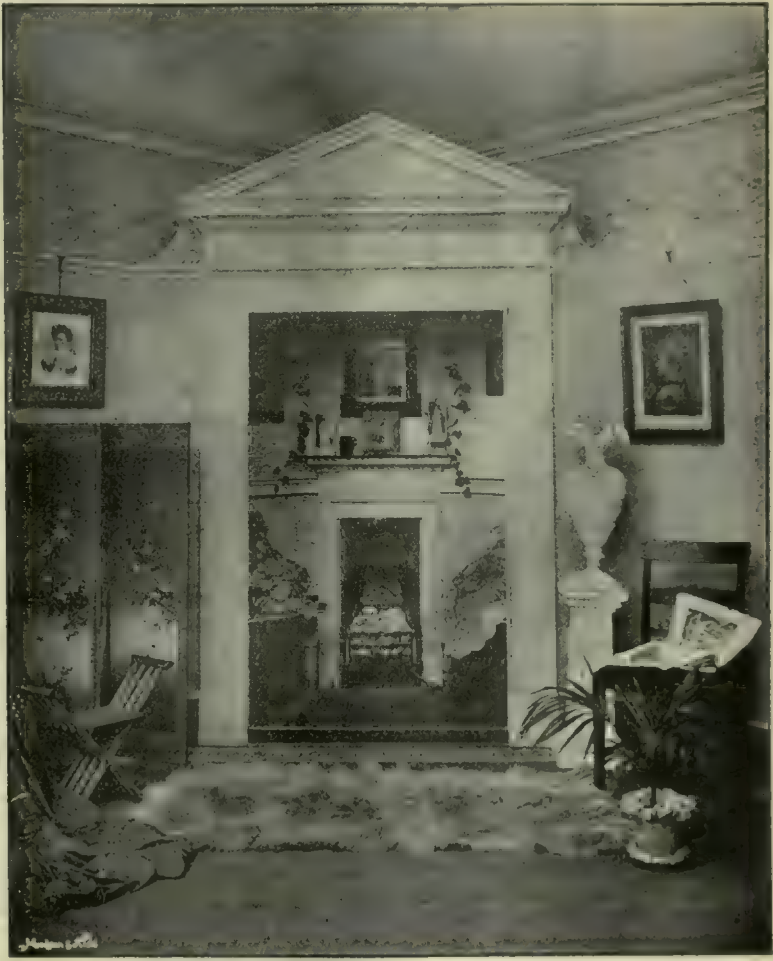


Fig. 15.

Beyond the reception-room we have the negative-room, to be used for both storage and retouching of the same, the general work-room, the toning and printing rooms, and a glazed printing shed beyond. Ascending the stairs from the reception-room we come to the studio, 29 ft. by 13 ft. 6 ins., with single slant light, and store and dark rooms beyond, the latter opening out of the former, so that if developing is going on, by shutting one door before opening the other Mr. West or his assistants may go in and out without risk of the entry of light. Both studio and dark-room are ventilated with Boyle ventilators and fresh-air inlets, an important point both for the comfort of sitters and the health of operators. At the west end of the studio is a small dressing-room, which can be approached either from the studio or house, and, indeed, forms the means of communication between them on the first floor.

Fig. 13 shows the interior of the studio, the woodwork of which, as also throughout the interior of the whole of the building, is stained brown with "solignum" and wax polished. The plaster is at present too new for much interior decoration to be done; but later Mr. West will treat the studio in cool, soft tints of Muresco, and I am also designing for him some appropriate inscriptions for the interior, as well as name boards, etc., to go outside.

The view shows the head of the stairs and the window at the west end. This latter, being glazed with obscured Muranese glass, can, with its broad window seat, be itself used as a background and accessory, or can be curtained when it would otherwise interfere with the scheme of lighting in use.

Lastly, we have a view (Fig. 14) of the exterior, showing the forecourt, the two show windows, and the single slant light of the studio. The elevations are formed, as will be seen, of red brick on the ground floor with rough cast over, with the roofs of tiles, to harmonise with other work in the immediate vicinity. The exterior wood generally is stained brown with solignum, with window casements painted a creamy white. At some future time it is proposed to erect a conservatory in the angle of the building, where a door has been left to lead to it from the drawing-room.

Having shown you quite enough, if, indeed, not too much, of my own work, I will now pass to that of others, in the shape of the studio interiors which have been contributed by the ladies and gentlemen by whom they are owned, and following my own comments on each as they appear, I should be very glad to have any further or explanatory remarks from any of the said owners who may happen to be present.

DRINKWATER BUTT.

Mr. Butt then threw upon the screen slides illustrating the design, construction and decoration of the studios of Mr. Percy Lankester, Tunbridge Wells; Mr. Moffat, of Edinburgh; Mr. Crooke, of Edinburgh; Mr. Chapman, of Swansea; Mr. Swan Watson, of Edinburgh; Mr. Whitlock, of Birmingham; Mr. N. S. Kay, of Manchester; Mr. T. C. Turner, of Hull; Mr. McIlwrick, of Paisley; Miss Lena Connell, of St. John's Wood; Mr. Gordon Chase, of Muswell Hill; Messrs. Speaight, of Bond Street; Messrs. Ellis and Walery, of Baker Street; Mr. Charles Speight, of Kettering; Mr. J. Speight, of Sutton Coldfield; Mr. F. A. Swaine, of Bond Street; Mr. E. O. Hoppé, of Baker Street; Mr. Frank Brown, of Leicester; Mr. Edwin Hadley, of Nottingham; Mr. Keith Dannatt, of Haslemere; Mr. Hugh West, of Cobham; the studio of Herr Dührkoop, and several slides of American studios, contributed by Mr. Hana, concluding with some views of a studio occupied by Mr. Butt himself at Carlisle, one of which we reproduce (Fig. 15), and which, as he said, he introduced to illustrate a principle which he always endeavoured to carry out—that of making the best of whatever things or materials might already be to hand; the frieze over the Cosy Corner being really an Adams mantel rescued from destruction during the demolition of an old house in Hampshire, and the interior being decorated with Lincrusta left over after the making of some fixed backgrounds, etc.; the whole carrying out the injunction of the poet Longfellow—

> "That is best which lieth nearest,
> Shape from that thy work of Art."

Several of the above-named gentlemen having made a few descriptive remarks as the various slides representing their studios appeared on the screen, a vote of thanks to Mr. Drinkwater Butt was proposed by Mr. Gill and carried by acclamation, and after a short and suitable reply by the former gentleman the proceedings terminated.

## PHOTOGRAPHY OF MEN.

CHARACTER, in portraiture, is not a matter of particular physical facts, not of eccentricities, not of accidental momentary conditions, not even involving the much-vaunted Cromwellian wart; neither is character even a matter of phases, but rather of basic tendencies.

An attitude, physical or mental, may occur, which, if recorded, would not constitute a portrait. A face can be so lighted or otherwise arranged that while it may be proved to have been an actual condition of the moment, is not at all characteristic.

The vogue of the day seems to accept the idea that the glib "catching" of the unusual is the true delineation of character, but the results rarely carry conviction, and are beneath the purpose of portraiture.

"Style." is credited, at times, with bringing about what is termed character; but it is, of course, only a vehicle and not a result. Occasioned by the original habit of the particular mind and influenced by training, pictorial methods acquire a certain slant which we define as "style." General practice, through the diversity of subject matter, makes for variety of style, and, per contra, the specialist is led to repetition of effects which, sooner or later, he will realise. fail to express the subject. The more interesting the style the greater the danger, for the style should never be permitted to be more interesting than the matter.

While it is true that the value of the work of an individual lies in the way he sees the subject, at the same time one must be sure that his style is kept in a state of flexibility—so that he may show the difference between men rather than their similarity. The way you see the personality is the point, for it is what you see in men, not how you dress them—that is the reason for your professional existence, and inflexible style is, after all, only a species of clothing, good or bad—as it fits. As to the other extreme, it is my experience that modish innovations or eccentric flights have no value in the eyes of the friends of the subject as compared with sound exposition of character.

The basic trend is what should be portrayed, how he affects you, rather than what he appears to the eye—what he thinks, not what he says—what he *would* do rather than what he *does* do—that is character.

Sympathy is the only road to this innermost region, and Lafcadio Hearn says that "sympathy is limited to comprehension"—comprehension is the result of directed and consecutive effort—therefore, specialising is necessary in order to acquire comprehension, as comprehension is necessary to acquire that genuine sympathy which is to open the gate to the other man's character.

The man who would be successful as a "photographer of men" must be sympathetic to what is found common in men; he must be capable of liking, even though the unlikeable is strongly evident, and when the likeable *is* found, he must be able to expunge everything else from his measure of the man.

I am conscious of the fact that my failures are directly traceable to my inability at times to conquer dislikes, and put in their place an appreciation of good qualities which my lack of control prevented my finding, and unjustly diminished—a diminution of anything admirable in another man is fatal to a "photographer of men." A painter is remembered by his best works, and a writer by his finest thought; the pot-boilers and the faulty writings are lost and forgotten, and a photographer's client is entitled to a perpetuation of his finest and best.

By reason of his limited sphere a "photographer of men" would be led to grotesquerie if he were to indulge in fault-finding criticism of men, for one rapidly grows strong if effort is continued and confined. Therefore, the necessity for the appreciation which invites, gives confidence, disarms—or rather takes away occasion for arming—*that* is the power which makes most for the success of a "photographer of men."

Emerson says, somewhere, "He who would be powerful must have the terrible gift of familiarity." It must be the true familiarity, not the make-believe, for that won't make men believe. I doubt whether I have ever made a portrait of a Japanese man that has been worth the making—I know that I don't understand them—and with them I have not "the gift of familiarity." To be able to think in parallel with your client is an absolute necessity—to occupy *his* point of view, to look over his shoulder—nothing short of this will answer if the game is to be worth while.

The work is more exacting than general practice; more is expected of you and less credit is given for the result; your everyday pictures are compared with the happy accident of the general practitioner, and if you are only equally successful you are regarded as a failure, while if you have really gone closer you are given to understand that it is no more than should be expected, for "you are the specialist."

One is apt to overlook the fact that while the pictures are *of* men, they are *for* women. Ninety per cent. of my work is done for some woman and the other ten per cent., while perhaps made primarily for business purposes, is reviewed by women; so the truly successful "photographer of men" must be blessed with bifocal vision, capable, also, of seeing over the woman's shoulders—and permit me to observe that they are sometimes difficult shoulders to see over! The man who is master of his business frequently occupies the rôle of a lovely white rabbit in Madame's household. In America 'tis said that they sometimes become so tame that they will eat out of the ladies' hands and the "photographer of men" then has need for sympathy—if madame does the buying!

Seriously, seeing the man as the woman sees him is most difficult of acquirement, and most necessary, because when the picture is for the woman, it must satisfy the woman, or—be it ever so good, viewed from any other point—it is a failure, for it fails of its *only* purpose.

Therefore, if you would be a "photographer of men," be sure that you are not a scoffer; be sure that you have that genuine admiration for something which is in every man; be sure that the joy of the occasional triumph is recompense enough to satisfy you; be sure that pounds, shillings and pence is not the real motive of your professional life—*and then*, be prepared for the times when your inadequacy forces itself to a hideous recognition, when you will say, "to have arrogated to myself the title of 'photographer of men' proves that I am a first-class, a number one, presumptuous ass." At any rate, these are words that *I* have used to *my*self.

PIRIE MACDONALD.

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## THE LENS IN THE STUDIO.

The following is an abstract of the lecture delivered by Mr. Edgar Clifton on the Friday evening meeting (May 19) of the Congress.

ROUGHLY speaking we may divide the lenses usually employed for studio work into three classes, viz., those which will give only sharp images, those which at their larger apertures give only soft images, and those which are adjustable for either sharp or soft results at will. In the first division we find the Petzval portrait lens in its original form, the Rapid Rectilinear or Euryscope, and most of the new rapid anastigmats such as the Zeiss Tessar, Goerz Celor, Ross Homocentric, and similar lenses. Now, although these lenses are specially designed to give sharp images, it does not follow that such images must of necessity be hard. The picture I now show you was taken with a rapid rectilinear, and is remarkably harmonious and soft in appearance, although on inspection quite sharp in most of its planes. With lenses of this type it is, however, difficult to avoid hardness when dealing with strongly-lighted subjects, and many charming effects are consequently lost.

The second class, consisting of lenses which are specially constructed to give soft pictures, is a very interesting one and deserves greater attention on the part of professional photographers than is at present given to it. Many purchase or borrow lenses of this type, and after one or two unsuccessful trials discard it until some others worker's pictures excite them enough to make another spasmodic trial. All lenses of this type want living with for a time and carefully and continually working until a result pleasing to the artist is obtained. Typical lenses of this description are the Bergheim, the Anachromats of Puyo and Puligny, the Eidograph, and the Smith lens. Many lenses of this class depend upon chromatic as well as spherical aberration, and in such cases the action of the lens must be studied and careful experiments made until the exact degree of unsharpness can be obtained time after time.

The third class of lenses, comprising some of the most useful, is well represented by the Dallmeyer Patent Portrait Lens, the Cooke Portrait Lens, and the Beck Portrait Lens. The specimens which I now pass round were taken with a Dallmeyer 4B, and illustrate the flexibility in treatment which is possible with one and the same lens. A is taken in the ordinary way—that is to say, with the back cell tightly screwed up so as to obtain the maximum degree of sharpness. Note the hard shadows and the rough skin texture. B is taken from the same position with the same lighting but with the back cell unscrewed *five whole turns*. Here we have the maximum degree of diffusion. Between these two extremes we may stop at any point which pleases us; one and a half or two turns usually being sufficient. C is taken with the same conditions of lighting as the two preceding exposures, but from a greater distance. For this the back lens was removed entirely, and the front combination used at full aperture. Here we have a very pleasing degree of diffusion produced in the same way as in the complete lens, viz., by the introduction of spherical aberration. D is also with the front lens alone, but with the aperture reduced to about $f/11$, giving the same drawing but almost perfect sharpness. You will not need me to tell you that the negatives are absolutely untouched and that the prints are purposely made to show the negatives at their worst. I must apologise for not using a more handsome model, but the sitter was the only one of whom I could be certain of not objecting to pose as a shocking example. It was my intention to show these specimens as lantern slides, but I found that when magnified the varying quality of definition could not be judged as well as by contact prints.

I will now touch upon the subjects of rapidity and depth of focus. The rapidity of a lens is, as is known to everyone here, governed by the proportion of the effective aperture of the diaphragm as compared with its focal length. But in ascertaining the rapidity of a lens we must first find the accurate focal length and also the effective aperture of the diaphragm. These points I shall deal with later when on the subjects of testing and comparing lenses. The diagram which is now upon the screen shows in a very clear way why stopping down a lens increases the depth of focus. This represents an ideal condition in which there is a total absence of spherical aberration. If this is present the rays no longer converge to one point, but cross at different planes, giving an appearance of depth of focus.

What the scientific optician regards as defects in a photographic lens are in many cases not detrimental to its use for portraiture, and may, in certain cases, prove of great practical value. To start with, spherical aberration, which increases the depth of focus and softens hard outlines and harsh lighting, is a serious defect in a lens intended for scientific work, but invaluable to the artist. Curvature of field is another defect which may be turned to advantage by judicious posing; many a sitting figure may be well defined at a larger aperture with a round-field lens than with one having a flat field. Even inequality of illumination may be pressed into service by bringing the head of the sitter well into the centre of the field, and arranging for the drapery to fall upon the less well illuminated margin. Astigmatism we have no use for. It cannot be cured by stopping down, although it may be minimised in this way. Softness of definition of the character now so popular may be obtained in a variety of ways, viz., by the use of a lens such as the Dallmeyer Patent Portrait, in which spherical aberration may be produced to any desired degree without altering its rapidity, by using a single lens in which the amount of spherical aberration is controlled by the diaphragm alone, or by the employment of a lens of the Dallmeyer-Bergheim type, in which both spherical and chromatic aberrations combine to give an image of great softness which is uniform in quality throughout a deep field. Soft results may be obtained by enlarging from a sharp negative, using a soft focus lens for the purpose or by printing through celluloid or paper, but the results are not to be compared with those obtained directly by means of the lens.

The selection of lenses for studio work depends greatly upon the size of the studio and the class of work to be done. As a general rule a Rapid Portrait lens of 11 to 13 inches focal length for cabinets and an anastigmat of about 19 inches for larger pictures will be satisfactory, the large lens being also available for outdoor work. If many large portraits are wanted, it is better to have a portrait lens working at *f*/5 or *f*/6 of about 20 inches focal length, with the diffusion arrangement if possible. Pictures made with such lenses have a tendency to give more plastic images than can be obtained with the optically superior anastigmat. When purchasing a lens a good idea of its suitability for portrait work may be got by focussing a candle flame at the distance at which the sitter will usually be placed. This light may then be moved in the same plane until its image is near the edge of the plate and note taken of the amount of curvature of field and also whether loss of sharpness is due to this curvature or astigmatism. This rough test calls for no apparatus and yet gives a practical method of comparing or selecting a lens. Very often a lens by an unknown or obscure maker will be found to be nearly equal to one by a first-rate firm. When buying an old lens the surface should be examined. Scratches, even if deep ones, do little harm and greatly reduce the price, but a general dullness of the surface will give flatness in the negative. It is sometimes possible to have such a lens repolished, but this, as well as all other lens repairs, should never be entrusted to any one but the original maker.

Edgar Clifton.

## PHOTOGRAPHING CORONATION FESTIVITIES.

In the current issue of the "Red Lamp," the monthly journal issued by Messrs. Mawson and Swan, of Newcastle, "Rufus" gives the following hints on photographing festivities such as will mark the day of the King's Coronation in all parts of the country:—

The commonest mistakes that are made in this work is to photograph the procession at right angles to its route and also to give a very rapid exposure. If the correct position be taken, that is, the camera is pointed at an angle of about 45° with the direction of the procession, so as to about cover at least three or four horses one behind the other on the plate, quite a long exposure, say one-tenth of a second, may be safely given without much fear of movement showing, whilst such an exposure in a fairly good light will give a well-exposed negative at *f*/8, using Mawson's Felixi plate. In selecting the point of view it must be remembered that the sun may shine—and I hope it will—so that a position should be taken up in which the sunshine will come at an angle either from the right or the left of the camera. The worst possible position is facing the sun and the next worst place will be with the sun immediately behind the camera. A first-floor balcony is probably the best standpoint that one could procure. A high point of view means that the camera will have to be pointed downwards, giving distorted architecture and an unpleasant bird's-eye view, whilst there is always the danger of something getting into the way at the critical moment if a low standpoint be chosen. Finally, see that your field of view is quite clear of bunting.

Coronation day is practically one of the longest days in the year, and therefore—if the weather be fine—we shall have little real darkness in the northern counties. This will give North-country photographers the advantage that it will be easy to obtain the architectural details as well as the illuminations on the same plate, but care must be taken to avoid obtaining a daylight effect. The best plan to adopt will be to keep the negative thin and print the architectural details rather dark. Of course, a backed plate must be used, and these should be procured some little time, at least a week, in advance of the day they are required for use.

The exposure will be somewhere between fifteen seconds to one minute at *f*/8, using a Mawson's Felixi plate backed, but much, of course, depends upon the character and quality of the light. For instance, thirty seconds at *f*/8 would be about suitable for electrical illuminations at 10 p.m. Those who are accustomed to using orthochromatic plates should use Mawson's Ortho' A plate, backed, as the yellow-sensitiveness makes them much more speedy for work of this description.

It may surprise some of my readers to learn that fireworks are particularly easy things to photograph. All that is necessary is to focus the camera for infinity, and to leave the lens uncapped until some of the fireworks are sure to have been secured. Then cap the lens, change the plate, and make a fresh exposure. It is necessary that the camera be used on a stand and that it be focussed for infinity. This may readily be done by sharply focussing by daylight some object, distant at least a hundred yards, and marking the extension on the baseboard for future guidance.

It is important to make several exposures, using backed plates, and the lens working at its largest aperture. After developing the plate, make a print before you destroy it, as a firework negative looks quite different from an ordinary subject. In fact, they are most deceptive, as they always look "rotten" to an inexperienced eye.

Photographic Record and Survey of Kent.—An appeal is being made to all who are interested in photography, or in the history, archæology, and science of the County of Kent, to become members and correspondents of the Survey, and to contribute, if possible, half a dozen prints each year to the collection in the County Museum of Maidstone.

A most valuable collection of over five hundred views of Kent castles and churches, photographed by Mr. Kenrick, from watercolour drawings made between the years 1797 and 1808, by Mr. H. Petrie, F.S.A., has been added to the collection during the year. Duplicate prints of these old views are offered at very reasonable prices to those who are interested, and it is hoped that many of them may be framed and preserved in the buildings they represent.

At the annual general meeting, Maidstone, under the chairmanship of Mr. H. Snowden Ward, F.R.P.S., Sir David Salomons, Bart., was re-elected president, with the following officers and committee:—Vice-Presidents, G. Abbott, M.R.C.S., F.G.S., Sir Martin Conway, Capt. G. McDakin, F. G. Smart, F.A., F.L.S., F.S.A., and H. Snowden Ward, F.R.P.S.; hon. treasurer, F. J. Argles; hon. curator, J. H. Allchin; hon. secretary, H. E. Turner, B.A., B.Sc.; committee: E. W. Andrew, Joseph Chamberlain, F.R.P.S., Miss Dawson, W. H. Day, H. J. Elgar, Rev. W. Gardner-Waterman, C. H. Grinling, J.C. Harris, J. Hepworth, C. Igglesden, P. Mathews, and B. Shallis.

The secretary reported that 553 prints had been added to the Survey collection during the year. Selections of Survey prints had been exhibited in the course of the year at Canterbury, Chislehurst, the Empire Exhibition at the Crystal Palace, and at Guildford on the occasion of the Congress of the South-Eastern Union of Scientific Societies. The prospectus of the Survey had been revised and reprinted, and was being widely distributed. The Woolwich Antiquarian Society and the Tunbridge Wells Society had decided to affiliate with the Survey.

The chief subject of discussion was the question of arousing interest in Survey work, and bringing societies and members into touch with the central organisation by means of lectures illustrated by Survey lantern slides, and also of portfolios of prints that might be circulated. Both schemes received the support of the meeting, but as no one volunteered to act as organiser of either, the Council hope that by the publicity given to the proceedings some enthusiasts in Survey work may be induced to come forward and offer to organise these schemes. The secretary would also be glad to hear of anyone who would be willing to act as local secretary or correspondent for the furtherance of the work in his particular locality.

Prospectuses of the Survey and any information relating to it will be gladly supplied by the secretary, Mr. H. E. Turner, B.A., B.Sc., 14, Queen's Road, Tunbridge Wells.

## THE PROFESSIONAL SHOWROOM AT MESSRS. HOUGHTONS LTD.

The department at 88-89, High Holborn, devoted by Messrs. Houghtons Ltd., to the display and demonstration of professional photographers' requisites, has recently been enlarged and rearranged—with the result that a more adequate amount of space is allotted to the many special lines of goods for studio use in which Messrs. Houghtons specialise. Since the formation of this department a year or two ago it has rapidly grown in importance under the management of Mr. F. H. Loveday, and at the present time the photographer who pays it a visit may depend upon being able to make his choice among the latest designs of apparatus in the way of cameras, backgrounds, studio accessories, printing appliances, or lamps for studio portraiture or printing. As manufacturers of cameras Messrs. Houghtons are in a good position to carry out photographers' individual requirements in cases where even the wide

The Professional Department at Messrs. Houghtons.

The Professional Department at Messrs. Houghtons.

range of models may not precisely represent the facilities desired. Attached to the department is a well-equipped dark-room in which customers, if they so wish, may themselves develop plates which they have exposed by a portrait lamp which they may contemplate purchasing. The photographs, here reproduced, will give some idea of the variety of requisites to which Messrs. Houghtons invite photographers' consideration in this department, though the views necessarily cannot show the stock of mounts, backgrounds, and other goods kept in great variety, but difficult of inclusion in a general view of premises.

A Corner in Messrs. Houghtons' Professional Department.

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# Photo-Mechanical Notes.

### A New System of "Make-ready."

A PATENT, No. 22,613, of 1910, has been granted to M. A. Droitcour, of Oak Park, Cook County, Illinois, U.S.A., for a method of making what he calls "toned printing plates," which consists of taking a matrix in wax or other material as usual, then depositing a thin shell of metal on it, taking it away from the depositing tank, and after placing a suitably prepared overlay upon the original printing surface, pressing the wax sheet with its thin skin of metal against such overlay. He then removes and deposits additional metal upon the thin shell, and afterwards backs it up as usual, taking precaution by means of an underlay to prevent the distortion of the shell during the application of the backing metal.

### Improved Apparatus for Wiping Intaglio Plates.

A patent, No. 23,473, of 1910, has been granted to A. Valentin, J. Zerreiss, and H. Georges, of 48, Rue de la République, Puteaux, France, for an apparatus comprising a roller of a soft and resilient substance, such as gelatine, rubber, or the like, which wipes the surface of intaglio printing plates previously inked, and is cleaned by a scraper or other means. The particular apparatus described is one in which the roller is partially submerged in a bath containing a solvent for the ink, and in contact with two rotating brushes, which brush the surface before it is finally cleaned by coming into contact with the scraper. The actual apparatus and the details which enable it to be conveniently used are described at length in the specification.

### Further Improvements to Dr. Albert's Etching Machine.

Dr. E. Albert has been granted a patent, No. 858, of 1911, for improvements in his etching machine, consisting in the use of a reciprocating paddle and means for imparting a varying rectilinear motion to the same, so that its length of travel varies, but periodically repeats itself. There are several claims to the particular sort of machinery invented to attain this end, and the final claim is for the use in combination with a water tank and bath opening, of a pipe and syphon system, arranged so that it will either empty or fill the water tank and etching bath.

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# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between May 22 and 26:—

DAYLIGHT DEVELOPMENT.—No. 12,387. Photographic daylight pocket developing flask. Naomi Purcell O'Neill.

LIGHT FILTERS.—No. 12,461. Foreground light filters. John Knight Holbrook.

CAMERAS.—No. 12,607. Photographic cameras and lenses therefor. Thornton-Pickard Manufacturing Co., Ltd., Arthur Gray Pickard and Richard Hesketh.

CINEMATOGRAPHS.—No. 12,419. Moving-picture appliances or lantern slides. Alexander S. Spiegel and Robert Glendinning.

CINEMATOGRAPHS.—No. 12,538. Holders for cinematograph or like films, and films for use therewith or similar apparatus. Rotary Photographic Co., Ltd., and Ferdinand von Madaler.

CINEMATOGRAPHS.—No. 12,774. Cinematograph apparatus. Charles Joshua Lane, jun., and Cecil John Thomas Birts.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

THREE-COLOUR CAMERA AND FILM-PACK.—No. 23,058, 1910 (October 18, 1909). The invention consists in a pack in which three colour-sensitive plates are held together for three-colour exposures. A special camera serves for the making of all three exposures simultaneously. In Figs. 1 and 2, 1 represents the casing of the camera; 2 is the lens. A sliding base-plate, 3, placed within the camera, carries a lens 4, and a transparent reflector 5 disposed at an angle of 45 degrees. A plate-holder, 6, provided with a shutter, 7, is fitted to an aperture in the top of the camera in any convenient way.

This plate-holder carries the sensitive plate-pack, which comprises the three sensitive plates, 9, 10, and 11, the green-sensitive plate, 9, being at the back of the holder with its film side down, the blue-sensitive plate, 10, being disposed with its film side up, and in contact with the film side of the green-sensitive plate, 9, and the red-sensitive plate, 11, being also disposed film side up with its film in contact with the back of the blue-sensitive plate, 10.

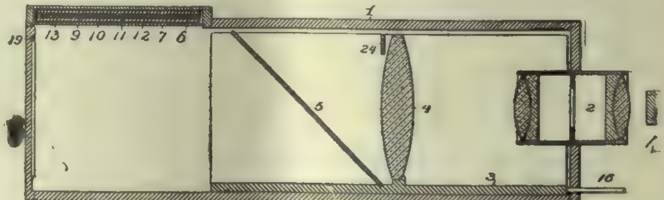


Fig. 1.

By preference, the green-sensitive plate 9 has a light-proof backing 12, and the red-sensitive plate a similar backing, 13, whereby the sensitive surfaces are all shielded from exposure to light when putting the pack in or taking it out of the holder.

Strips 14 bind together the blue- and green-sensitive plates at one edge, and the three plates at the opposite edge, the latter strip also providing a flexible hinge 15 for the face plate 11, which is narrower than the other plates, the front and side edges of plate 11 being therefore free from confinement, but the plate being normally held in its proper relation to the other plates by the shutter 7 of the plate-holder after the pack has been inserted. The plates 9 and 10 may, therefore, be said to constitute one member of the pack, and the plate 11 another member, hinged to the first.

Either before or after the application of the plate-holder to the camera, the slide 3 is drawn forward by any suitable means, as, for instance, by a rod 16 passing through an opening in the front of the camera, whereby, when the sliding shutter 7 of the plate-holder is withdrawn, the plate 11 will drop down into contact with the back of the camera, as shown in Fig. 2, and the slide 3 is then pushed inward so as to bring the lens 4 into proper relation to the objective lens 2, and locate the diagonally disposed transparent mirror 5 below the plates 9 and 10 contained in the holder, and in front of the plate 11, which lies against the back of the camera.

After the exposure has been made, the slide 3 is drawn forward, and the plate 11 can then be swung up into its proper relation to the other member of the pack, either by means of an arm 17, located at the back of the camera and carried by a rock shaft 19, accessible from the outside of the camera, or by tilting the camera so as to cause the plate 11 to swing by gravity to its proper position in the holder, the sliding shutter 7 being then re-applied to the holder so as properly to retain the plates therein.

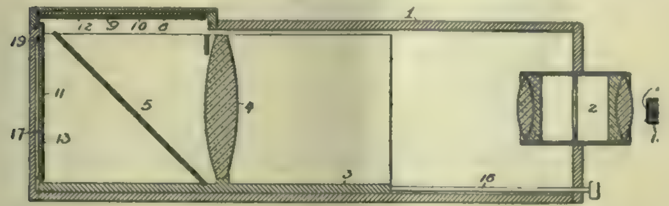


Fig. 2.

The transparent reflector 5 serves to divide the light rays in order to form two separate images, one for the blue- and green-sensitive plates in the holder, and the other for the red-sensitive plate at a right angle thereto; this transparent reflector may be of a red colour, in order to render unnecessary the application of any colour screen to the red-sensitive plate 11.

The purpose of the lens 4 is to approximately parallelise the diverging cone of rays from the objective lens 2, and thereby correct the distortion incident to refraction at various angles through an inclined transparent reflector, and also to equalise the colour absorption and percentage of reflection from top to bottom of the reflector.

In the absence of this lens there would, because of the different angles of incidence, be considerably more reflected light and correspondingly less transmitted light towards the edge of the reflector furthest removed from the objective lens.

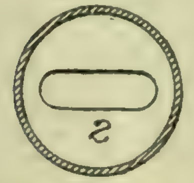


Fig. 3.

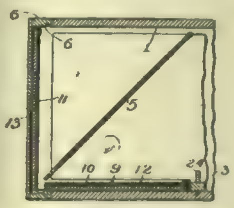


Fig. 4.

With the plates hinged as shown, the image at the upper portion of the plate 11 would also be imperfect, because of the cutting off of light by the diaphragm strip 24. In order to minimise this loss, without proportionately increasing the time of exposure, I prefer to employ a horizontally elongated lens aperture, as shown in Fig. 3.

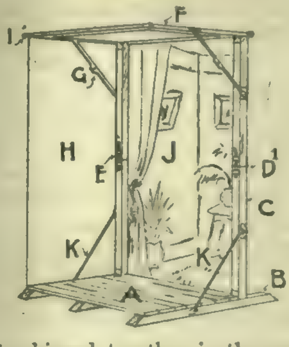
The vertical position of the plate 11, however, and its relation to the image projected by the lens, is dependent upon the width of the hinge strip, by which this plate is connected to the plates 9 and 10.

The compensating lens 4 so supplements the objective lens 2 as virtually to shorten its focus, making it substantially equivalent to a lens of the same actual aperture, and of focal length equal to the distance from the objective lens to the compensating lens when adapted to form sharp images on the sensitive plates. The objective lens 2 must, therefore, be of longer focus to occupy a given position when the compensating lens is in place than it would be in the absence of such compensating lens.

It is possible, however, to substitute for the combination of objective lens and compensating lens shown in Figs. 1 and 2 a single achromatic lens of the diameter of the image of the object to be photographed, with a diaphragm placed at its focal length in front of it. This camera, however, would be more cumbersome than that shown in Figs. 1 and 2, and the lens would be expensive, except in small sizes.

In the embodiment of the invention shown in Fig. 4, the plate-holder is at the rear end of the camera, and retains the red-sensitive plate 11, preferably by contact of the sides of the plate-holder with the edges of the plate, the member comprising the blue- and green-sensitive plates dropping down on to the bottom of the camera in order to effect their exposure, and the diagonal transparent mirror 5 occupying a reverse angle to that illustrated in Figs. 1 and 2. F. E. Ives, Woodcliffe-on-Hudson, New Jersey, U.S.A.

**Portable Studio.**—No. 23,898, 1910 (October 15, 1910). The invention consists of a collapsible studio, comprising a flooring A, carried upon battens, B, uprights or struts, C, hinged to the rear corners of the flooring, these struts being constructed in two equal parts, hinged together in the centre and held rigid when in use by strap bolts E, a hood or roof F, hinged to the upper ends of the struts and knuckle joints and other stays, for holding the structure rigid when erected. Ernest Albert Sanderson, 38, Fordel Road, Catford, London, S.E.



The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

**Projection Apparatus.**—No. 12,042. Automatic picture or like projection apparatus. Guerzoni.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Printing from Thin Negatives.

A writer on the above subject, in "Photography and Focus" for June 6, gives the following suggestions:—"As I develop all my negatives with a view to subsequent enlargement, and therefore take great care to keep them on the thin rather than on the dense side, it sometimes happens that I want to make contact prints on P.O.P. from plates that have not strong enough contrasts to give good, plucky pictures. It is well known that by printing on P.O.P. under a piece of green glass more contrast is obtained than if the printing is done in the ordinary way, and there is no reason why a piece of green glass, such as can be obtained from any glazier, should not be laid over the frame. But I found that this prolonged the printing to such a time as to be most inconvenient, unless the negative were printed in direct sunshine, while there are objections to printing in the sun. To avoid these, I tried ground glass in contact with the green glass, and found it to be just what was required. I have made a shallow box with a hinged lid, and into this lid have let a sheet of green and a sheet of ground glass. The box will hold four quarter-plate printing frames quite comfortably; it is 12½ inches x 10 inches inside, and 1¼ inches deep. Any extra thin negatives that are in hand are printed in the box, which can be laid about in the garden anywhere where the sun happens to shine without any fear of damp getting to the frames, while the more vigorous negatives are printed in the usual manner."

# New Books.

"Camera Work," No. XXXIV. (Alf. Stieglitz, New York.)

This is a Rodin number. We began its perusal with a burst of merriment, thinking that the American coloured comics were nowhere beside "Camera Work" for real side-splitting fun. But the book is plethoric in its amusing absurdities, and after the first page nausea began to set in. We scarcely know what Rodin himself must think of this little knot of writers and photographers who offer him such an apotheosis. He must be either for them or against them in his heart. If one had the means of knowing exactly which, one would hold the key to his life, his work, and his business in life. Possibly he laughs in his sleeve and accepts the homage for what it is worth to him. We hope so. The illustrations are absolutely unsuitable for a public journal, being reproductions of the slightest possible drawings—feelers after ideas, which most self-respecting artists would not allow out of their own hands. There is, besides, still a deal of adulation of the Post-Impressionist painters, and a deal of frantic posing and reaching for transcendent modes of speech in the articles. The same old denunciation of art-criticism in a journal that is choke full of it—such as it is.

"CINEMA."—The second part of the trade annual, published by Messrs. Charles Mendel, 118, Rue d'Assas, Paris, is designed on the lines of the "Annuaire" of the photographic trade proper, which we reviewed a few weeks ago. In like manner it deals with the trade information relating to the cinematograph industry, and forms a useful guide to those having dealings with French and other firms. The volume runs to a total of 400 pages, and is issued at the price of 6 frs. 25.

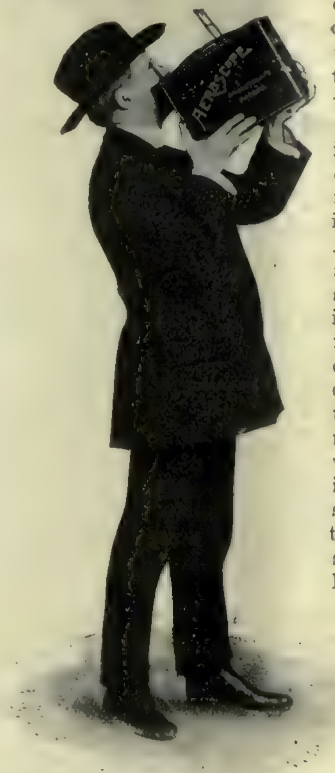
DEFECTS IN NEGATIVES.—A second edition of a little manual dealing with the improvement of defective negatives reaches our table from the publisher, M. Eger, Leipsic. It is by Dr. Georg Hauberrisser, and the title, "Verbesserung mangelhafter Negative." The author follows the useful plan of briefly describing such defects as fog, stain, spots, etc., and in a series of useful paragraphs details causes, remedies, and preventives. A number of supplement illustrations supplies the reader with further useful aid in locating the causes of his failures. The price of the handbook is 2 marks 50.

SCHWIER'S "KALENDER."—This indispensable little annual, issued from the office of a contemporary, the "Deutsche Photographen-Zeitung," Weimar, reaches us in its thirtieth annual issue. As in previous years, it contains a full directory, with lists of members of the photographic amateur and professional societies in Germany, a list of the photographic trade in that country and Austria, a classified index to firms supplying, or manufacturing, the various articles for photographic work, and, lastly, an index to the firms in towns in the chief Continental countries. We place the new volume on our shelves, knowing that it will continue to be in constant use as a reference volume. The price is 2 marks.

"THE MODERN BIOSCOPE OPERATOR."—A second edition of this up-to-date manual of cinematograph work has just been published from the "Bioscope" office (Ganes, Ltd.), 85, Shaftesbury Avenue, London, W. The text has been considerably re-arranged and rewritten in parts, the chapter on electric lighting now dealing with petrol-driven generating sets and rotary transformers. The subject of the book is treated in a highly practical way from the point of view of the cinematograph lantern-operator. The author deals with sources of light, electric equipment, and the care and management of the cinematograph lantern. He gives much useful advice on the actual manipulation of the lantern, and finally deals with the government regulations which the cinematograph showman must observe. The price of the book is 3s. 9d., post free, foreign postage 3d. extra.

# New Apparatus, &c.

**The Aeroscope Cinematograph Camera. Made by the Aeroscope Co., Ltd., 16, Charing Cross Road, London, W.C.**

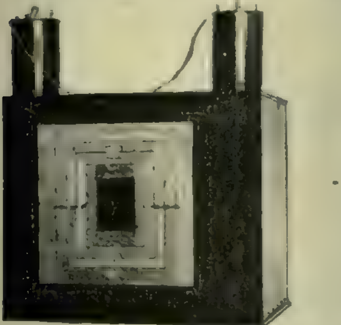


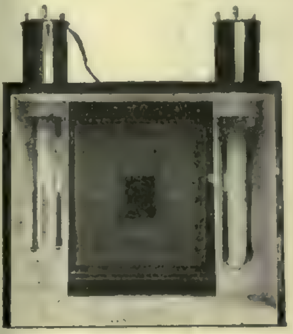
We have recently had the opportunity of inspecting the working of a new cinematograph camera, which, it does not seem too much to say, should establish a new order of things in outdoor cinematograph operating. The essential novelty in the "Aeroscope" camera is that the film, instead of being wound by the hand of the operator, is led from spool to spool by driving mechanism, the motive power for which is provided within the apparatus itself by compressed air. The operator is thus left free to manipulate the instrument as if it were an ordinary hand camera. And, indeed, its bulk and weight are not so very different from, say, a 5 x 4 magazine or reflex instrument. The motive power is contained in five steel cylinders, placed together in a compartment on the one side of the camera, and providing the means of passing 450 feet of film without recharging. This driving mechanism includes a gyroscope, by which the working of the apparatus is steadied, and the speed of the film supply is regulated by a small lever. In the models of the apparatus which are shortly being placed on the market the spool-chambers are of the daylight-loading type, so that any necessary length of film may be used in the apparatus without the necessity of resorting to a dark-room. The advantages of a camera which may be quickly pointed up or down and from side to side are such as will readily be appreciated by the cinematograph operator, whose subjects are of all descriptions. The very fact that the camera may be used without the bulky tripod places its user immediately at a great advantage, and obviously permits him to secure subjects which would otherwise be impossible. The camera is fitted with the usual accessories in cinematograph work, whilst the company supply the pressure-pump and one or two other appliances, which are the only additional items of the kit required for working the "Aeroscope." A full descriptive booklet, giving the sizes, etc., of the new instrument may be obtained on application to the Aeroscope Company, at the address given above. Our illustration, made from a photograph, well shows the proportions of the camera.

**The Goerz Hypergon f/22. Made by C. P. Goerz Optical Works, Ltd., 1-6, Holborn Circus, London, E.C.**

The original Hypergon, as our readers will remember, was constructed to cover the enormous angle of 135°, and to compensate for the inevitable falling-off in illumination towards the margins of the negative was fitted with a revolving star-shaped mask which rotated by pneumatic pressure supplied by a ball and tube. In the latest addition to the Hypergon series it is recognised that such an extreme angle is not always required, and, the angle being reduced to 110°, the rotating mask is no longer required. The lens submitted to us is No. 000a, of 3in. focal length, and is designed to cover a half-plate at *f*/32. This we find it does perfectly. The focus is somewhat too short for some types of half-plate cameras, but the swing-front of a Sanderson enabled us to test the 3-in. lens. The 3½-in. lens would probably be necessary for some half-plate cameras. Two stops are fitted to the lens, *f*/22 and *f*/32, and the series coincides as regards focal lengths with the original series of Hypergons, varying from 2⅜ to 7⅞ in. The plates covered are, of course, smaller, though quite as large as are required in the great majority of cases. The prices are about 12 per cent. less, the 3-in. lens costing £6 and the others ranging from £5 5s. to £11. For architectural work the lens should be invaluable, and the 110° Hypergon without the star mask should become a very popular form of extreme wide-angle lens.

The "Robinson" Enlarger.—Some time ago, on its first introduction, we reviewed the convenient piece of apparatus devised by Mr. Ralph W. Robinson and placed on the market by Messrs. Marion. Our readers may remember that it consisted of an illuminating chamber supplied with a series of metallic-filament incandescent lamps and served both for enlarging and reducing from negatives by transmitted light, as well as for copying all descriptions of original. A new model of the apparatus has now been introduced in which greater illuminating power is supplied by means of a pair of automatic two-carbon arc lamps, which by an ingenious method of construction are caused to give an extremely even and powerful illumination over the back board of the chamber. The apparatus is designed for economical working, consuming about half a unit per hour, and for many odd jobs to be done in a professional photographer's establishment, in addition to regular enlarging work, is a most useful piece of apparatus. The price, complete with carriers taking negatives from 12 x 10 to quarter-plate, is £10 10s.





# New Materials, &c.

Marion "Professional" Bromide Paper.—Messrs. Marion and Co. send us samples of a new brand of bromide paper which they have brought out under this name specially for contact printing and enlarging by professional workers. The paper is issued in glossy, matt, semi-matt, and rough grain, and in card weight, in addition to the ordinary thickness. Trial of the paper showed that it yields exceedingly clean and brilliant prints without any tendency to veiling, and of excellent black colour. Full particulars may be obtained on application to Messrs. Marion, 22 and 23, Soho Square, London, W., from whom bonâ-fide professional users may obtain samples.

The Leto "Phœnix" Plate.—The Leto Photo Materials Co., Ltd., have just placed on the market a new plate under this name specially prepared for the use of the amateur worker. The emulsion is one of evident latitude in exposure, but the Leto Company reduce matters to a further degree of simplicity for the tyro by enclosing with each packet of plates an exposure table, which forms a most useful guide for all conditions of light and subject. In our own experience we obtained some excellent negatives during the holidays on the "Phœnix" plate, which should certainly be a popular one both for hand-camera and portrait photography. With a view of popularising the use of the plate, the Leto Company have arranged a competition, open only to amateurs, in which prizes are offered for the best prints from negatives on "Phœnix" plates printed on "Seltona" paper. The first three prizes are £3 3s., £2 2s., and £1 1s. respectively, whilst there are a further series of twelve prizes of 10s. 6d. each and fifteen consolation prizes each of 5s. Entry forms for the competition may be obtained from photographic dealers generally, or by direct application to the Leto Co., 1, Crutched Friars, London, E.C.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Saturday, June 10.

South Suburban Photographic Society. Excursion to Dartford and the Darenth.
Hackney Photographic Society. Excursion to Mucking.
Liverpool Amateur Photographic Association. Excursion to Erddig Park, Wrexham.
Bradford Photographic Society. Excursion to Shibden Dale.
Darwen Photographic Association. Annual Picnic to Bolton Woods.
Balham Camera Club. Outing to Waltham Abbey.
North Middlesex Photographic Society. Record Outing to Hampstead.

### Monday, June 12.

Southampton Camera Club. "Ozobrome." W. A. Chaplin.

### Tuesday, June 13.

Royal Photographic Society. "On the Cause of Reversal and its Remedy, with Some Notes on the Photographic Process." E. Sanger Shepherd, F.R.P.S.
Manchester Amateur Photographic Society. "Platinotype." T. Lee Syms.
Handsworth Photographic Society. Council Meeting.
Hackney Photographic Society. "Toning Bromide Prints." H. W. Bennett. Council Meeting.
Bradford Photographic Society. Excursion to Hirst Wood.

### Wednesday, June 14.

West Surrey Photographic Society. Visit to Festival of Empire, Crystal Palace.
South Essex Camera Club. Lecturettes:—1. "Varnishing and Matt Varnishing a Plate." C. Wille. 2. "Sulphide Toning." A Harvey. 3. "Print and Plate Washing." T. Michell.
North Middlesex Photographic Society. "The Romance of the Beehive." Mrs. Douglas Wilson.
South Suburban Photographic Society. Distribution of Prizes, by the Mayor of Deptford.
Southport Photographic Society. Excursion to Burton Point.
Manchester Amateur Photographic Society. Ramble to Dovedale.
Balham Camera Club. "Intensification and Reduction." C. W. Coe.

### Thursday, June 15.

London and Provincial Photographic Association. "Simple Apparatus for the Determination of the Nodal Point of a Lens or System of Lenses." A. Haddon. Nomination of Officers.
Handsworth Photographic Society. Exhibition of Home-made Apparatus.
Hackney Photographic Society. Excursion to Wheathampstead.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, June 6, Mr. J. C. S. Mummery in the chair.

The occasion was the opening of a house exhibition of prints by the oil transfer process, by M. Robert Demachy, of Paris, from whom also a paper, relative to the exhibits, was expected. As this, however, failed to arrive, the proceedings took the form of a brief discussion of the pictures on the walls.

Croydon Camera Club.—The spring session has closed with a house exhibition, and the exhibitors and members generally are to be congratulated on a really capital little show, the best ever seen in the club rooms. It may or may not be a sign of the times, but hardly a trace of modernism is evident. For instance, there is not an echo of that paroxysm of genius involved in the bathing-machine wheel episode, of revered memory; the weird humour of the "coal-cart and tower" conception is, of course, of so recent a date that the usual period of incubation must be awaited before it can be ascertained definitely whether the disease will spread. Indeed, it is quite a pleasure to record that, perhaps with one single exception, not a single work on the walls can be considered "strong" in an offensive sense, moderation and self-restraint being the keynote of even the "oils" and "bromoils." This would have caused grief to our transatlantic friend Mark Twain, who, it may surprise some to know, very many years ago originated modern originality in photographic impressionism, when he depicted a superb view of the Matterhorn, with a blurred donkey of vast proportions in the foreground, explaining that the animal had strayed into the picture just as the exposure was being made. Many might contend, and outside evidence is certainly not wanting in support of the idea, that the spirit of this quadruped is by no means dead, and under varying subtle guises and shapes, it is still playing the same old game. Who shall say? But, as the Walrus would observe, we are diverging, and we return to the exhibition.

Mr. F. J. Mortimer kindly acted as judge, and made the following awards :—Class I. (open to all members) : Silver medal : Mr. F. J. Terry, "A Summer Storm," a platinotype print representing a rocky coast scene, of first-rate composition, full of gradation and quality, the suggestion of movement in the water being adequately secured by a slow shutter speed. A fine example of what a panchromatic plate and filter can do in the hands of a good technical worker with a happy gift of pictorial selection. Bronze medal: Mr. H. P. C. Harpur, "A Corner of the Enchanted Isle," a fine bromide print, the poetic feeling pervading the picture doubtless being secured partially by Mr. Harpur's favourite method of placing separated layers of tulle in an improvised lens hood. We should have preferred less sentiment and a little more definition. Class 2 (beginners).—Silver Medal: Mr. A. F. Catharine, "The Jovial Infant" (reference to the *picture*), a technically excellent and well-modelled portrait in ozobrome of a child, with a petrified expression thrown in to indicate joviality. The title is of use in removing any impression that the infant was sitting on the business end of a drawing pin. Bronze Medal: F. Baker, "Sweet Pastures," an unpretentious and pleasing little study. Class 3 (beginners, technical merit only): Bronze Medal: E. C. Crane, "The Discobolus." The small bromide print appears to be as perfect a reproduction of the original as could be wished for.

In the technical section Dr. Mees exhibits a series of instructive photomicrographs, showing the definition given by various grades of dry plates, and Mr. C. W. Raffety a spectrum of nitrogen, rather a difficult subject, the rhythmical repetition of the complicated bands being well rendered. In the pictorial section Mr. J. M. Sellors exhibits (not for competition) many beautiful decorative pictures in quite a novel vein, the majority being graceful studies of leafless boughs and twigs, and birds thereon perched silhouetted lightly against a faint diaphanous background. Once again pure photography is responsible for the charming results obtained, all, by the way, secured in our London parks; here, too, ordinary plates score heavily, the complete subordination of the background being entirely due to the accentuation of the mist present in the original scenes.

# Commercial & Legal Intelligence.

**Coventry Bankruptcy Court.**—Before the Registrar, Mr. C. A. Kirby, Reginald Edwin Michael Bleasdale, photographer, 16, Hampton Street, Warwick, until recently in business at Nuneaton, attended for his public examination. Replying to the Official Receiver (Mr. C. J. Band), debtor said he commenced business on his own account about 1890, having previously worked for his father, who was also a photographer. At the time he started business on his own account he had practically no capital. He was then living at Wellesbourne, where he stayed about a year. He then went to Nuneaton, where he had been at various addresses and had combined with his business as a photographer that of a stationer, insurance agent, and moneylender's agent. He had about £50 at the time of his marriage, representing money he had saved. The business at Nuneaton was not a success. Asked why he had not continued keeping books, debtor said he got into difficulties and lost heart. The Official Receiver suggested that was all the more reason why debtor should have continued to keep books. The Official Receiver : What are the causes of your failure? —Debtor : Bad trade. Anything else?—Indirectly, exorbitant charges by a moneylender. Have you had many dealings with moneylenders?—Only one. How much did he charge you?—Fifty per cent. Debtor added that he had had a number of transactions extending over the last ten years, and the last amount he borrowed was £10. He also admitted that from the time he was married he had probably been living beyond his means. The examination was adjourned.

**The first meeting of creditors** in the failure of Samuel Hodge, photographer, of Spohr House, Fore Street, Sidmouth, was held at Exeter on June 1. According to debtor's statement of affairs, his gross liabilities were £98, and his assets £20, leaving a deficiency of £78. He attributed his failure to want of capital and illness in the family, which destroyed his recent Easter trade. Details of the trading history were given by the Official Receiver, from which it appeared that debtor started in business at Sidmouth at the end of 1908 with a capital of only £5. He had kept no books of account whatever, but it was estimated that during the whole of the trading period—nearly two years and a half—his net profits from the business were £140, which was about £45 less than his estimated expenditure for household and personal purposes. Debtor said he only became aware of his insolvency a month ago, when he filed his own petition. He had in his possession some 250 water colour pictures, which he stated were not his property, but had been sent him for sale on commission. The unsecured creditors included one for £35, proceeds of sale of pictures on commission. The other liabilities were all for sums under £10, and chiefly incurred in connection with the business. Debtor has been adjudicated bankrupt, and the matter remains in the hands of the Official Receiver.

**Legal Notices.**—Notice of intended dividend is given in the bankrupt estate of Albert Argent Archer, photographic artist, 140, Kensington High Street, S.W. All proofs must be lodged on or before June 17 with Mr. E. L. Hough, Bankruptcy Buildings, Carey Street, W.C.

# News and Notes.

**Royal Warrant.**—A Warrant of Appointment has been granted by the Queen to Messrs. Bassano, the photographers, of Bond Street, W.

**One of our Readers**, a keen photographer, wishes to find a companion for a holiday in Switzerland in July, preferably someone who would enjoy climbing expeditions. Those interested may address "Z.," care of the Editors.

**At a meeting** of the Direktorate of the Freie Photographische Vereinigung, of Berlin, held on May 19 last, it was decided to make arrangements for an international exhibition of photographic arts in Berlin in the course of the winter, 1912-1913.

**By Command of Her Majesty the Queen**, Mr. W. S. Stuart, of Richmond, Surrey, photographer by appointment to H.M. the King, attended at Buckingham Palace on Friday last and had the honour of taking a number of portraits of Her Majesty.

**The Queen** recently honoured Campbell Gray, the photographer, with a sitting for photographs at Buckingham Palace. The pictures are to be published as engravings together with those recently taken of the King. There will be 500 only printed. The proceeds, without deductions, will be handed to the Festival of Empire funds.

**Names and Addresses Wanted.**—Marion and Co., Soho Square, W., have received the following applications without names and addresses being given on the postcards :—From Blackpool (for new catalogue), Dingwall (for new electrical booklet), Glasgow (for catalogue, electrical, and background booklets). Should this meet the eyes of the parties concerned, no doubt they will do what is necessary.

**Photographic Record and Survey of Surrey.**—The annual excursion will take place on Saturday, June 17, Guildford having again been selected as the place of meeting. Although during the earlier part of the day members will be scattered in various directions photographing such objects as particularly appeal to them, yet an opportunity for a collective gathering will be given at tea time, and those wishing to join in this should communicate at once with the hon. secretary, Mr. Frank F. Wood, 11, Milton Road, Wallington, Surrey, from whom also particulars of trains, etc., may be obtained.

**Messrs. W. and D. Downey** will, during the Coronation—from June 12 to 24—show at the Clavier Hall of the Arts and Dramatic Club, an exhibition of photographs that should be of the greatest interest. It will include most of the photographs they have taken of our reigning House for the past fifty years, starting with Queen Victoria, the Prince Consort, and their family in childhood, and coming down to a recent photograph of King George not before seen. Members of other Royal families who have visited this country will also be shown. An interesting item will be a photograph of nine kings, taken at Windsor last May, and shown in an exhibition for the first time, by special permission of His Majesty. There will be an album of photographs of all the descendants and relations of Queen Victoria, some 150 in number. Several autograph albums will be on view containing the signatures, at various ages, of many kings, queens, princes, and other notabilities.

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

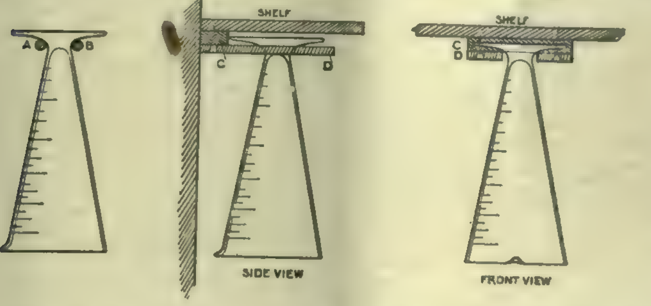
## KEEPING MEASURES CLEAN IN THE DARK-ROOM.

To the Editors.

Gentlemen,—One of your correspondents mentioned cleaning conical glass measures a while ago. Perhaps the following hint on prevention may be useful. If working near a wall, measures will hang safely, wrong side up, on two long nails.—Yours faithfully,

A. Clarke.

53, Bankfield Terrace, Bury.



## SUNDAY CLOSING AND THE SHOPS BILL.

To the Editors.

Gentlemen,—As an enthusiastic Scottish supporter of Sunday closing of photographic studios, I should like to refer to the letter of "Lancastrian" in last week's issue.

In the first place, he permits himself a quiet gibe at those who attended the recent Congress, and explains that he had neither the leisure nor the money to do so. Now, apart from the fact that many attended the Congress at considerable sacrifice of time and money, is it not significant that with all his Sunday opening "Lancastrian" is evidently not in a position to afford a week in London to widen his knowledge and outlook, and to co-operate with his fellow-photographers in their efforts to improve his business and theirs? In his case, apparently, a seven days' week has not only deprived him of leisure, but has failed to bring him financial prosperity.

But perhaps he does not mind this, if the real reason of his Sunday opening is revealed in the last paragraph of his letter. In referring to Sunday concerts, etc., he says—with his own case evidently in mind—"All honour to the men who devote their services to making the Sunday of the working toiler brighter and happier." "Lancastrian" is a philanthropist! He opens on Sundays to make the life of the working toiler brighter and happier! The toiling photographic assistants—who, unlike museum attendants, tramway men, etc., get no other day off for Sunday—are invited to immolate themselves with him on the altar of noble self-sacrifice. Surely this is too much for "Lancastrian" to ask from poor photographic humanity, even if he himself does really work as hard during the week as his assistants.

In regard to artificial light, many of the biggest Sunday openers work largely with electric light, and "Lancastrian" will probably soon find himself also compelled to use it for Sunday afternoons in November, if present conditions continue.

The truth is that whether a photographer's clients are agricultural labourers, millworkers, or twins, he will find, if they cannot be taken on Sunday by him or by anyone else, that they will come during the week. Just now, if the photographer does not open he loses business to the man who does, and he finds it difficult to refuse requests from his own customers. If opening were illegal, people would take no offence, and practically the only orders that might be lost would be of the cheap and chance kind. Indeed, the need of a little effort will make the photographing more of an event, and a better price will be obtained than from the careless Sunday passer-by.

I am sorry to find myself in disagreement with part of Mr. Rigden's letter on the same subject in the same issue. I feel that the success of the efforts to obtain Sunday closing will be very much retarded by this question of extra overtime for photographers' assistants. I think it bad tactics, as we are not powerful enough—even if we were in time—to obtain such an important alteration on one of the most keenly contested and already decided parts of the Bill. Besides, surely Mr. Rigden forgets that printers, mounters, retouchers, and indeed most of the workers of the studio are not affected by this Act, and that a liberal allowance of overtime is given by it, whereas under the Factory Acts photographers are not allowed any overtime at all, a privilege which is given to several other trades.

Apart from tactics, I am opposed to it on principle, as I think the sixty hours' overtime allowed by the Bill is ample. It means ten hours a week for six weeks, and to have any more would largely destroy the meaning and usefulness of the Bill, and would give an advantage to the most unscrupulous employer corresponding to what he has at present.

With apologies for encroaching so much on your valuable space, and with gratitude for your own attitude in this matter, I am, etc.,

Scottie.

June 3, 1911.

To the Editors.

Gentlemen,—"How oft the means to do ill deeds make ill deeds done." When will the few ill-advised photographers learn that the inclusion of photographers in the new Shop Hours Act will mean ruination, not to themselves alone, but to the vast number of lens, camera, plate, paper, background artists, and mount manufacturers, etc.? Stop or shorten the hours of photographic business, and you pull up the usage of photographic materials. What will then happen? All photographic makers will produce less, dismissal of hands will then follow, money that would have been spent on photographs will be spent elsewhere ("more's the pity"). This Sunday closing, kill-joy idea should be a matter for each photographer himself. But, as it now stands, it is just a dodge of a number of men who are well off themselves. Some who made their pile opening on Sundays now view with jealous alarm the strenuous efforts of a younger race of men making good. These so-called "good houses"—do they mean old-fashioned houses?—will not advertise, will not be civil to customers, imagine they confer honour on their clients by photographing them, when, as a matter of fact, the boot is on the other foot. Are these gentlemen of ancient history the foundation of the present prosperity of the photographic world—these gentlemen who use three dozen plates in a week, and fancy they are busy—or is it the men who advertise, make photographs good, cheap, and popular, and use up to a thousand plates a week, etc.? The time has come when it is up against the photographic manufacturers to help those who help them. The men who keep countless thousands in the photographic trade busy, the cheap, good man who makes things hum. America has some good sayings. I give one to the photographic business gratis:—"Get on or get out." Thanking you for the hospitality of your columns, I am,

Roe McMahon.

11, Harcourt Street, Dublin,
June 2, 1911.

To the Editors.

Gentlemen,—I am glad to follow "Lancastrian" in re-opening for ventilation the all-important subject of photographing on Sundays. Now I would challenge the presumption that the resolution passed by the Congress of the Photographic Association voices the approval of the majority of photographers. I can hardly believe that it bears sufficient influence from members, as it appears to me that it will affect the very subsistence of a portion of respectable, hard-working subscribers should the suggested measure be promoted to law. It seems to me outrageous to deny to parties the taking of their photographs by amateur friends or the professional at their homes on Sundays. I think it equally unreasonable to refuse them the homage of studio accommodation, embodying as it does characteristics so essential to good results. I advocate Sunday photographing because of the convenience it offers to sitters, and particularly for the enormity of trade raised all peculiar to that day. Some is directly disposed to the photographer; all the rest goes to the Sabbatarians, the plate and paper manufacturers, the mount makers, and trade houses—I think that I may add, with emphasis, to the copying and enlarging departments of those who champion restrictive legislation. I can put it without fear of contradiction that even with firms of the very highest standing, copies whose origin comes from Sunday-open studios amount to some 75 per cent.

It is the amelioration of the lot of the assistant where legislation is badly needed. The imposition of a minimum salary of 30s. per week and a 48 limited number of hours would come as a boon to the employee, and would effectually check the greatest evil of all, the cutting of prices.—Yours faithfully, A. Cohen.

9, Mary Street, Dublin.

## MONEY IN PLATINUM RESIDUES.

To the Editors.

Gentlemen,—Some of your readers, we are sure, are interested in the recovery of platinum residues. We have just received a cheque for £25 odd, which represents the value of residues recovered from £233 worth of platinotype paper. We keep a jar, into which we pour all our waste developers and "first" acid baths. In this mixed liquor we keep standing some granulated zinc. We stir occasionally. This method may not be scientific, and perhaps we do not get back *all* the platinum, but it is no trouble, and yields back a good 10 per cent. on the original cost of the paper.—Yours faithfully, H. P. Robinson and Son.

Rembrandt Studio, Redhill,
June 2, 1911.

## A PORTRAIT WANTED.

To the Editors.

Gentlemen,—I want to find the negative (taken, I believe, by Mayall) of General Sir John Inglis, of Lucknow fame, about 1858, when he came home. If found, I would like a copy, and if more than one negative, copies. I would then—after seeing it (or them)—see what it would cost to have a copy in water-colour, say about 4 in. by 6 in., closed in background, say the *head* of a cabinet size. There are numbers of young artists known to all photographers who would be suitable for such work. He who has the negative, if my hopes be realised, may have such a man on his staff. The Mayall photograph, I know, shows the whole of the tunic of the General, so that if a cabinet, would have to be somewhat larger, if the tunic be shown.—Yours faithfully,

David Ross McCord.

The McCord National Museum,
Temple Grove, Montreal.

## RETOUCHERS' GRIEVANCES.

To the Editors.

Gentlemen,—I am taking an enforced holiday, owing to ill-health brought on by long hours (without even a half-day each week) and the cramped attitude I was obliged to assume while retouching in a draughty shop. Of course, protest was useless, but I endured it for ten months for other experience. However, Nature is an exacting mistress, and when we treat her unreasonably she makes us pay; so I must put up with the inevitable for awhile. If only employers would have the sense to realise how much better and quicker assistants would work under comfortable and reasonable conditions, *perhaps* some of the less lazy would stir themselves to produce such circumstances, provided they had the necessary sympathy.

There is another point of vexation: that so many photographers lead one to think they do the very best work, advertise for a first-class assistant, and offer a fair salary, when one hasn't the least idea if such an account is correct.

The last situation I accepted was one such. Imagine my chagrin to find that the hours of work accounted for the salary; practically all the work was postcards, with some cheap mounted prints, and just a little of the better-class portraiture. I wish that disappointment and changes could be prevented by the strict truth being adhered to in the advertisements. If you think good may result and can give space for this in your paper, you are at liberty to air a grievance which a few others have experienced.

A Sufferer.

## A CAUSE OF FOGGED NEGATIVES.

To the Editors.

Gentlemen,—I wonder if you, or other photographers, have experienced the difficulty which I have under the conditions as follows:—When using a wide-angle lens outdoors my plates invariably develop fog. Have tried short and long exposures, always shade the lens, and generally start development with plenty of bromide, and have tried without bromide, but always the same result. The negative starts as though it were all right, and one might flatter oneself upon a successful issue, but almost immediately, instead of continuing to gain strength, etc., the shadows become veiled; in fact, the plate assumes the appearance of being fogged by extraneous light, the edges, protected by flange of slide, remaining clear. When lens used for interior work, the result is altogether different, and quite satisfactory, and one would say from these data that light gets to plate in camera out of doors; but I keep covered with focussing cloth, and have had it in sunlight to examine, and cannot find any percolation of light. What is the reason? Can you explain in your usual lucid and scientific manner? I have also a hand camera, which, under certain conditions, serves me in the same way. In this case I have imagined that the lens, perhaps capable of covering a larger plate, illuminates the sides of camera inside, which is reflected on to the plate and causes the "fog." Shading the lens to almost cutting off some of the picture, obviates to some extent. In spite of this drawback sometimes I have obtained perfectly clear and brilliant negatives, especially when working with light—i.e., sun—pretty well at my back, and the subject well illuminated, and, better still, if the camera be pointed downwards. Here is a defect, which makes one very careful in the use of the instrument, the unreliability constituting it more a toy than a dependable piece of apparatus. The lens seems excellent, for, having used it upon half-plates in ordinary camera, I have obtained negatives all that can be desired. Am I setting you too difficult a problem to solve, or is it my own ignorance of what is necessary to overcome the difficulty, that is, making a mountain out of a molehill? At any rate, I feel that you will, if possible, "help the lame dog over the stile," and, maybe, at the same time assist others.—I am, yours faithfully, Erebus.

[We can only suggest two explanations of your trouble, one being reflection from the sides of the camera, which, of course, should be obviated by a lens hood. If, however, a carefully adjusted lens hood fails to cure the fogging, the only alternative would seem to be flare in the lens. We suggest that you should expose two plates with the lens under identically the same conditions and on the same subject, but using two different cameras. If the fog is the same in both cases it will most probably be the lens that is at fault, and not the camera. If a difference is noted, then it is obviously the camera that is to blame. It must, however, be remembered that a camera which gives reflected fog with one lens will not necessarily do so with all, as a good deal depends on the angle at which the light strikes the folds of the bellows, and this, again, depends on the focal length of the lens as well as upon the taper of the bellows. There is a common delusion that square bellows cameras are free from this defect, but, as a matter of fact, they will give as much reflection as a taper bellows in suitable conditions. In any case a lens hood should be a remedy.—Eds. "B.J."]

# Answers to Correspondents.

*** *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

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**PHOTOGRAPHS REGISTERED:**

W. H. Major, Woodstone, Peterborough. *Photograph of Mr. John Holland, aged 84, and Mrs. Holland, aged 35, Married at Woodstone Church, Peterborough, May 28, 1911,*

R. J. Thompson, Cycle Works, Bellingham, Northumberland. *Photograph showing the Gas Works surrounded by Water during the Great Flood at Bellingham, May 14, 1911.*

R. Wooler, 44, Institute Road, Eccleshill, Bradford. *Photograph of Victoria Road, Saltaire, and Photograph of a Bird's Eye View of Saltaire Park, Yorks.*

W. Giles, 15, Strand, Walmer, Kent. *Photograph showing Royal Marine Light Infantry North Barracks, Depôt R.M., Deal. Photograph showing Canada Road, Walmer, and the New Royal Marine Depôt Church.*

F 6.3, A. F. K., and others.—In our next.

**HANG 'EM.**—We are afraid we cannot give you the advice you want as to prices. Surely you are best able to ascertain the cost of the job to yourself and to base the price on that.

**JAY MAY.**—We are sorry to say we do not know the source of supply of Libra papers. As regards plates, consult the figures given by the firms named under "Plates," on page 1344, of the "Almanac."

**BILDSICHT CAMERA.**—The advertisement in this year's "Almanac" published by you of a camera entitled the Bildsicht, by Levie J. Sasse, Nordfelder Reche, 15, interests me, and I should like to know if there is an English agent for that firm, from whom I may get a prospectus. If you can help me in the matter I shall be much obliged.—GEO. W. PERKIN.

The London agents are the Tella Camera Company, 68, High Holborn, W.C.

**WASHING PLATES.**—If I fill an ordinary 6ft. house bath, and suspend plates or films just under the surface, will the fact of hypo dropping to the bottom suffice for washing without changing the water, and how long will it take?—EUTHIE.

We should advise you to wash first for five minutes in running water, then soak as you describe for half an hour to an hour, and finish up with a second wash in running water for five or ten minutes. We think this would be efficient in removing hypo.

**BACKGROUNDS.**—Would you please tell me, in this week's "Answers to Correspondents" column if possible, the method of mixing flatted oil colour for painting backgrounds?—S. HART.

Flatted oil colour is made by mixing the pigments with the minimum quantity of oil, using turpentine to bring the paint to a workable consistency. Soap flatting, which is frequently used, is made of ordinary oil paint, diluted with an equal volume of strong soapsuds. Ordinary oil paint may be flatted when dry by stippling with a large brush, moistened with turpentine.

**COPYRIGHT.**—I have had a book brought to me, out of which I am asked to copy an engraving, by D. J. Pound, from a photograph by Mayall. The book is called "The Drawing-Room Portrait Gallery of Eminent Personages," and was published in 1859 by The London Joint Stock Newspaper Company, Ltd., 109, Strand. Should I be held liable if I produce an enlargement, as, of course, I shall charge for same?—CHARLES BOWN.

It may be presumed that the photographer by whom the negative was made has been dead for over seven years, and copyright in the portrait therefore will have run out.

**SPOTTED PRINTS.**—Could you favour me with your opinion as to cause of fading and spottiness as shown on prints herewith? They were supplied to customer unmounted about three and a half years ago, and taken by him to be mounted and framed at a picture-framer's, who mounted them on mounts, as you now see. Would it be impurities in mounting board, or due to improper washing, etc., of prints? Prints have been hanging indoors since framing.—GEE.

We think it quite likely the spotting is due to the boards, and possibly to the mountant also, on which the prints have been put. The mounts are evidently a cheap kind of strawboard.

**FINISHING PRINTS.**—(1) Is there any book giving copies for pencil sketches to be put in by hand on bromide prints? (2) Is it customary to use ordinary water colours for making stained drawings, or is there a special paint made for the purpose?—A. H.

No book of the kind is published. You should be able to find suggestions in the illustrated weeklies, especially those devoted to ladies' affairs. Books on pencil drawing can be obtained through any artist's colourman. The series of "Studies in Two Crayons" would give you some idea as to the treatment of draperies, etc. (2) We assume that by "stained drawings" you mean those made by the Autotype Company, for which, we imagine, water colours are used.

**ELECTRIC LIGHT PORTRAITURE.**—My studio is 18ft. x 10ft., and 9ft. high, and I wish to have three or four small electric arc lamps fitted for photographing at nights. Please inform me what candle power is necessary for about two seconds' exposure with *f*/11, and where I can obtain such lamps.—TRIPOD.

You will hardly need more than one arc lamp for so small a studio, especially with the exposure you are willing to give. It is impossible to measure the photographic value of electric light in candle power, as the colour of the light has so much to do with it. Excellent lamps are made by Marion and Co., Houghtons, the Westminster Engineering Company, and others. As your studio is so low the Westminster "Toplight" would probably give the best lighting.

**COLOUR PHOTOGRAPHY.**—As I am interested in colour photography, I shall esteem it a favour if you will inform me if there is an efficient "three one-exposure camera" on the market, suitable for portraits and other colour work. If so, the name of maker, and probable cost. "Ives" film-pack has been mentioned to me. Do you consider that suitable?—JOHN BRAND.

The only two one-exposure cameras that we know are that made by Mr. Sanger-Shepherd, 5-7, Gray's Inn Passage, Holborn, London, W.C., and the camera of Mr. E. T. Butler, of 26, Craven Park, Willesden, N.W. We do not know whether Mr. Butler's camera is on the market, but think it is: Mr. Butler will be able to tell you. We have not seen any actual examples of the Ives' film-pack camera, as these are not yet obtainable in this country.

**PAPER FOR PASTEL REPRODUCTION.**—What would be the best plate to use, and which screen, to obtain the full rendering of tone values in reproducing a beautiful pastel drawing in which the colours are charming (it is a head of a child), as most perfect print is required? I propose using in printing the buff "platinotype" paper, unless you advise another. This colour would, I think, be so much like the general effect of colour of pastel. The picture is about 24 x 15; 12 x 10 prints required if possible.—REPRODUCTION.

We should advise a panchromatic plate with a fairly deep filter, such as the Wratten K 3. Without having seen the original, we should say that buff "platinotype" would give an excellent reproduction. We notice that Mr. Hollyer, in his reproductions of paintings shown at the Royal Photographic Society, is now using this paper.

**P. A.**—Most certainly, mounting, or canvassing for orders, are not part of the duties of an operator, but we find it difficult to answer your question as to how you may escape from the terms of the agreement. Supposing you were to leave, or be dismissed from the firm, and were to take a position within the prescribed radius, we think it most probable that, even though you had left on the grounds you name, the firm would be able to obtain an injunction preventing you from working within the radius. We do not think they would be able to do more than that, and we certainly believe that the penalty named in the agreement would be held by a judge to be excessive in the extreme. We do not feel competent to say more than this, and would advise your seeking the advice of a solicitor, who would perhaps be able to say whether the agreement, as a whole, is so entirely in favour of the employer as not to be binding on either party.

A Case of Authority.—I was asked to take photographs, for the foreman of the contractors of engines in what they call the electric power station, it being a new building for the colliery company. While taking photograph the manager of the colliery sent a message over to me that I was not to take any photographs, and I was to go over to the office to see him; but, being pressed for time, I did not go then. The following morning I received a letter from him as follows:—"Dear Sir,—Photographs taken by you at our new power station this morning. Please take notice that you are not to print and publish the above on any account, and in future you must not come to these grounds to take any photographs without permission from this office." Neither the building nor the plant has been handed over to the colliery company yet. The foreman for the builder holds one key, and the foreman for the electricians holds the other, and they both want the photographs. Can the manager of the colliery prevent me producing the prints because photographs were taken on their ground? The colliery company have not sanctioned or formally taken over building or machinery from the contractors yet, but they are erected on their ground. Should be much obliged if you will answer for me as soon as possible.—H. J. L.

As the photographs were taken to the order of the foreman employed by the contractors, it is he who can authorise you to produce the prints, and any prints you may make will be produced on his responsibility. As he was the person who gave you the order, you have no right to produce prints, nor to refuse to produce them, on the demand of anybody else.

Printer.—(1) Over-print very slightly. (2) Place prints, one by one, in water, change water three times, the prints becoming brick-red. (3) Stock solution: Water, 1,000 ccs.; borax, 10 gms. For each sheet of paper take 300 ccs. of this solution, and 6 ccs. of 1 per cent. gold chloride solution, adding a further 100 ccs. of water to slow toning. Mix bath fresh, as it does not keep. Tone until the brick-red gives place to a soft brown colour, not to violet. After toning wash in two changes of water, and place in platinum bath. (4) Water, 1,000 ccs.; phosphoric acid, 10 ccs.; potass. chloro-platinite, 1 gm. Use as much as is necessary for the prints; above quantity tones about eight sheets. In the bath the prints become first violet, then blue, and finally a greyish black. Take them out as soon as the tone has passed from violet to black. If toned longer, final colour is brownish; if taken out sooner, final tone is bluish. Trials on a few prints, toning for different times, will soon allow of the right point being judged. Exhausted platinum bath will not give a pure black tone. After platinum toning, wash thoroughly and fix. (5) Fix in solution of 50 gms. hypo in 1,000 ccs. water. Bath should not be chilled; better to make it up in advance. Time of fixing about ten minutes; prints should be kept on the move and placed singly into the bath. They are then washed for one hour in running water, or at least six changes, using the permanganate method as a test for the removal of the hypo. Prints may then be trimmed wet and mounted at once. (6) For red chalk tones, the best way is to tone for a short time in the borax bath and fix, or to tone for a short time in a used platinum bath after prints have been well washed, then washing and fixing. This gives reddish tones. Red chalk is also produced by washing prints and fixing in 10 per cent. hypo, then toning for a short time in the combined bath; but these tones are less permanent.

Kallitype Paper, etc.—I have been trying to prepare some Kallitype paper, and find that on mixing ferric oxalate and silver nitrate one gets a precipitate. I prepared the ferric oxalate myself in the dark from freshly precipitated ferric oxide and oxalic acid, and on testing find it quite free from ferrous oxalate. In fact, I have prepared Kallitype paper with the commercial ferric oxalate, which contains ferrous oxalate, and find it works quite as well. Is it necessary to have some other reagent present, such as ammonia? In the "B.J." for 1910 there is another formula, given by J. Thomson. Perhaps that works better. With a ppt. present it is not possible to coat paper evenly. (2) Would it be possible to get a printing process resembling mezzotint by taking a screen block (made by reproducing a piece of black paper), coating with bichromated gelatine (or some such colloid), printing under a negative, etching as in photogravure, and then printing as a mezzotint? Do you think that the process block, when it prints dead black, sufficiently resembles the mezzotint burr to make such a process feasible?—Chas. E. Franck.

(1) Add a grain or two per ounce of oxalic acid to the ferric oxalate solution, make the mixture warm by standing the vessel containing it in hot water, and add the silver nitrate (dissolved in the smallest quantity of water) in small doses. (2) Mezzotint consists in starting with a deep black and scraping away in order to form the picture by making the tones lighter where necessary. "Etching as in photogravure" is to put in the darks, the very opposite of mezzotint. To imitate mezzotint it would be necessary to start as you suggest, with a half-tone or some similar grained ground, and then build up in proportion to the lights of your picture. It would perhaps be possible to do this by some process of electro-deposition, certainly not by etching as in photogravure. Photogravure is itself considered a substitute for mezzotint, but you would not get a connoisseur in mezzotints to agree that the process even approached mezzotint in richness.

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Seeing Before the Event.—Referring to the statement made by Dr. Abrahams in a lecture at the Camera Club, that one sees a thing happen before it happens, if one knows it is just going to happen, "M. R." writes to the "Daily News": "When next you see any road-breakers at work you may yourself enjoy this sensation of 'second sight.' When the iron wedge is inserted in the solid macadam and the two hammers swing down in rhythmical cadence, I *always* see the wedge sink *before* the hammer touches it. Knowing it to be an illusion, I make it a point to watch the operation whenever I have the chance, but the illusion never disappears. I invariably see the wedge sink as if the wind of the coming blow already forced it down. The blows following each other so rapidly, I once believed I might mistake the effect of the second blow for that of the preceding one, but most careful watching has convinced me that this is not the case. I explain the singular thing in this way. Knowledge of the happening of a fact is conveyed to the mind by the senses, but this is superfluous when the knowledge is already there. I *know* what is going to happen, and have no time, in that fraction of a second, to distinguish between that absolute knowledge and the superfluous confirmation or repetition conveyed by the sense of sight. As a matter of fact," adds "M. R.," "I *could* not *see* it happen when it *does* happen; for the hammer then covers the wedge, and hides the top of it from view."

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## The British Journal of Photography.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2667. Vol. LVIII. FRIDAY, JUNE 16, 1911. Price Twopence.

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## SUMMARY.

The Coronation Week.—Communications for the editorial and advertisements of the "Journal" must reach us at the latest by Monday morning next, first post, in order to secure insertion in next week's issue, which will be published on Wednesday morning, June 21.

At the Royal Photographic Society, on Tuesday evening last, Mr. Sanger-Shepherd read a paper on a new process, the invention of Mr. W. Hay Caldwell, which allows of the production of a rapid gelatine emulsion capable of withstanding over-exposure to almost any degree and permitting of the manufacture of printing papers which can either be printed-out fully in the frame or partially exposed and developed like bromides, in each case retaining the true gradation of the subject. The new product gives every promise of proving a most remarkable step in advance in photographic negative-making and printing. (P. 463.)

A further letter pro inclusion of photographers under the Shops Bill will be found on page 465.

Prices for commercial photography, assistants' conditions in France, etc., are topics dealt with by correspondents. (P. 465.)

A miscellany of timely hints for professional photographers is quoted from our up-to-date contemporary, "Camera Craft," on page 453.

An exhibition of the London Salon of Photography is to be held during September-October at 5a, Pall Mall East. (P. 465.)

A collection of prints by M. Demachy representing the latest development in the oil process may now be seen at the house of the Royal Photographic Society. (P. 458.)

Mr. Harry D. Gower, in an article, describes a method of preparing P.O.P. prints on fabrics. (P. 451.)

M. André Callier, in a recent paper, has given a number of useful precautions in employing the copper-silver and lead methods of intensification on gelatine negatives of line subjects. (P. 452.)

The manipulation and uses of stripping collodion paper are dealt with in an article on page 457.

In a leading article we describe a method which may be used of estimating the efficiency of diaphragm shutters. (P. 450.)

## EX CATHEDRA.

**Next Week's "B.J."** In consequence of the Coronation ceremonies which take place on Thursday and Friday of next week, June 22 and 23, the "British Journal of Photography," dated the 23rd inst., will be issued on Wednesday next. Correspondents, querists, and others are therefore asked to note that all communications for the editor should reach him, if possible, during the present week, or at the latest by the first post on Monday morning next. Advertisers also are requested by our publishers to note that all copy should likewise be received at the latest by the first post on Monday morning.

* * *

**Two Art Exhibitions.** The New English Art Club exhibition in the Suffolk Street Galleries is, on the whole, as enjoyable as ever, though it is without anything extraordinarily arresting. Perhaps the most noteworthy of all is the deliberate and exhaustive sketch by J. S. Sargent of a stable interior called "Shoeing Oxen at Siena" (146). This is painted with the searching enthusiasm of an old Dutchman, and its tones and textures are marvels of dexterous brushwork. Those who like thrilling sensations of the repellent sort had better see Henry Lamb's peasant studies, which, though ridiculous in their affected manner, are undoubtedly the work of a gifted man. The International Society at the Grafton Gallery has hit upon an excellent idea in showing the works of men who have been pioneers in paint during the last century. They have, perhaps, not been as honestly representative and comprehensive as they might have been: their own particular point of view is open to question in the matter of proper perspective and proportion, and therefore the exhibition is not as educational as it might have been. We could well have dispensed with some of the 28 Condors, for example, in favour of works by not a few great men who are unrepresented—Böcklin and some Germans. Rossetti is much over-represented. He has been well shown in past years. But, taking the show as it is, one may have some surprising moments, especially in seeing the early work of Millet and others.

* * *

**Coronation Subjects.** In nearly every town and village in the United Kingdom there will during next week be some doings which will call for the services of the photographer, who will, if he be wise, strike while the iron is hot, in the way of rapid delivery of prints, especially if they are wanted for press purposes. The experienced press worker makes liberal use of methylated spirit for drying both negatives and bromide prints, and to those who are not accustomed to do this a few hints may be acceptable at the present juncture. To dry negatives they should, after washing under a tap or rose, be set up to drain for about a minute, and then blotted till surface dry with perfectly clean, smooth tissue; this absorbs the moisture as well as blotting paper, and leaves no trace of fluff behind. There is a stout, yellowish paper called "Stout Buff Copying" which is excellent for the purpose. The negative should now be immersed in a dish containing methylated spirit to the depth of half an inch, and this should be rocked for a few minutes until the surface ceases to run into streaks when drained. It should then be transferred to a second dish of spirit and allowed to remain in it until the next plate is ready to follow it, when the first plate may be set up in a draught or in a warm place to dry. Thorough soaking in the spirit is the secret of safe, even, and rapid drying. Prints should be blotted in the same way, and a number of them immersed in the spirit and moved about as in toning until they feel stiff to handle, when they may be hung up to completely dry. This may be hastened by placing them near a fire, taking care, however, that they do not catch fire. Prompt dispatch of prints is essential for newspaper work. Unless you have some unique subject, you may as well save your stamps if you do not post your prints within two or three hours of the event, and even for local sale there is a much greater demand on the great day than after the morning's reflection, when folk have had time to count the cost.

* * *

**Definition and Hardness.** Mr. Edgar Clifton, in his paper on "The Lens in the Studio," read before the P.P.A. Congress, laid emphasis on the fact that a lens giving a perfectly sharp image will not necessarily give a hard result. We are afraid that the two effects are often confused. Possibly nine times out of ten when the critic condemns a photograph for undue sharpness the thing that is really worrying him is not the sharpness, but the hardness of the details. Similarly, we have often heard a photograph condemned for being too much out of focus, when, as a matter of fact, the focus was sharp, but the picture far too soft. The real faults in such cases are therefore ones of lighting, exposure, and development, and have nothing to do with the lens. There is reason to believe that these facts are at last becoming more generally recognised by photographers, for good focus is more prominent a feature at recent exhibitions than it used to be a few years ago. A factor that tends to avoid hardness is, of course, the use of orthochromatic methods of working, which give a more complete range of tones. With a plate that is insensitive to certain colours some tones must be left out, and this alone is enough to conduce that hardness. Very few of the best workers now neglect the use of filters and of colour-sensitive plates, and the results of truer colour and tone rendering are apparent on all exhibition walls.

* * *

**Soft Focus Effects.** In considering the selection of a lens calculated to give diffused focus it is important to remember the distinction between the effects produced by chromatic and spherical aberration. With the former sharpness of delineation may be apparent if the plate is within the depth of focus of the objective, but with the latter nothing need be sharp. In other words, the image of a point formed by a lens that possesses chromatic aberration will be a point surrounded by a blur, while a lens with spherical aberration alone may represent the same point by a disc. The effects produced in the two cases may therefore differ very greatly, as pointed out in the book, "Artistic Lenses," by MM. Puyo and Puligny, which was published five years ago, but is, we fear, now almost forgotten. A lens possessing spherical aberration alone will represent some few points in the object by blurred points, others by discs, and others probably by rings; hence it would appear that such lenses would require very careful use. We believe, however, that all the diffusing lenses show some chromatic as well as spherical aberration, the anachromats being specially distinguished by the fact that the diffusion they produce is due almost entirely to chromatic aberration.

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## A USEFUL METHOD OF ESTIMATING THE EFFICIENCY OF SHUTTERS.

The efficiency of a shutter is never an easy thing to measure, neither is it always a simple thing to estimate by calculation, but sometimes calculation will enable us to take a very short cut towards a result that we could only reach by experimental measurement of an elaborate nature and involving the use of special apparatus. The efficiency of a shutter is a purely relative matter, and simply represents the proportion of the total time of exposure during which the lens aperture may be considered to be fully open. Seeing that in all cases some part of the total time must be occupied in opening and closing the aperture, it follows that the whole aperture cannot be in use or be effective during the whole of the time of exposure. Taking, for example, the case of an iris shutter which opens and closes in the same manner as an iris diaphragm, it is obvious that exposure begins and ends in the centre of the lens-aperture. If the time from the first opening to the final closing is, say, $\frac{1}{10}$ second, then the duration of the exposure is $\frac{1}{10}$ second in the centre of the aperture alone. The margins are open merely for an infinitesimal moment of time, and intermediate points of the aperture between the centre and the margins for varying times all less than $\frac{1}{10}$ second. The total amount of light that reaches the plate is therefore not equal to the amount that would reach it if the full aperture were wide open for $\frac{1}{10}$ second, but a certain fraction or percentage of that quantity, the fraction involved being the "efficiency."

The efficiency can be calculated in the following manner. Consider the case of the ideal shutter with an efficiency of 100 per cent. Such a shutter cannot exist, but we must consider it, as it forms the unit for comparison. The amount of light that would pass through such a shutter in a time equal to $t$ can be represented by a cylinder, the diameter of which is equal to the diameter of the shutter opening, and the height of which is equal to $t$. The cubic contents of this cylinder will then represent the amount of light passed by the shutter, and will be our unit of comparison. Next take the case of the iris shutter before described, and consider what form of solid body will represent the light passing through it. Seeing that the centre is open for the full time $t$, while the margins, assuming there to be no pause in the motion of the shutter, are only open for an infinitesimal period, it is evident that the only solid body capable of representing the amount of light passed must be of a conical form. If the shutter moves at uniform speed the cone will be straight-sided or a perfect cone, and its cubic contents will be one-third the contents of the cylinder of the same height which we have taken to represent the light passed by the perfect shutter with an efficiency of 100 per cent. The efficiency of the iris shutter will therefore be $33\frac{1}{3}$ per cent., and the efficient exposure will be one-third of the total duration of exposure.

If the shutter movement is not uniform the cone will not be straight-sided, and its contents will then be more difficult to determine, but in most cases it will probably be sufficient to consider the motion as uniform. If the shutter pauses at the moment of full opening then the solid representing the efficient exposure will not be a simple cone, but a cone mounted on a cylinder, the height of the latter being equal to the time during which the aperture is open. In the best modern shutters the time of opening and closing is always the same, and is very rapid, so that the cone is a comparatively flat one. With the highest speed the cone alone represents the efficient exposure, but as the speed is lowered or the time increased the only thing altered is the time of full opening or the height of the cylinder under the cone.

If there is no pause at full opening, then the only way to vary the speed is by altering the rate of movement of the shutter blades. The result then is that the highest speed is represented by a low flat cone and the lowest speed by a high cone with an acute apex, the efficiency being the same in both cases.

Up to this point we have considered only the efficiency of the shutter alone. If used in combination with a lens the aperture of which is equal to that of the shutter the conditions are precisely the same, but if the lens aperture is smaller than the shutter aperture then the conditions are modified somewhat. In this case the cylinder representing ideal efficiency will have a height equal to *t* as before, but its diameter will be only that of the lens aperture. This lens aperture will be full open while the shutter blades are travelling beyond it up to the limits of the shutter aperture and back again; therefore the arrangement is practically equivalent to that of a shutter in which a pause is made at the moment of full opening. The solid representing the efficient exposure will therefore be a cylinder surmounted by a cone, the diameter of the cylinder being that of the lens aperture.

We have considered here only a shutter which gives a very simple solid representing efficiency. The sliding plate or blind shutter will give equally simple forms, but some other diaphragm shutters give complex shapes, the cubic contents of which are not easily determined. The method is then not so readily applicable, but in all cases its principles are the same. We have first to determine the form of the solid body representing the efficient exposure, and then to compare the contents of that body with those of the cylinder representing ideal efficiency. So long as the forms are confined to cylinders and cones calculations are easy, and the method will be found useful in many cases.

# A NOVEL AND ATTRACTIVE FORM OF PHOTOGRAPHING P.O.P. PRINTS ON FABRICS.

The facilities of being able to transfer photographs made on P.O.P. paper do not seem at the present time to be taken advantage of as they might be, the fact being, perhaps, the reversed result that is obtained, or it may be careless working, and so spoiling the results. Anyhow, for the sake of those who feel disposed to try their hands at what may be called a very decorative process the few particulars set forth here may be helpful to some degree.

So far as the print is concerned, there is nothing more than the carefully printed and toned picture, but no hardening bath of any description must be used; if it is, disaster will probably follow. If possible, transfers should be made with prints from the last washing, or the prints may be dried as usual and used at a future period, but previous to a dried print being used a thoroughly good soaking in water must take place, and for winter work it should be about 55deg. to 60deg.; in the summer this will not be necessary, the working temperature being fairly high.

The transfer of the whole print from its paper support does not in the strict sense of the term take place, nor must it be looked for. What really happens is that a good deal of the gelatine is absorbed by the fabric, leaving some of the gelatine upon the paper when peeled off. A paper introduced some years back could be transferred to any object one wished; it was prepared with a substratum which was easily dissolved, between the gelatine and the paper, but my experience with it was that it came away much too easily and at times when it was not wanted to.

The fabric for the permanent support of the image may be silk linen, but for ease in working sateen is hard to beat, being a very absorbent material and obtainable in almost any colour, while at the same time is not costly.

If the fabric has a dressing which would repel moisture in any way, washing thoroughly in water, drying, and then ironing out with a warm iron, to get it flat and free from creases, will be necessary.

A piece of the material is now taken an inch or two larger than the print, and carefully pinned by its four corners to the cloth of a small ironing board, previously arranging to have an iron made hot as if ironing was about to take place. Any sort of iron will do: it should be hot, but not hot enough to singe or burn.

The print should, for convenience (although not necessarily), be printed with a white edge, similar to a carbon safe-edge; it looks better, the finish is much superior, and the gelatine is not so liable to run when the heat is applied.

The print is carefully taken from the water in which it has been thoroughly soaking, all moisture is removed from its face and back with some old linen or blotting-paper, and it is carefully laid face downwards upon the fabric. Now run a roller squeegee over it, and then lay a piece of white blotting-paper on the back, with just enough glycerine to make it moist, but not wet. Over this lay another piece of dry blotting. Now with your hot iron go over the back carefully, pressing the iron as if ironing. Then, without hesitating for one moment take away the blotting-paper, lift the two opposite corners of the print, and peel it away. If everything has gone right an excellent impression of the print is the result, the gelatine image having been incorporated with the fibres of the material, which may be now unpinned from the cloth on the board and placed on one side to dry thoroughly.

In conclusion, I may say the interest does not always finish with the ironed print; the surface of the fabric so treated is well adapted for colouring, while, again, coloured fabrics lend themselves admirably to subjects if photographed with dark backgrounds: they allow the ground colour of the material to take the predominating colour of the subject. Ideas and suggestions are numerous, but, of course, after this treatment the material will not wash.

Harry D. Gower.

Royal Institution.—A general monthly meeting of the members of the Royal Institution was held on Monday last, June 12, the Duke of Northumberland, K.G., president, in the chair. The special thanks of the members were returned to Mr. W. Phipson Beale, K.C., M.P., for his donation of £25 to the fund for the promotion of experimental research at low temperatures; and to Dr. Donald W. C. Hood, C.V.O., for his present of a portrait of Faraday.

# POWERFUL INTENSIFICATION OF GELATINE PLATES.

[In the following short article in the "Bulletin of the Association Belge de Photographie," M. A. Callier, of Brussels, deals with two of the intensification processes which are of particular value in obtaining negatives of line originals. He points out one or two new expedients which may be used when applying these methods to dry plates with the object of securing the same cleanness of lines which the processes give when applied to negatives on wet collodion.—Eds., "B.J."]

Those photographers who are acquainted with the wet collodion process are gradually becoming fewer in number, and it may, therefore, be worth while to describe some methods of intensification of which good advantage may be taken in treating gelatine plates which are used in the reproduction of plans, line originals, etc. Methods of intensification, such as were used with wet collodion, cannot be employed for dry plates without certain modifications, since, leaving the extra time of washing out of the question, the gelatine film does not give up so readily certain compounds as does the thin film of the wet collodion plate. It is, however, possible to modify the older methods so as to adapt them to the new plates.

### Intensification with Copper Bromide.

This method of intensification was first proposed by M. Féry for dry plates. Unfortunately it is easy to produce a heavy brownish fog which presents considerable difficulty in its removal. A method which can be used with great prospect of success, but not with absolute certainty, is the following:—The negative, after well washing, is placed in the following bath, which may be kept in use for a considerable time:—

| | | |
|---|---|---|
| Copper sulphate ........................ | 25 gms | ½oz. |
| Potass bromide ........................ | 25 ,, | ½oz. |
| Water ........................................ | 1,000 ccs. | 20ozs. |

This mixture acts like a solution of copper bromide. The negative is rapidly bleached, the silver of the image being converted into silver bromide and cuprous bromide.

Subsequent washing will remove the soluble salts, but it must be done rapidly since the cuprous bromide quickly oxodises in the air and thus makes it difficult to obtain the intensification. The best plan is not to wash the negative in ordinary running water, but to pass it through a series of three or four baths of two per cent. acetic acid, in each of which it is allowed to remain for about five minutes. The last of these baths, when poured into a measure, should become only very slightly blue on addition of ammonia. There will always be some slight bluish colour since the cuprous bromide is slightly soluble. After washing with distilled water, which removes the greater part of the acetic acid, the negative is placed in a two per cent. solution of silver nitrate where it rapidly darkens. The re-action here, according to the majority of authorities, is that the cuprous bromide and silver nitrate re-act, giving silver bromide, copper nitrate, and metallic silver. But it may be questioned if the brownish deposit thus obtained actually consists of metallic silver. It appears to be slightly soluble in solutions of soda sulphite.

After a very short washing in distilled water, the negative is placed in a weak solution of sodium chloride (common salt), which serves to precipitate the excess of silver nitrate, the presence of which, without this precaution, would lead to brownish fog through reduction of the gelatine of the film. The slight deposit of silver chloride which is formed can be dissolved in a ten per cent. solution of sodium sulphite, which is almost without action on the silver bromide.

The negative may be finally re-developed, preferably with amidol, and, of course, in full daylight.

The intensification produced by this process is great: the grain is slightly enlarged, but so little that fine transparent lines are not choked up. If the negative is seen to be veiled in intensification any reducer may be used to clear it, the image being formed of metallic silver. Good results are obtained with almost absolute certainty by following the above instructions precisely, that is to say, when working with plates of thin emulsion film. If necessary the process can be repeated several times over.

### Intensification with Lead.

Intensification with lead is as simple in use as the foregoing method with copper bromide is complicated. The intensification given is extremely great, but, unfortunately, the size of the grain is greatly enlarged, and fine lines have a tendency to choke. The following is the method:—The negative, which should be well washed, is bleached completely in a solution made as below, which should be filtered between each time of use:—

| | | |
|---|---|---|
| Potassium ferricyanide ............ | 40 gms. | 360 grs. |
| Lead nitrate ............................ | 60 ,, | 525 grs. |
| Acetic acid ............................... | 20 ccs. | 3 drs. |
| Water ....................................... | 1,000 ,, | 20 ozs. |

It is necessary to add the acetic acid in order to cause the solution to penetrate into the gelatine.

The chemical effect of this intensifier is to form lead ferrocyanide, which acts upon the silver in the image giving lead and silver ferrocyanides. After bleaching, the negative is washed in three or four baths of three per cent. pure hydrochloric acid (which should contain no iron), each bath being allowed to act for about five minutes. The object of the hydrochloric acid is to prevent the formation of basic lead salts, and thus to facilitate, to a great degree, the removal of the soluble salts. The ferrocyanides are converted into chlorides which are of an equal degree of insolubility. After washing with running water, in order to eliminate all traces of ferrocyanide as shown by the yellow colour, the negative is placed in a weak solution of ammonium sulphide in which it quickly darkens, forming an image of silver sulphide and lead sulphide.

It is somewhat remarkable to find that the intensification can be repeated indefinitely: probably the lead ferrocyanide acts as an oxidising agent of the silver sulphide, the lead sulphide probably remaining intact. The process would be free from all reproach if the slight fog, which is left by the last operation, could be removed by a suitable reducer. It has been found that this can be done most easily by immersing the plate for a few minutes in a weak bath of bromine water, followed by washing for a few minutes and immersion in a hypo bath: the latter removes small quantities of silver bromide and of lead bromide which are formed.

It is interesting to note that the gelatine almost completely loses its solubility in boiling water in the portions which are intensified, but not in others.

### Physical Intensification of the Wratten High-Resolution Plates.

Messrs. Wratten and Wainwright prepare plates of extremely thin film which can be easily developed before, or better after, fixing by a physical developer. This latter has the following composition:—

| | | |
|---|---|---|
| Metol ...................................... | 20 gms. | 180 grs. |
| Citric acid ............................ | 100 ,, | 2 ozs. |
| Water ........................................ | 1,000 ccs. | 20 ozs. |

To 100 ccs. (3½ ozs.) of this stock solution, 10 ccs. (3 drams) of ten per cent. silver nitrate solution are added at the moment of use.

At the end of four or five minutes the plate is well scrubbed with a tuft of cotton wool and development commenced anew with a fresh bath, this process being repeated until sufficient intensity is obtained. Any veil which may be left in the finished negative, or positive, is removed with any convenient reducer.

The definition obtained by this process is excellent, the results resembling those on wet collodion. It is an excellent process and gives most beautiful results.

ANDRE CALLIER.

# ON A METHOD OF EXAMINING AND PHOTOGRAPHING FINGER-PRINTS.

[The following is an abstract of a lengthy paper in the "Archives internationales de Médecine légale" by Dr. E. Stockis which we translate from the "Photo-Revue." The author deals with a difficult problem of documentary photography, for which he prescribes a method of working which is readily carried out in practice with simple apparatus.—EDS. "B.J."]

THE important part which is played in criminal inquiries by the examination of finger-prints is well known. In earlier papers we have published instances of identification by this method, and descriptions of the processes which we have used for rendering visible the latent finger-impressions on various supports.[1] These latent impressions are those most frequently met with; they are left by the contact of, and perspiration from, the fingers, and they, though not directly visible to the eye, are formed by a transparent deposit of fatty acid, of water, and various salts.

The identification of these impressions most generally requires the aid of photography,[2] and it is with the object of rendering them "photographable" that efforts have been made to apply colouring methods, with a view of intensifying the impressions left by the fingers on the objects touched, a special branch of work calling for delicate chemical study.

There are, however, great and obvious advantages in being able to photograph the impression without a chemical treatment, since this latter may impair certain delicate details of the impression, and, moreover, is a method which does not succeed nearly so well if the impressions have been made for a considerable time.

Now, the process of photographic reproduction by the usual means presents great difficulties when the prints are not coloured in any way, or intensified mechanically by means of an opaque deposit. The greasy substance which forms the impression possesses remarkable transparency, and only becomes visible to the eye and to the lens under conditions of oblique lighting, which are opposed to reproduction of the object in the flat.

The only method which those who have studied the methods of criminal photography recommend consists in obliquely illuminating the impressions by means of arc light. In confining themselves to this general method they point out, at the same time, that satisfactory results are obtained with difficulty and after numerous trials. Several cases of particular delicacy in our own practice have induced us to search for a better method of lighting, and that which we propose appears to us to fulfil the desired requirements. We will describe successively the impressions on glass and transparent objects, those on opaque objects, and, lastly, those on mirrors and other objects having a reflecting surface.

The finger-impressions, which are of such frequent importance in criminal inquiry, are very frequently met with on the fragments of glasses broken by the authors of a crime. They may be impressions of blood, of dust, or of dirt, produced by the impression of the soiled fingers on these substances. In these cases they are fairly readily seen, and their reproduction by photography may be done without special difficulty by arranging an oblique lighting more or less at a tangent to the impressions arranged on a light ground of suitable colour. It must not be forgotten that it is necessary to photograph at the same time a test object of known dimension, and we have recommended for this purpose the use of bands of gummed millimetre paper, which are applied to the object by the side of the impression being reproduced.

As a general rule, these impressions are produced by the application of greasy fingers only, and the lines which form them can only be distinguished from the usually colourless support by a particular kind of refraction, which renders them brilliant when illuminated in a particular way. In order to see these impressions, if they lie on a plate of colourless and transparent glass, it is necessary, if working by daylight, to place behind the glass a black ground not so wide as to cut off the illumination by the surrounding light; for example, to examine the print in front of a well-lighted window in the centre of which a black card has been suspended. By artificial light it is necessary to place them before a lamp, and the lines of the impression will then be visible near the edges of the illuminating flame. It is necessary, in short, to examine by transmitted light, and to work so that the incident rays fall, not completely in the axis of the rays, but a little obliquely, making a very small angle with the direction of these latter. Such is the illuminating arrangement which all the authorities have recommended. Windt and Kodicek[3] give a diagram of this in their work, and, among others, Reiss[4] and Urban[5] state the use of the arc light to be a condition of success.

Attempts have been made to render these impressions more plainly visible by various means. It has been recommended, for example, to dust over the greasy lines with an inert opaque powder. All the fine powdery products have been advised at one time or another—vegetable powders, lampblack, oxides, or metallic salts of the heavy or earth metals[6], so long as they will adhere by mere physical attraction to the fresh greasy deposit of a recent impression, and we may suppose that the greater number of these substances may be successfully used in causing the impression to appear without affecting the support. In the case of prints on paper, which can only be submitted to dry powdering processes, we have indicated[7] the use of a special powder which does not attach itself mechanically upon the relief of the design, but chemically on the fats and fatty acids which form this relief. Soudan red, and especially the scarlet aniline red, which is utilised in histological work for the colouring of fats, have appeared to us particularly useful for this purpose, and have given us regularly in the form of an inert powder, dusted on, excellent results, better than those which in numerous trials we have obtained with any other possible combination of powders.

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[1] Corin and Stockis. A case of identification by finger prints. (Ann. Soc. méd. lég. de Belg., 1905.) E. Stockis. Some cases of identification of finger prints. (Arch. d'Anthrop. criminelle, April, 1908.) E. Stockis. Some researches in scientific criminal investigation. Three new cases of identification by finger prints and impressions of palms of the hand. (Ann. Soc. méd. lég. de Belg., October, 1908.)

[2] E. Stockis. The demonstration to an audience of the identity of two finger prints. (Ann. Soc. méd. lég. de Belg., 1908, et Rev. de Droit pénal, 1908.

[3] Windt and Kodicek. Dactyloscopie. Vienna, 1904, p. 98.

[4] Reiss. Photographie judiciaire, Paris, 1903, p. 60.

[5] Urban. Kompendium der gerichtl Photographie, Munich, 1910, p. 47.

[6] Paul. Methods of rendering visible latent finger and foot impressions. (H. Gross, Archiv., 1903, Bd. 12, p. 124.)

[7] E. Stockis. Some new processes for showing and fixing finger impressions on paper. (Ann. Soc. méd. lég. de Belg., 1906.)

If the support itself is red, we must, of necessity, use a white powder, and, in default of chemical staining, produce a coarser mechanical adherence. In this case we recommend dried and porphyrised calomel, which is dusted over the impression, and the excess removed with a soft brush. In order to favour proper adherence, it has usually been found successful to breathe previously upon the impression.

But if the impressions have dried for any considerable time, no powder nor any dry staining medium will attach themselves mechanically, and on this account it is important to remember that impressions are usually absolutely dry after a few days. These processes, as a rule, are less suitable for glass than for opaque objects. In the case of glass, it has been proposed to darken the greasy lines by means of the vapours of osmic acid, or by a solution of silver nitrate followed by exposure to light. The results are uncertain, and rarely satisfactory, and the same may be said of treatment of vapours of hydrofluoric acid, which corrode and matt the glass between the greasy lines. One can, however, obtain a perfect staining of the greasy substance, even after drying, by a plan which we, in conjunction with M. Corin[8], have proposed—namely, by means of alcoholic tincture of Soudan red, which causes the impression to appear of a vivid red colour on a colourless ground. The preparations which we have obtained, even with impressions several weeks old, have been kept for several years, and are of such sharpness that they reproduce absolutely on sensitive paper in an ordinary printing frame, or may be enlarged directly in the lantern, the red colour of the lines lending itself excellently to reproduction. However, there are cases where it is scarcely possible to use the Soudan colouring, as, for example, impressions which exist on a vertical glass window, which cannot be moved, or on a transparent object which is too large to be placed in the dyeing dish. If the object can be arranged horizontally, one can do the dyeing by making a wax wall around the impression, so as to form a dish into which the solution of the Soudan dye can be poured, covering the glass plate. After dyeing, which occupies from twenty-four to forty-eight hours, the liquid is drawn off by a pipette, and the surface washed with water. This operation can be carried out on large surfaces of glass—mirrors which it is possible to incline sufficiently. Finger-impressions on mirrors, however, even when coloured, offer a fresh difficulty: the reflection of the impression on the back surface of the glass produces an image which is projected with that on the front surface, producing a double design which is very difficult to examine. On the other hand, the photography of this design is scarcely possible, since the lens, if it is placed exactly perpendicularly to the plane of the object, is itself reflected at the part where the impression is formed. Unless one is content to obtain a reproduction taken at a slight obliquity, one is compelled in this case to remove the metallic backing of the mirror, and here one is in the face of the same difficulties when examining and photographing the impression as in the case of any glass plate.

In the case of impressions on transparent glass, if breathing upon them causes them to appear by rendering the lines more opaque for an instant, we have frequently obtained direct photographic enlargements by placing the fragments of glass, which have just been breathed upon, in the enlarging lantern, the back of the glass being cooled by the evaporation of ether. An image was obtained by rapid focussing on a sensitive surface[9], but this method does not always succeed.

It will be seen, now that we have discussed the question, how it is frequently necessary to try different methods in a given case in order to arrive at some result, and how impossible it is to declare that all finger-prints form irrefutable evidence in all cases. Regular daily practice, on the other hand, is constantly encountering new difficulties.

Impressions from fingers frequently occur on glass articles, and it is, therefore, of importance to be able to photograph such impressions without subjecting them to any treatment, obtaining photographs which show the delicate image which is revealed by breathing on the fingered articles.

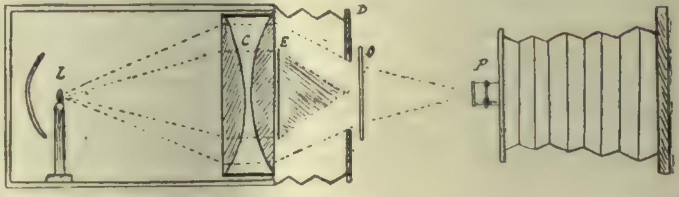

Fig. 1.

Arrangement of convergent illumination for photographing colourless finger impressions on transparent objects. L. Light-source. C. Condenser. E. Opaque black screen. D. Diaphragm. in the aperture of which a filter can be placed. O. Object. P. Camera.

Starting from the idea that weakly oblique lighting is necessary in order to cause the impressions to show strongly on a black ground placed behind the object we endeavoured to devise a method of doing this without recourse to the arc lamp, which is frequently not available in ordinary dark-rooms, but by using ordinary sources of illumination, such as the incandescent gas burner, acetylene, or limelight. It was found that the area which is lighted by these means is very small, and it is difficult to obtain even a uniform image of a single finger print, the part opposed to the light being very dark and the illumination falling off very rapidly. We, therefore, arranged a second oblique lighting, and thus obtained an illuminated area a little larger, though the centre was still insufficiently illuminated. In order to multiply the oblique rays we devised a lighting converging from all the points of the periphery in the following way (fig. 1). We arranged in front of an ordinary light-source, provided with a parabolic reflector, a condenser of sufficient power and size—in practice the condenser lens of 9-inch diameter which is commonly used for the enlargement of 7 x 5 negatives. The light-source should be placed at a greater distance from the condenser than its focal length so as to produce a bundle of rays converging towards a conjugate focus. In the centre of the condenser, on the other side from the light, a disc of black paper, about 3¼ to 4 inches diameter, is pasted: at a few inches distance on this side of the condenser an opaque screen is arranged with an aperture situated on the optical axis of the system, the aperture in the screen being a little smaller than the diameter of the black disc. Against this screen any light-filter which may be necessary may be placed. Finally, the glass plate bearing the impression to be photographed is placed in front of this diaphragm and is examined by placing the eye on the optical axis of the condenser. If a position is taken sufficiently distant so as not to encounter the marginal rays which emanate from the condenser all round the disc and converge on the impression the faint lines are seen defined with great brilliancy and sharpness on a completely black ground. Placing the lens of the camera in this position an exact reproduction of this appearance is obtained, taking the precaution to adjust the respective positions of the diaphragm screen and the glass plate so that the impression comes a little beyond the summit of the cone which projects the black disc in the centre of the converging beam of rays: the illumination is then uniform over the object.

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[8] Corin and Stockis. On a new process for showing and colouring finger impressions on glass. (Ann. Soc. méd. lég. de Belg., 1907.)

[9] E. Stockis. The examination and identification of finger impressions. (Rivista di polizia giudiziara scientifica, Palermo, 1907, No. 2.)

The light-source should be placed at such a distance from the condenser that the converging rays form a sufficiently short cone.

It will be seen that this arrangement of lighting can be very simply produced by means of the ordinary half-plate enlarger. All that is necessary is to remove the projecting lens and to paste a disc of paper on the centre of the condenser, either in front of, or on, a plate of glass which is placed in the negative carrier.

The reproduction may be made in several ways: by placing the lens fairly near to the front, at a distance double the focal length of the lens, the image is obtained on the ground glass same size as the original. In order to judge this readily it is fairly easy to place the ground glass at the start in the position corresponding to double the focal length and to focus by moving the apparatus thus adjusted towards, or away from, the impression which is being photographed. We may, however, measure exactly the size of the image on the ground glass by applying a rule to the original and to the focussed image. In practice it is a good plan to fix to the object being photographed, by means of a drop of Canada balsam, a small square of cover glass of about ½-inch. This is placed on one side of the impression to be photographed and the size of its image on the ground glass can then be readily measured, or, better still, a transparent graduated scale can be placed across the original. On developing the plate a positive image is obtained, dark lines on a clear ground. In order to obtain positives on paper the negative may be reversed by one of the usual processes, [10] or re-copied upon a slow plate, which will give a negative, or, lastly, a positive may be made direct by exposure on a piece of bromide paper.

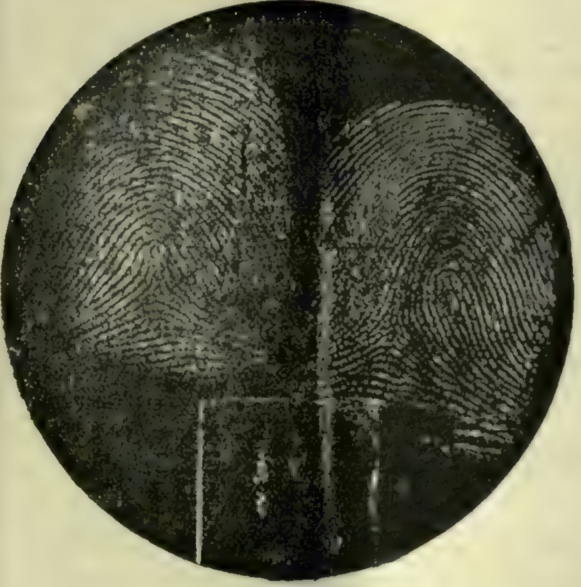

**Fig. 2.**

Colourless finger impressions on window-glass; enlarged at two magnifications.

When using plates it is well to employ a backing.

Fig. 2 is a reproduction of two faint impressions on glass. Below will be seen the test square of coloured glass measuring 1 cm., the image being very sharply defined. In the original print there may be seen, by means of a lens, a succession of small brilliant points, corresponding to minute crystals of fatty acid from the perspiration of the fingers. The negative has been taken by direct enlargement in the camera to two diameters. A further degree of enlargement may be secured by bringing the lens closer to the object, using a longer extension of the camera. In this way enlargement to several diameters may be secured, using a specially short-focus lens attached to a studio camera. The degree of enlargement is indicated by the size of the square test object.

The arrangement allows of the use of the filter which some authorities recommend in using oblique lighting. If, however, a light-source is employed which is rich in yellow rays, better results will be obtained as regards contrast of the lines by placing against the diaphragm either a thin plain parallel blue glass, [11] or the liquid Zettnow cell-filter, using ortho plates sensitised for the yellow rays. In cases where the impressions occur on coloured glass they will appear as brilliant coloured markings on a black ground, and it will be necessary to obtain, by means of filters, a lighting of colour complementary to them, using plates of suitable colour sensitiveness.

This method of illumination by convergent rays on a black ground, which serves excellently for ordinary photographic work, may be applied equally well to the miscroscopic examination of impressions. In order to study at a high degree of magnification the details of the almost invisible impressions on the glass we used the Abbe condenser provided with a central dark diaphragm. The field of the microscope is then completely black and the lines appear as greyish markings with indications of the small crystals of fatty acids against a ground of dark veining. The latent finger impressions, which appear only on breathing on the object, may be studied in this way in all detail, and it is easy to obtain photo-micrographs of high magnification of any particular portions of the subject. By means of this arrangement we have been able to study the methods of colouring the finger impressions on glass by powdering, staining, etc., and to obtain negatives showing, at a large magnification, how the impressions may be coloured and disclosed by these different methods. It is worthy of note that a similar effect is obtained by examination in the micro-polariscope between crossed nicols, leading one to believe that the oblique lighting with the ultra-microscope would enable one to show up the solid particles of the substance which form the greasy finger impressions on a dark ground.

In cases where one has to do with impressions on a glass surface, the imperfect transparency of which does not allow of transmitted lighting, the processes above described can be no longer employed, and recourse in this case must be had to an opaque support. This will be the case, for example, in glass, one surface of which is matt or bears a design, in enamels, in highly-coloured glasses of deep colour, such as the very deep green of wine bottles.

E. Stockis.

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[10] Or the new uranium of Bennett described in the "Photo-Revue," 1910, p. 100. See "British Journal Almanac," 1910, p. 641.

[11] For the preparation of colour-screens and particularly the blue screen of the old three-colour process, which is very useful for this branch of work, see the mémoire by A. and L. Lumière "Sur la Photographie des Couleurs."

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**Change of Address.**—Mr. Newton Parks, trade enlarger, has removed from Hearnville Road, Balham, S.W., to 347, Upper Richmond Road, East Sheen, S.W.

**No Photography at Ascot.**—Remarkably stringent regulations were issued for the Ascot Race meeting on Tuesday last. Coming this year, the week before the Coronation, Ascot is more "Royal" than ever, a host of home and foreign notabilities being present as a matter of course and duty. The regulations provided, however, that no photography was to be permitted in any of the stands, in the paddock, or on the racecourse.

# SOME PROFESSIONAL ITEMS OF PRACTICE.

[The following notes form an article in the current issue of "Camera Craft," of San Francisco, our monthly contemporary which, as we have frequently pointed out, keeps the needs of the professional photographer well to the fore in its pages.—Eds. "B.J."]

One often has to make a negative of a sitter, perhaps dark skinned and dressed in dark clothing, but wearing a large white hair ribbon, white feather boa, or white plume. Owing to their location, it is practically impossible to cut off the light with a screen. My plan is to keep a weak solution of acetic acid near at hand when developing; and, when the image of such a white decoration has developed almost far enough, take the plate from the tray, drain for a moment, and then paint over the offending high-lights with a brush and the acid solution. This checks the development of such parts, and the negative should have a wash under the tap and be returned again to the developing tray to secure the necessary development of less favoured portions.

Making copies is a most disagreeable job for some photographers; others find it quite easy and simple. Always put the picture to be copied in a printing frame and under a sheet of clean glass. You then have it perfectly flat, and reflections will not appear in unexpected places, as they so often do when there is some curvature present. Place the printing frame where it receives the direct light, with a white card laying in front of it if the light be a little too high. If the light is entirely from the side or from above, the grain of the paper is sure to show. Give a fairly short exposure and develop with a strong pyro developer, well restrained with bromide. Work for contrast, as copy negatives are always inclined to be flat and lifeless. In extreme cases, where the surface of the print is badly scratched or cracked, give it a coating of glycerine and squeegee it in contact with the clear glass used in the printing frame. This has a surprisingly good effect in minimising the defects in the copy negative.

Use a white background for children, for dainty misses in light drapery, and for negatives to be vignetted. When developing, take them out of the regular developer just before the image of the sitter reaches the desired density, and finish in a strong pyro developer, one that is extra strong in pyro. This will generally give the white ground good density, while adding but little to the rest of the negative. A white background calls for a high-keyed lighting, which in turn calls for a shorter exposure. Some operators use too low a key of light for white grounds and too high a key of lighting for black grounds. Do not let the light fall on your black ground, and keep it three or four feet behind the subject in order to get away from the "pasted-on" effect. Allowing some light to fall between the sitter and the ground, but not on the latter, also helps wonderfully in securing an effect of atmosphere. Remember to give more time for your low-keyed and black ground effects.

I show every customer, after his regular order is filled, a redeveloped enlargement from his best negative. I always trim these to an odd size, either an inch narrower or an inch shorter than the stock sizes of frames, carrying my own frames in these odd sizes. This is shown at the time the regular order is delivered, and permission asked to place it in the window for a few days. A fair price is made for the picture and frame together. It is not forced upon the customer, and if not sold at once, a courteous letter is written a few weeks later, asking if the sitter would not like to purchase it, again naming the price. A third letter is written a few weeks before Christmas, suggesting that it would make a nice Christmas gift at a very reasonable price. The number of these enlargements that can be sold will surprise anyone who is only familiar with the rather ancient method of trying to take orders for an enlargement by showing a sample from another and perhaps entirely different kind of negative. Most people have been disappointed with orders so placed in the past, and it is necessary to overcome their fears by showing the actual work.

The strong point of the above plan is the fairly saleable stock of prints that you will have on hand, all ready for delivery, just when the Christmas rush comes on. In fact, I prefer carrying these enlargements along to that season to trying to force them upon my customers at the time of delivering their regular order. I generally explain that these pictures are not destroyed for six, eight, or ten months, as the case may be, in order to carry the time past the next Christmas. Another plan, but one that pays only indirectly, is to make an extra print on each order, mount it on a calendar card, write the customer's name and address, and one's compliments, on the back, and put it away. These calendar mounts are quite cheap directly after the first of the year. Remove the date pad and use as above. Stick on new date pads the last week in November and mail them to the addresses on the back. Your customers will be highly pleased, your holiday business will be increased, and many new customers will see the calendars and be tempted to try you for their own pictures.

About a year ago, a demonstrator showed me how to overcome halation when photographing interiors in which strongly lighted windows came within the view. I find it more effective than using non-halation plates and working in the ordinary way. A long exposure is given, about five times normal, and the plate is then soaked for about two minutes in a saturated solution of potassium bromide, made about milk warm. It is next given a slight rinse in water and then put into a strong pyro developer, in which it is allowed to develop to the desired density. Development will be slow, but a fine negative, entirely free from halation, will result. To get the right exposure, I focus, stop down as much as is necessary, and then, removing my head from underneath the focussing cloth, look directly at the strongest light for a minute. Returning my head beneath the focussing cloth, I count seconds until I can see all detail in the shadows. Half this time will give a good negative, but with somewhat under-timed shadows. The same time will give full-timed negatives, while double or treble the time will do no harm, and will allow of the bromide treatment to prevent halation, as described above. The same method is also applicable to any class of subjects requiring more than two or three seconds' exposure. This is a suggestion I got from one of the annuals several years ago, and it has saved me many large plates and the loss of many good orders that I would otherwise have lost through under-timing.

Here is a formula for the best reducer it has ever been my good fortune to try. It was given out by a demonstrator at an Eastman school. He had a small bottle of sulphuric acid, C. P., and another containing a saturated solution of permanganate of potassium. Into an eight-ounce graduate of water he poured about two drams of the acid and about four drams of the permanganate solution. This was applied, by means of a wad of cotton, to the over-dense portions of the negatives, as they came out of the wash water. The work was done near a tap, under which the negatives were rinsed every few seconds to avoid staining. However, should stains make their appearance, a short immersion in a very weak solution of oxalic acid will remove them. This reducer does not destroy the delicate detail in the shadows, as the ordinary Farmer's reducer is apt to do.

The professional often has an opportunity of buying up developing paper that has gone stale and will give nothing but very flat and grey. If this paper is taken out of the envelopes and "baked" in a fairly warm oven, or dried before a fire, shielded from any strong light by a screen of post-office paper, for a couple of hours, it will generally give perfect prints. By following this plan, I have been able to use to good advantage large quantities of very fine paper that cost me about one-fourth the regular price. I have used such paper that has been off the market for several years and paper that has been returned by various customers as entirely worthless. In extreme cases I have found it necessary to add very large quantities of bromide solution, enough to give greenish tones; but these prints were used for re-developed sepias, and seemed to give even better results than those obtainable on fresh papers.

A good deal of what passes for contrasty lighting in studio work is really the result of under-timing. If the reader will put a subject under his light and make an exposure under the conditions which he believes gives him a contrasty lighting, and then, without changing a screen or curtain, expose another plate, giving it four times the exposure, and develop the two together or in the same developer, I am quite sure that he will learn something to his advantage. A study of the two prints from the two negatives will set him to thinking that perhaps he has a bad habit of under-timing much of his work. It is an easy experiment to try, and one that nearly always results in a surprise to the one making it.

With the advent of the printing machines, there is an increased demand for long runs, particularly in postcard work, and negatives are subject to more or less wear and damage. While varnishing helps, I have recently been giving the preference to a hardening bath, made up as follows:—

| | |
|---|---|
| Alum | 2 ounces |
| Tannic acid | 1 dram |
| Water | 16 ounces |

After the negative is well washed and fixed, it is immersed for exactly four minutes in this solution, the dish being rocked all the time. If allowed to act longer, the film may buckle or blister at the edges. The solution can be used over and over until exhausted. The negative seems to darken a trifle, becomes more brilliant, the film tough and glass-like as to surface, and so hard that water may be spilled on the surface and wiped away without injury to the negative. MARTIN F. ELLIOTT

# ON THE WORKING AND USE OF STRIPPING COLLODION PAPER.

[If we may judge from the materials offered by the photographic trade, the use of C.C. stripping paper is much more general in Germany than in this country. In Germany many makers of collodion paper supply also one, the film of which can be stripped off and transferred to another support, whereas in the "Classified Index to Goods Advertised" in the "British Journal Almanac" we find only one entry under "Stripping C.C. Papers." We may, therefore, take this opportunity of translating a short article on the working and use of these papers which appears in the current issue of "Der Photograph." EDS. "B.J."]

STRIPPING collodion paper serves for the transfer of pictures to surfaces which do not admit of direct printing; also for the preparation of transparencies and for the production of photographs on rigid supports, such as porcelain, metal and wood. Articles of decoration executed in "semi-enamel" are, for the most part, produced by means of stripping collodion paper, using opal or porcelain as a support. Extensive use is likewise made of the paper for the production of transparencies on glass suitable for decoration of windows as well as for purposes of projection. In consequence of the fine grain of the collodion emulsion the projected pictures are extremely rich in detail, and in their results, when enlarged, are superior to those made on development plates. We may first glance at the method of manufacturing the stripping collodion paper. Whilst in the preparation of ordinary C.C. paper the sensitive collodion film is coated direct on to the baryta substratum of the paper, in the case of the stripping paper there is an intermediate film which consists, as a rule, of soft gelatine, and provides the means of removing the collodion film by treatment with warm water. This intermediate film serves the further purpose of obviating any sinking in of the printed-out image, and the prints are thus of extreme brilliancy.

In working there is very little difference from the ordinary procedure. Prints which are to be transferred to solid opaque surfaces are printed to the ordinary depth. Those which are to be used as lantern slides require to be taken much darker, whilst those intended for use as window transparencies need to be strongly over-printed to supply sufficient depth when bound up with the ground glass or semi-transparent paper in the usual way.

All toning and fixing baths and washing waters used for the stripping paper must be cool. The temperature should not exceed 70 deg. F. at the outside. The prints are best toned in a combined bath, which, with stripping paper, works considerably more quickly and supplies much bluer tones than the use of separate baths. The following is a formula which can be recommended. The following two solutions are first prepared:—

| | | | |
|---|---|---|---|
| A. | Lead nitrate | 50 | gms. |
| | Distilled water | 100 | ccs. |
| B. | Gold chloride, brown | 1 | gm. |
| | or ordinary commercial gold chloride | 2½ | gms. |
| | Water | 100 | ccs. |

The toning bath is prepared as follows:—

| | | |
|---|---|---|
| Water | 500 | ccs. |
| Hypo | 100 | ,, |
| Solution A | 50 | ,, |
| Solution B | 20 | ,, |

There is no need to wash prints before toning in this combined bath. Toning and fixing will go on simultaneously, and be complete in about 10 minutes. The tone given is one of distinct bluish shade.

The well-washed prints, whilst still wet, must now be squeezed down, for exclusion of air bubbles, on the surface (well cleaned) to which they are to be transferred. In doing this it is better to use soft pressure with the fingers than to employ the usual roller squeegee. Prints are brought on the surface to which they are to be transferred under water, the air bubbles then more readily escape as the print is smoothed out from the centre outwards. The support, with the print adhering to it, is then put to dry until the paper appears dry, but whilst the collodion film still adheres by means of the moisture in it to the new support. At this point the whole is then immersed in warm water of temperature from 104 to 120 F. With a good make of stripping collodion paper immersion in this warm water bath for about a half to one minute will be sufficient to soften the intermediate film. The whole being still under water, one corner of the paper is carefully raised and the paper removed, leaving the collodion film on the support. There is no necessity to prepare the support. The prints obtained in this way are, of course, reversed as regards right and left; if they are required correct as regards right and left double transfer must be resorted to. In order to protect the pictures so obtained from mechanical injury—the action of heat or of deleterious bodies—they are given a waterproof coating, either by application of a wax or by coating with some kind of varnish. In using the first method a fragment of waxing preparation is applied on a bit of linen being rubbed carefully over the print until all streaks disappear. A waxing substance for this purpose may be prepared according to the following recipe: White beeswax, 100 gms. are melted, and a mixture of 100 ccs. of pure turpentine and 4 gms. of a saturated solution of gum dammar in turpentine carefully stirred in, after which the whole is left to set.

The second method is simpler in use. One can employ one of the enamel varnishes, which are employed in the same way as collodion, and give a thin film of considerable protective power. In the case of prints transferred to opaque surfaces, such as articles of decoration of all kinds, the use of this varnish has the advantage that it gives a high glaze and an improved brilliance and depth to prints which may be defective in contrast. A simple recipe for the preparation of such a varnish is to dissolve 20 gms. of gum dammar in 150 ccs. of ether and 150 ccs. of petroleum spirit.

In conclusion, a few hints may be given as to the causes of failure which may arise from careless working. The chief of these is the frilling off of the film from the paper support before transferring. Another is the splitting of the film. Frilling of the film will only occur when too warm solutions or washing water is used, or when the prints are "forced" in the combined bath by keeping there too long. They should not be immersed longer than 10 minutes. Splitting of the film may be caused by taking prints directly from the printing frame and immersing them at once in a large volume of water. Here they curl up, and then when attempts are made to smooth them out again they are easily "kinked." The proper way is to put prints straight into a dish containing not too much bath, pressing them firmly against the bottom of the dish until they have completely absorbed the solution. In this case prints will show no tendency to curl. In drying, also, prints which have not previously shown any signs of splitting, may incur this defect if too high a degree of heat is used. Drying should be done quite gradually at the ordinary temperature of the room, and no greater heat than 85 deg. F. should be used.

Stripping C.C. paper is thus seen to be a material which is readily worked, and possesses possibilities which deserve more wide use than has hitherto been accorded to it. Particular mention should be made of the decorative effects which may be produced by using metallic supports in place of glass or porcelain. Thus papers which have been coated with a metallic bronze may be used for the transfer of the prints, and those who will take the trouble to experiment for themselves in the use of stripping paper will realise the effects which can be produced and the commercial advantage which can be taken of this material.

DR. F. FORMSTECHER.

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"LIBRA" PAPER.—In reference to the recent query by "Jay-May," as to the makers of the above paper, Mr. W. Fisher writes us from Filey saying that the paper is made by the Libra Company, and is obtainable from the Kodak Company.

INFRA-RED PHOTOGRAPHS.—Those who have not had an opportunity of seeing the remarkable series of photographs made by Professor R. W. Wood with infra-red rays should obtain the "Illustrated London News" for June 10, in which is a series of reproductions, showing the fantastic beauty of the white foliage and black skies which are produced when taking the photograph of a scene by only the infra-red rays which are emitted. Professor Wood contributes a short article on the subject.

# Photo-Mechanical Notes.

### Colour Printing Past and Present.

THERE has been exhibited at the hall of St. Bride Foundation Institute this week, a collection of every variety of colour print. Most of the specimens were taken from the unique typographic library of this Institute, but the exhibition was supplemented where necessary by loan. The earliest prints are those known as "chiaroscuro," dating from about 1505. This was a method of tint printing with wood blocks, and the process of printing colour by means of wood block has continued right down to the present day, through Knöfler, Leighton, Edmund Evans, and the private presses and amateurs who alone practise it now. There were also shown examples of the application of colour through stencils, from fifteenth century examples down to the work of the modern French machine which produces most of the French tinted fashion work, and also examples of the stencilled work of the air-brush. Coloured stipple engraving, coloured aquatint, and coloured photogravure of all kinds were shown, also very numerous examples of Baxter prints, of chrome-lithography, work of the Orloff press, coloured collotype, and photo-lithography, including colour offset, and finally of colour half-tones. The specimens were frequently contained in the books they originally illustrated. Although the exhibition will be over at the time this appears, the history of colour printing is fully illustrated by the magnificent collection at the Technical Library of St. Bride, where every facility is afforded for the inspection of these colour prints to those genuinely interested.

### Testing of Materials Used in Photo-Engraving.

The photo-engraver who encounters trouble frequently blames his materials, and it is impossible to say that it is always his workmanship and not the materials that are at fault. Thus we have recently known of an etcher, making line blocks by means of the four-way powdering process, who could not get good results until, after trying three different sorts of zinc and three different sorts of dragon's blood resin, he hit upon a combination that was exactly suitable.

Even when the engraver is satisfied it does not follow that the printer will be. The engraver must have materials that enable him to do his etching easily and well, but metals which may be all that is desired in this respect do not necessarily best stand the wear and tear of printing. So that when tests are devised they must bear this in mind, and a metal, for example, will have to be easily etched with a smooth ground, and stand well both crushing and wearing strains.

# Exhibitions.

### TRANSFER OIL-PRINTS BY M. DEMACHY AT THE ROYAL PHOTOGRAPHIC SOCIETY.

AT the Royal Photographic Society's house in Russell Square may now be seen what may be described as the last act in the tragedy of controlled pictorial photography. Villainy (photographic printing) is at last vanquished, and Virtue (the artist's manipulation) is victorious. That is to say, the seventy prints shown by M. Robert Demachy have positively nothing of actual photographic processes left in them, and are all the work of M. Demachy's own hand. From the fresh and moist oil-print a "set-off" is taken by pressure upon damped paper of a suitable sort—Japan or Dutch—and the result is a delightful quality quite unlike the ordinary oil-print which, in all hands but Demachy's, has rather a stodgy, choked appearance. These transferred prints are delicate and airy in texture, their rich blacks notwithstanding. It is this texturous charm that has already led to their being likened to charcoal drawings and engravings, and, indeed, the resemblance is in some cases very marked. Upon this point M. Demachy, writing privately to our critic, remarked:—"I know that these engraving-like photographs will horrify photographers. They will say I am aping other processes. But I cannot help it if engraving ink and Holland paper will look like Holland paper and engraving ink. The resemblance stops there." A few have the brilliance and quality of etchings or copper engravings; for example, the beautiful and original "Lacemakers" (10). We have only one word to add in this connection. It is that there seems to us to be no real occasion for the impressed plate-mark on the prints. This is a "dodge" adopted by commercial enterprise to give many a print a specious look of having come from a copper-plate, which it never did, and we therefore think that M. Demachy's prints are just a trifle cheapened rather than distinguished by this ornamental addition. Of course, if a plate is actually used to concentrate the pressure, the resulting mark may be legitimate, but even then the danger of misrepresentation is too great to be risked, and a larger plate had better be used, the edges of which are beyond the limit of the paper. This is, of course, only our own view, and may not be shared by others. M. Demachy does not claim to be the first to use this transferring process; but he has taken up the idea in its infancy, and by many months of experiment and trial brought it to the excellent and finished result he now shows. As pictures, the prints are still an advance upon his former shows here, which seem to be for ever developing towards finer things. We have no room to notice them in detail, but may just mention one or two masterly figure studies, Nos. 28, 29, 31, and 32, also the splendid "Plomarch Wood" (60) and "Caudebec" (45). As this exhibition marks a new step in the march of pictorial photography, we should imagine it will be numerously attended. It closes on July 15.

## PHOTOGRAPHS AT THE IMPERIAL EXHIBITION.

British photographers have nothing to complain of in their treatment at the hands of the management of the Festival of Empire Exhibition at the Crystal Palace. Whereas the Fine Art Section of painted pictures occupies certain upper chambers of the interior of the Palace, whereto few give themselves the trouble to mount, the British photographers are accommodated in about half the area of the Australian building on the ground level, and in the full stream of all the sight-seers. Around this spacious hall the various clubs have been allotted a panel each, above which the name of the society is boldly inscribed. The following clubs are represented:—North Middlesex, City of London, Bournemouth, Streatham, Maidstone, North-West London, Wimbledon, Clapham, Bowes Park, Watford, Eastbourne, Rugby, Architectural Association, Camera, Sketch and Debate Club, Birmingham, Croydon, Balham, Derby, Oxford, Zodiac, Postal, London, County and Westminster Bank Photographic Society, South London, West Surrey, Kettering, Sutton, Rotherham, Bromley, Amateur Postal, Catford and Forest Hill, South Suburban, Perseverance Postal, Ipswich, St. Albans, "Wellcome." No club has been allowed to show more than twenty works. Awards are to be given for the best club show, and for the best individual picture. We do not think that the societies have taken themselves seriously enough over this opportunity. They have selected a few of their cherished scalps, mostly works that have already gained recognition, and here their efforts seem to have ceased. Consequently the show has a tired and stale appearance to the frequenter of photographic exhibitions. It is possible that the visitors who will give most time to an inspection are the very people who have seen most of these works before. Perhaps this state of things is unavoidable, but it is unfortunate. The general level of merit amongst the clubs shows to what a stationary pitch pictorial photography has been pushed, and the judges who have to make the awards will have a difficult and thankless task. But when all is said and done, the affair is a splendid advertisement for amateur photography, and should further popularise the camera in pictorial work. Strange as it may seem, in a large enterprise ostensibly for Imperial Federation propagandism, the Colonial exhibits are scanty. They are to be seen in the South African Pavilion. The clubs entered are Toronto, Ottawa, Winnipeg, Cape Town, Greytown, and Photographic Society of India, which last sends but nine pictures. The style of work done by these Colonial clubs is less sophisticated than our own, less striving after subtleties of tone and effect; but it is healthy and good. In these new worlds the camera ought in the nature of things to see and conquer large fields of unhackneyed material. Painters' traditions are not there and but little imported; therefore the photographer, if he have any observation or impressionability at all, should be enjoying a perfect feast of new ideas, new country, new life, new methods. What charms us most in Colonial photography is purely this recording of new ideas. When the work approaches to or emulates the well-worn themes of historic Britain it forfeits its birthright, and is less masterly than the work bred of the traditions of the old country.

## FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Entries close September 1 (Britain), August 21 (foreign). Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between May 29 and June 3:—

Stereoscopy.—No. 12,891. Process for the production of stereoscopic pictures. Joseph Sutton Withers for Deutsche Rastergesellschaft m.b. H., Germany.

Advertising.—No. 13,256. Photographic processes, specially applicable to photographic advertising devices. John George Capstaff and Frederick Jerrold Teago.

Toys.—No. 13,200. Photographic toys. Arthur William Head.

Cinematographs.—No. 13,311. Apparatus for producing animated pictures. Waclaw Czerniewski.

Cinematograph.—No. 13,400. Cinematograph apparatus utilising ordinary photographic films. Alfonso de Giglio.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Toy Cinematograph.—No. 26,943, 1910 (November 29, 1909). The invention consists of a toy cinematograph, characterised by the crank handle for operating the film-band roller, being connected by intermediate members with the armature of a dynamo machine, the current of which, generated by the rotation of the handle, is employed for producing the light necessary for the illumination of the pictures. Nürnberger Metall- und Lackier-Waarenfabrik vorm. Gebrüder Bing Actiengesellschaft, 16, Blumenstrasse, Nuremberg.

Self-Portrait Shutter Releases.—No. 12,912, 1910 (May 27, 1910). This invention relates to apparatus for automatically operating photographic shutters and for giving a signal, e.g., at a short time before the exposure of the negative, so as to enable the operator to photograph himself or to appear in a group or landscape. By means of the mechanism (1) a signal is given to announce when the release of the photographic shutter is about to take place; (2) the shutter is released; and (3) a signal is given announcing that the shutter has been released and a photograph taken.

In the apparatus, the actuating lever on the first wheel of the clockwork train next the driving spring or its equivalent is arranged to release two spring-controlled vanes, one before and the other after the release of the photographic shutter, this lever having the free end of the driving spring connected thereto, and being connected to the first wheel of the clockwork train through a ratchet-wheel and pawl, in such a manner as to enable the driving spring to be stressed as the actuating lever is returned to its initial position, the pawl meanwhile riding over the teeth of the ratchet-wheel, which may be formed by the first wheel of the clockwork train itself.

The device can be mounted on the photographic apparatus itself, or may be placed at a certain distance therefrom, and then effect the control from a distance by the aid of suitable transmission mechanism. Louis Joseph Emmanuel Colardeau, 13, rue de Navarin, and Jules Richard, 25, rue Mélingue, Paris.

Cinematograph Operating Boxes.—No. 9,911, 1910 (April 23, 1910). The claim is for apparatus for closing openings in cinematograph enclosures, comprising the combination of a shutter, a rope attached to the shutter, a hinged arm for holding the rope, a catch for holding the hinged arm, and means for releasing the catch and rope. John Hugh Winter, 30, Narrow Wine Street, Bristol.

Cleaning Cinematograph Film.—No. 16,480, 1910 (July 11, 1910). There is provided a casing, within which is disposed one or more guide drums or rollers, two or more rotary rubbers or brushes, a "drawing" sprocket wheel, further guide drums or rollers, an air circulating fan, a film-storage, and a "take-up" spool, and means for simultaneously rotating the rubbers or brushes, "drawing" sprocket wheel, fan, and film "take-up" spool.

The film to be washed is placed upon the storage spool, and is led over the first-mentioned guide drum or drums or rollers, enclosed by a bath, and between the rubbers or brushes, to the sprocket wheel, the teeth of which engage with the holes at either side of the film, and draw it through the washing liquid in the bath. From the sprocket wheel the film is led over drums or rollers, arranged at suitable distances apart, and preferably disposed within a separate chamber (which may be formed by partitioning off the frame or casing), being dried under the action of the fan; the washed and dried film is finally led over the "take-up" spool. Thus the process of washing and drying is continuous.

The fan is preferably driven by an electric motor disposed upon a platform at the side of the frame or casing, which motor also drives, by any suitable means—as belting—the rubbers or brushes, the "drawing" sprocket wheel, and take-up spool. According to a modification, the provision of guide drum or drums or rollers within the bath may be omitted, the spool containing the film to be washed being itself disposed in the bath. Vincent Edward Horsman, "Cratfield," Grove Road, Wallasey, Chester.

Quinone Intensifiers.—No. 25,751, 1910 (July 16, 1910). The invention consists of a process of intensifying negatives, etc., by means of quinones and of their sulphonic derivatives in the presence of bromides or of alkaline chlorides.

As examples the operation with benzoquinone and with its sulphonic derivative may be described :—

### 1. Employment of Benzoquinone.

The intensifying solution is formed as follows :—

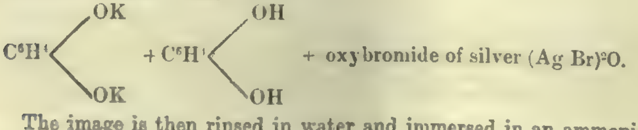
| | |
|---|---|
| Water | 100 ccs. |
| Benzoquinone | 0.5 gms. |
| Bromide of potassium | 2.5 gms. |

The image which has originally a dominant colour tending towards blue when immersed in this solution takes a brown-red colour, which is gradually propagated through the thickness of the silver layer. This colour of the image does not allow actinic rays to pass as easily as that of the original image; also the intensified image is more opaque, which further diminishes the intensity of the light which traverses the image.

It can be taken that the silver of the image is transformed into oxybromide of silver under the action of the quinone and of the bromide of potassium.

Thus :—

$2C^6H^4O^2 + 2KBr + Ag^2 + H^2O =$



$$C^6H^4\left\langle\begin{matrix}OK\\OK\end{matrix}\right. + C^6H^4\left\langle\begin{matrix}OH\\OH\end{matrix}\right. + \text{oxybromide of silver } (Ag\,Br)^2O.$$

The image is then rinsed in water and immersed in an ammonia solution consisting of two parts of water and one part of ammonia, so that the image which becomes a little cloudy by its treatment in the first solution becomes completely clear without loss of intensity.

### 2. Employment of Benzoquinone-sulphonate of Sodium.

The benzoquinone can be replaced by its sulphonic derivative in the form of sodium salt for example. The colour given to the silver differs from that which is obtained with quinone. This colour varies according to the amount of sulphonic quinone in the solution. By varying the amount between 1 per cent. and 5 per cent. images are obtained of which the colour varies from brown-yellow to orange. The colour given to the image is redder the more sulphonic quinone the solution contains. The same quantity of bromide of potassium is employed as when operating with benzoquinone. If the quantity of bromide is increased the colour of the image becomes browner, and assumes the aspect of a collodion image. As in the employment of quinone, the image is not completely clear, but can be cleared without diminishing its intensity by treatment with ammonia as before described. This method of intensifying gives results analogous to intensification with bichloride of mercury. It notably increases the effect of the contrasts, as its action is more rapid on the opaque parts than on the transparent parts of the image.

Its employment has the following advantages over intensification with bichloride of mercury :—It produces intensification with a single solution which permits of directly following the intensification of the image. The intensified images are unalterable under the prolonged action of water, and have great stability against light; they brown slightly under the prolonged action of sunlight, but this browning is uniform and produces only a slight increase of intensification. If the intensified image has been treated with ammonia it does not turn brown in the light.

This process is suitable for toning silver salt photographic images on either glass or paper. Société Anonyme des Plaques et Papiers Photographiques, A. Lumière et ses Fils, 21-25, Rue St. Victor, Monplaisir, France.

Combined Photo- and Cinematograph Apparatus.—No. 11,312, 1910 (May 10, 1910). The claim is for apparatus comprising the combination of a case or body adapted to receive at the front end a removable film moving mechanism, a film moving mechanism, and means for focussing; and constituting a combined cinematographic and ordinary photographic apparatus for taking cinematograph and ordinary photographs. Campbell Thickins Mackay, "Glan Alyn," Gresford, Denbighshire, and George Charles Thomas, 2, Beach Bank Avenue, Liscard, Chester.

Colour Prints on Paper.—No. 12,252, 1910 (May 18, 1910). The invention relates to a process of colour photography wherein a print is made upon a sensitised colour-screen paper from a negative taken through a colour-screen of the same pattern, but of complementary colours.

The screen, as shown in Fig. 1, is formed in any suitable manner of points, squares or any other shape placed close to one another. These points are red, green, and blue-violet. They are not microscopical in size, but their diameters can vary according to the size and sort of photograph that is required. The fact that the points are not microscopic facilitates the register-

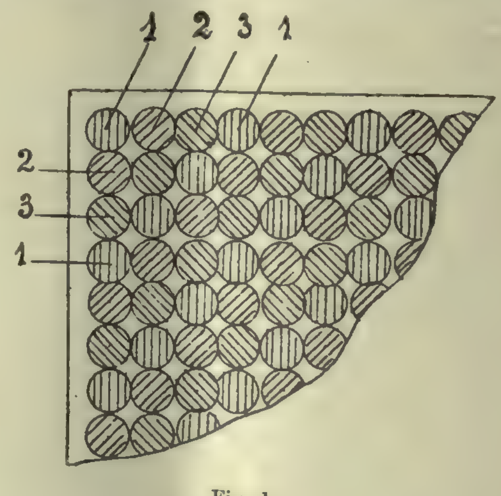


Fig. 1.

ing of the points on the paper and the plate. The screen is placed in the camera close to and in front of the panchromatic plate, which will show, when exposed and developed, a quantity of points filtered each by a different point of the screen.

In order to obtain the maximum of speed when exposing the plate, and in order not to use a compensating yellow glass, a special compensating screen is employed. This compensating screen is formed by a number of points obtained by exposing a panchromatic plate or film under the screen first referred to. This plate when developed and finished shows more or less shaded points corresponding to the various coloured points of the screen. The exposure should be timed so that the less actinic colour, viz., the red, should not impress the plate, thus leaving on the latter clear transparent points. The darkest shades will thus correspond to the blue points of the screen.

By placing this plate close to the screen, the plate will be automatically compensated for the various colours, every point having its own small compensation screen.

In explanation of how the required colours are printed on the paper, consider a landscape with a blue sky. All the points of the plate that were under the green points (2) and the blue points (3) of the screen in the camera are exposed, and will be more or less black on the negative, whereas the points under the red points of the screen give a transparent negative. If we look through the negative backed by the screen that was used for taking the same, the sky will be red. But if instead of this screen we back the plate with a screen the points of which are of a complementary colour, the negative will be transparent at the blue points and the sky will look blue.

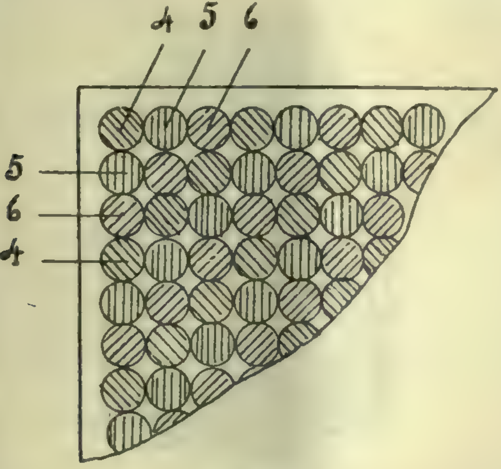


Fig 2.

On a paper (Fig. 2) or other medium are printed, by means of an impression surface exactly similar to that which has served to form the screen, points of the same width and shape as those used for the screen.

These points are so arranged that to the red points (1) of the screen correspond the blue points (4), to the green points (2) of the screen correspond the red ones (5) of the paper, and to the blue ones (3) the yellow ones (6). The colours used to make the points on the paper are not soluble in water.

The paper thus prepared is coated with a transparent coating of bichromated colloid (gum, gelatine, or other product) on which the negative is printed after registering the points. This printing will give a quantity of insoluble points covering exactly the various coloured points of the paper, that must form the image, whereas the other coloured points not being protected by insoluble colloid points will, after washing the colloid away in cold water, be washed away in alcohol or other solvent of the coloured points. Therefore point (4) will be covered by an insoluble colloid point, and being the blue point that corresponds to the point (1) the sky will be blue; the other points that are not blue are washed away and the white paper is at those places all that remains.

The image is thus formed on the white paper by the remaining coloured points. As many prints may be made as is desired.

It may be advisable to take away the "stippled" look which the picture now has. The remaining gum points are therefore washed away in warm water or a solution of carbonate or bisulphite of sodium.

In order to obtain colour points that can be blended (become more or less liquid and flow one into the other) they are made of colours or inks which are insoluble in water, but soluble in another fluid (for instance, alcohol) and are not attacked by the chemicals used in the usual pigmentary photography (carbon, bichromatized gum, etc.).

Such colours are prepared by dissolving in alcohol aniline dyes and colourless resin. This solution is dried and pulverised. A coloured powder is thus obtained on which water or the usual chemicals have no action. This powder when mixed with a minimum of fat or oil, in order to obtain a printing ink, is placed on the paper at the required places.

To blend the colours the paper is treated by a dissolving substance or its vapour, for instance, alcohol more or less concentrated, or vapour more or less warm of alcohol, according to the desired result.

The action of heat may also be used for obtaining the blending, the colour points being in this case mixed with an appropriate easily melting substance, such as wax, paraffin, or similar products. The result obtained is a softening of the lines.

For registering the negative on the paper, the screen carries, for example, at three of its angles a small opaque point, which will also be reproduced on the sensitive plate, and the paper is provided with three corresponding points or perforations. The registering points will in no case be larger than a coloured element. These points will preferably be constituted by a coloured element itself rendered opaque, and will be reproduced on the paper by elements of complementary colours either blackened or perforated.

Enlargements may also be obtained. In order to obtain the exact width of the points of the definite image it is sufficient to enlarge the screen with which the negative was taken.

The blending of the colours is not in every case necessary, and a quantity of points that are nearly invisible can easily be registered. J. Sury, Wyneghem, Belgium.

## New Trade Names.

Kodura.—No. 333,317. Photographic paper and other photographic materials included in class 39. Kodak, Ltd., 57 to 61, Clerkenwell Road, London, E.C., dealers in photographic materials. May 4, 1911.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### On Using the Single Combination of a Doublet Lens.

There is one point in connection with the use of the single combination of a doublet lens (writes Mr. Hugh O'Connor in "Photography and Focus" for June 13) which is sometimes overlooked. A half lens, having only half the number of reflecting surfaces possessed by the complete lens, ought to give a distinctly brighter negative; but it is often just the reverse. The reason for this is that on the removal of one lens, the thread into which it screwed is left bright, forming a reflecting surface in such a position as to impair the brilliancy of the negative very considerably. It does more when this is outside the camera, that is to say, in front of the lens in use, than when it is behind; but in either case it is harmful. If there is a ring of bright metal to be seen when the lens is unscrewed, a ring of black paper or some similar covering should be slipped over it for the time being.

# New Books.

"Cassell's Cyclopædia of Photography." Parts 2 to 6. Edited by Bernard E. Jones. Price, each part, 7d. nett.

The series of numbers, which on completion are to form a complete encyclopædic treatment of photography, have now reached a round half dozen, bringing the articles, which are in alphabetical order, up to the "hand-camera." We fear that the work of an editor of such a publication as this is often a thankless task, for the problem of arranging from beginning to end a series of alphabetical entries, which at the last shall form a complete and comprehensive treatment of the subject, is one which calls for an immense amount of both knowledge and discretion. Attractive as an alphabetical arrangement presumably is to the reader, it is, nevertheless, about the worst arrangement which can be adopted for properly preparing a manual of instruction in such a miscellaneous craft as photography. We may assume, perhaps, that circumstances beyond the control of the editor of the Cyclopædia have determined an alphabetical arrangement, and that the best has had to be made of this inconvenient system. Most certainly the publication fully bears out its title, for it is encyclopædic to a degree. One must believe that its title has appeared to require references in the volume to many items of most remote interest to the average amateur photographer, to whom obviously the publication is offered. To take three entries only on the first page of Part 2, what amateur photographer is likely to concern himself with "Azotate," "Azote," or "Azotic Acid," interesting as it may be to have the explanation of these French chemical terms. We might multiply instances of this kind:—"Burette," "Chrystolotype," "Diaphan," "Encemble," "Fociscope," "Glyphógraphy," and "Halogens." Another somewhat unfortunate description of entry is that which is placed alphabetically according to the name of the originator of the process or formula. Thus we find a reducer, a P.O.P. toning bath, and a mercury intensifier collected under "Haddon," and other entries such as "Balagny's Developer" and "Dolland's Process." We would not misjudge the editing of the Cyclopædia by assuming that cross references are lacking to point to such entries as these in considering the subjects proper to which they relate. The fault lies in having an alphabetical system and believing that, having it, the entries in such a work must all be chopped up fine and made as many as possible.

We have written thus as much in general criticism of such an arrangement as of the particular instances to which we have pointed. And we would hasten to say that within the covers of each part of the Cyclopædia an immense amount of information on photographic processes is collected and clearly expressed. The chief articles contained in the issues which we have received since reviewing Part 1 of the Cyclopædia are those on "Blocking Out," "Blue Prints," "Bromide Printing," "Bromoil," "Camera Obscura," "Candle-Light Effects," "Carbon Process," "Ceramics," "Photographing Children," "Chrono Photography," "Printing-In Clouds," "Collodion" and "Collodion Emulsion," "Wet Collodion," "Colour Screen," "Colouring Photographs," "Composite Portraits," "Copying," "Copyright," "Crystoleums," "Daguerreotype," "Dark Room," "Developers," "Factorial and Stand Development," "Diaphragms," "Drapery," "Emulsions," "Enlarging," "Film Manipulation," "Fixing," "Flashlight," "Gum Bichromate," "Halation," and "Hand Camera," in all of which the subject is usefully though at times too briefly treated. The articles in the Cyclopædia are everywhere liberally illustrated, in every instance by drawings specially made for the publication.

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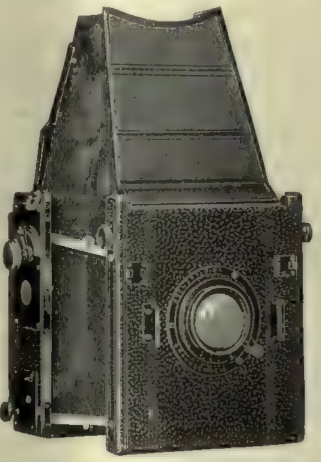
"The Camera House Journal."—In the last number issued of this trade circular Messrs. W. Butcher and Sons, Ltd., give full particulars of the novel "Dandycam" (daylight loading), for the exposure and development of button portraits. Particulars of mounts for amateurs, of a new postcard printing frame, and of the "Primus" dry-mounter (for dry-mounting prints in albums, etc.) are also given.

# New Apparatus, &c.

**The Voigtlander Folding Reflex Camera. Made by Voigtlander and Sohn, 12, Charterhouse Street, London, E.C.**

With such excellent reflex instruments to their credit as the "Vida" and "Heliar," it is not surprising that Messrs. Voigtländer should turn their attention to a reflector camera of the folding type. The result of their labours in this direction is the new instrument before us. The camera is made in one size only, namely the Continental 9 x 12 cm., which, being a little larger than our quarter-plate, allows of the English standard size of plate being used simply by the addition to the dark-slide of a carrier. The slides as sent out with the camera are thus fitted. Undoubtedly the tourist photographer will appreciate this fact, inasmuch as he is assured of obtaining a supply of plates in even the smallest Continental town, and he is hardly likely to complain of the very slightly increased bulk and weight of the camera which are rendered necessary by building it in the 9 x 12 cm. size.

Portability in hand-cameras being a purely relative term, one cannot reasonably apply the same standard to a folding reflex camera as one would, say, to the ordinary folding focal-plane instrument. The folding type of reflex is of course designed to obviate the irreducible bulk of the box form of reflex, and although makers have not yet succeeded in attaining extreme slimness in folding reflex cameras, they have, however, achieved a substantial degree of success in the matter of a convenient carrying of the camera in packing it among other luggage of a tour. In the case of the present Voigtländer instrument the dimensions of the closed camera come slightly under 7½ x 7½ x 4 inches. To open the camera, two metal catches, seen in the drawing, above and on either side of the lens, are released, automatically raising the hood. The camera is then pulled out on its four hinged struts, just like any other folding camera of the strut pattern, and then, to set the mirror in position, a lever on the side of the camera, not shown in the drawing, is turned through half of the space within which it has play, at the same time pressing down a small stud mounted on it. The mirror being now in its down position, the shutter may be wound. The speed of the shutter is adjusted by setting a small accessory pointer in any one of a series of holes. For time-exposures this pointer is placed to Z, the shutter wound, when, on pressing the release, the full width of the shutter is obtained, and on releasing again exposure is terminated. A small catch is provided immediately below the shutter release for holding the full aperture of the blind open when focussing on the vertical screen, or when in giving extra long exposures. The front of the camera is provided with rack and pinion rise and fall movement to the extent of ¾-inch fall and the same amount of rise. The lens fitted is the Voigtländer "Heliar" of f/4.5 aperture and 18 cm. (7 inches) focal length. The objective is mounted in a focussing jacket which is graduated to focus up to 6ft. 6in. As is, of course, necessary in a reflex of the folding type, the shutter is self-capping. The mirror is held in place by two pairs of levers, each of which is immediately placed back in the hinder frame of the camera by means of the mirror



lever. The camera is very rapidly opened and closed, and both it and the three dark slides supplied with it are characterised by the excellent mechanical workmanship which one expects of Messrs. Voigtlander. Complete, with slides and "Heliar" *f* 4.5 lens, the price of the outfit is £24 5s.

The Watkins Indoor Exposure Meter.—The Watkins Meter Company, Imperial Mills, Hereford, have now issued the indoor meter in the same style as the popular "Bee" meter, the scale allowing of exposures being read off directly when using the 1/16th tint convenient in indoor work. The meter is likewise supplied with a quarter-tint dial, which gives exposures directly without having to multiply by 4 in taking the actinometer number. This extra dial-plate should be a useful addition to those who use the ordinary "Bee" meter, since it can be fitted in a few seconds, and would facilitate the calculation of exposures where the light is poor and the time required for taking the full tint inconveniently great. The price of the Indoor meter, as now supplied, is 2s. 6d.; extra quarter-tint dial, 6d.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

Saturday, June 17.

Hackney Photographic Society. "Portraiture" S. Woodhouse.
Darwen Photographic Association. L. & C. P. U. Annual Picnic to Rochdale.
Manchester Amateur Photographic Society. Ramble to Rochdale.
Southport Photographic Society. L. & C. Union Annual Excursion – Rochdale.
North Middlesex Photographic Society. Outing to Laindon.
Handsworth Photographic Society. Excursion to Wilmcote for Aston Cantlow.
Halifax Camera Club. Ramble to Cragg Vale District.
Chelsea and District Photographic Society. Outing to St. Etheldreda's Church.
Derby Photographic Society. Outing to Bretby.
The United Stereoscopic Society. Outing, Woking and its Surroundings (week-end).

Sunday, June 18.

Balham Camera Club. Outing to Gomshall and Shere.

Tuesday, June 20.

Manchester Amateur Photographic Society. "Stereoscopic Photography." F. Eastwood.
Hackney Photographic Society. "Subjects in London Streets." A. H. Blake.

Wednesday, June 21.

West Surrey Photographic Society. Open Night.
Balham Camera Club. Members' Night.
North Middlesex Photographic Society. "Hints to Beginners." A. H. Lisett.

Thursday, June 22.

Liverpool Amateur Photographic Association. Excursion to Dovedale.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, June 13, Mr. Chapman Jones in the chair.

Mr. E. Sanger-Shepherd read a paper on "The Cause of Reversal and Its Remedy." He explained that the communication which he was making that evening formed part of several series of researches carried out by Mr. W. Hay Caldwell, whose name was doubtless known to many of them as an investigator in photographic processes. In order to make clear the progress which Mr. Caldwell had attained in emulsion making, he (Mr. Shepherd) would go back to the classical curve of a plate of Hurter and Driffield, in which there were three portions corresponding to the periods of under-, correct, and over-exposure, and a fourth corresponding with the phenomenon known as reversal. Messrs. Hurter and Driffield had shown that in order that a negative might be a true representation of the subject photographed, it was necessary that the exposure should fall within the straight part of the curve, viz., that of correct exposure, and Messrs. Hurter and Driffield's dictum, though it had been modified to some extent by subsequent work of their own and others, nevertheless still held good for plates and developers as at present used.

In considering the action of light on the plate, Mr. Shepherd assumed the correctness of the theory according to which a sub-salt, or sub-halide, of silver is formed, the liberated halogen being absorbed, or, when remaining unabsorbed, leading to reversal phenomena. Now Mr. Caldwell had found that certain substances which could be added to the emulsion possessed the property of being incapable of reduction in light after oxidation by the liberated halogen; also of not reducing the silver salt in the dark, and, thirdly, of absorbing the halogen as rapidly as it was liberated by exposure to light. These substances were the salts of hydrazine, or of hydroxylamine, which could be either added to the emulsion or applied to coated plates as a bath. The result of making an increasing series of exposures on such plates was that the straight-line "curve" of Hurter and Driffield, instead of passing into the characteristic period of over-exposure, was continued as a straight line; in other words, the practical effect of giving even the most excessive degrees of over-exposure was that the gradation of the plate was retained, although, with normal development, the densities produced were very much greater. He, Mr. Shepherd, had made negatives on the new hydrazine plates giving in one case the normal exposure, and in others increasing degrees of exposure up to 5,000 times, and still obtaining negatives which would be described as perfect. In the case of greatly excessive degrees of exposure it was, of course, necessary to use a very dilute developer. Just as the plate was incapable of showing defects due to over-exposure, so, also, reversal, so far as his experiments had gone, could not be produced. He showed lantern-slides of an electric incandescent lamp and an electric arc, in each case taken on an ordinary plate and on one prepared with the hydrazine emulsion. In the case of the ordinary plate the filament of the lamp and the focus of the arc were both completely reversed, showing as black in the positive lantern slide. In the case of the hydrazine plates reversal was absent, the filament and the arc of the lamp forming the highest light in the lantern-slides. Mr. Sanger-Shepherd pointed out that such striking results as these opened up a new field in practical photography. So long as sufficient exposure was given it did not matter, within the widest limits, what the actual time of exposure was. And development might easily be reduced to an entirely automatic process, the time of which, unless the degree of over-exposure was outrageously excessive, might be fixed. His own preference was for a time of development of two minutes. He did not think they should be called upon to spend more than two minutes on the development of a plate. It was a convenient time, which allowed of plates being placed in the developer, covered from light, and then, by the time a cigar had been comfortably lighted, development would be about complete. He could not say that a system of development had been completely worked out as yet for the hydrazine plates, but it probably would be within a very short time.

Another important effect of the use of hydrazine in the emulsion was that a plate, or paper, might be either printed out like P.O.P. or partly exposed and developed in the ordinary way. He showed a series of prints, some developed and others printed-out, but all made on paper cut from the same sheet. In this connection it was also important to note that the gradation of the print remained the same, although the method of production was so entirely different. The plates or papers, which were printed-out, could be simply fixed in ordinary hypo, when they gave a pleasing warm tone, or then could be gold-toned in the usual way, or over-exposed (for development) so as to give a series of warm tones, in each case with retention of the gradation. All Mr. Sanger-Shepherd's experiments had been made with the high-speed hydrazine plates at his disposal, and having a speed of 400 H. and D. Fast as these plates were for camera exposures, when printed-out the image was of a fineness and colour such as would be attained on a slow gelatino chloride transparency plate.

Mr. W. B. Ferguson asked whether the addition of hydrazine to the emulsion had any effect on the sensitiveness.

Mr. Sanger-Shepherd said he believed that it had a very slight slowing action.

Mr. F. F. Renwick demurred to Mr. Sanger-Shepherd's ready assumption that the effect of light on a plate caused any liberation of the halogen. He pointed out that the whole tendency of recent work, and particularly that of Lüppo-Cramer, was against such a theory. He had been very interested in hearing of the remarkable effects produced by the addition of hydrazine to the emulsion.

In reply to Mr. C. P. Butler, Mr. Sanger-Shepherd said that hydrazine could be added equally well to panchromatic emulsions.

Mr. Chapman Jones remarked that he was in agreement with Mr. Renwick as to the fallacy of liberation of halogen, but they were none the less indebted to Mr. Sanger-Shepherd for bringing before them the extremely interesting results obtained by Mr. Hay Caldwell.

London and Provincial Photographic Association.—At the meeting on the 8th the hon. secretary, Mr. Ernest Human, gave a lecture upon "Sulphide Toning, Some Causes of Failure." He said that things were liable to go wrong in either the bleaching or the sulphide bath, but more especially in the latter. The chief cause of yellowness in the finished print was the imperfect washing of the print; if any hypo was left in the paper it combined with the ferricyanide in the bleaching bath and formed "Howard Farmer's" reducer. Thus the print was reduced to a greater or less extent during the bleaching, and no length of time in the sulphide bath could bring back the original strength of colour.

The print should be, if anything, a little darker and stronger than would be passed for a black and white result, and then with good baths a good colour would be obtained.

The sulphide bath would not keep and work well more than three months under any conditions. The way to make the best keeping solution was to dissolve the soda in hot water and then to boil it briskly for from ten to fifteen minutes. During boiling the flask should be corked, the bleaching bath kept well; in fact, some of the results shown were bleached in a bath that had been in continual use for over twelve months, in working strength. It was kept in a blue glass-stoppered bottle, and beyond this no particular care was extended to its keeping.

Hypo in the sulphide bath was another cause of failure. This gave a yellowing of the print very similar to the first-mentioned failure. He found that as the sulphide bath aged, the colour of the print yellowed, and that even after twenty-four hours a slight difference could be seen, more especially if the sulphide was made with cold tap water.

Heavy spots on the print were, he said, due to air-bells on the paper in the fixing-bath. It was well to keep the prints on the move during fixing, and fix thoroughly and wash well, and then one would not be troubled with these small spots.

The best results were to be obtained with a new sulphide bath which had been boiled and allowed to cool, and it was better to make this as wanted if a good colour was to be obtained.

Many examples were on view showing the effect of the different baths at all ages, the effect of hypo in the print and also its effect in the sulphide bath. In all cases the print was divided into three parts, one part being left in the original black and white state.

# Commercial & Legal Intelligence.

Photographic Companies at Law.—Sheriff Umpherston last week issued an interlocutor at Dunfermline in the action at the instance of Tod Morris, carrying on business under the name of the Pioneer Portrait Company at 70, Seagate, Dundee, against Lewis Millar, carrying on business as photographer, etc., under the name of the North-Eastern Enlargement Company, at Chalmers Street, Dunfermline.

The pursuer sued for £100 in respect that Millar had maliciously and without probable cause previously raised an action against him in the Dundee Sheriff Court to have him interdicted against carrying on business in Dundee according to an alleged agreement, and also to have him interdicted from interfering with Miller's employees.

On the dependence of that action an arrestment was used in the hands of the National Bank at Dundee, and Morris further alleged that this was done maliciously and without probable cause, with the consequence that he had suffered serious damage.

The Sheriff assoilzied the defender, and found the pursuer liable in expenses.

In a note his Lordship states that the pursuer claimed damages on the ground that the Dundee action was raised maliciously with the object of injuring him in his business. The defender replied that the action of interdict raised was in good faith. The reason given by the defender for abandoning the Dundee action was that he was unable to prove the agreement, the present pursuer, who had been his manager, having had charge of the agreement, and having taken it before leaving his employment. It was extremely difficult to form any definite conclusion as to the true facts. The witnesses as a whole were most unreliable, and the pursuer perhaps more than any other. But he was satisfied that the pursuer while in the defender's service had signed an agreement which contained a clause restricting him from carrying on a competing business, and that the defender had believed that the clause applied to the business which the pursuer had commenced in Dundee, and that accordingly the action to interdict was raised in good faith, the arrestment on the dependence was a proper proceeding, and the action of the defender had in his judgment completely failed to prove any circumstances from which malice could be inferred. The mere fact that the business was a competing one was the only one which had been proved.

## NEW COMPANIES.

Brown, Barnes, and Bell, Ltd., has been registered with a capital of £1,500 to acquire the business now carried on at 31, Bold Street, Liverpool, under the style of Brown, Barnes, and Bell, photographers, the subscribers being Mr. Richard Brown, 6, Langdale Road, Sefton Park, Liverpool, and the registered office 31, Bold Street, Liverpool. File No. 116,184.

# News and Notes.

The Gevaert £1,000 Competition.—The firm of Gevaert, Ltd., are holding a competition for photographic prints in which cash prizes to the total value of £1,000, in addition to forty gold medals, will be awarded. Class B (professional photography) is open only to professionals, but professionals can, of course, enter in Class A (artistic portrait studies), which is open both to them and to amateurs. They are likewise eligible in Classes C (pictorial landscape photography) and E (scientific, architectural, and technical work). All prints must be on one or other of the Gevaert printing papers. It is not necessary to enclose a coupon or label with each entry, but it is a condition that special gummed labels and envelopes, obtainable free from any photographic dealer, should be used. In the case of the winning prints, the negative and all other rights are retained by the competitor, saving only that Messrs. Gevaert acquire the rights of exhibition and reproduction in journals. Full particulars of the competition and of the allocation of cash prizes will be found in a booklet just issued by Messrs. Gevaert, and obtainable from them at 26 and 27, Farringdon Street, E.C.

Dr. Willy Merck, of E. Merck, Darmstadt, celebrated on June 1 the twenty-fifth anniversary of his entry into the firm as a partner. The occasion was made a festive one, and all work was suspended for the day. In the morning employees and workers assembled in one of the buildings of the works to bear testimony by their presence and congratulations to the *entente cordiale* existing between owners and employees, and characteristic of the conditions of work at Merck's. Dr. Willy Merck was the recipient of a magnificent art glass vase, presented to him by the employees. The workers, of whom he is the direct chief, as the whole of the manufacturing (as well as the scientific) laboratories are under his personal supervision, expressed their congratulations in an illuminated address. Representatives of the Hessian Government, of the town of Darmstadt, and of numerous chemical works joined in the congratulations. In the name of the Grand Duke of Hesse (a son of our Princess Alice), the representative of the Government handed to the "Jubilar" the Grand Gold Medal for Art and Science conferred upon him in recognition of his services not only in promoting the advance of chemical research work and in developing this branch of the country's industry, but also as a distinguished patron of art. In the evening employees and owners joined in a "Kommers," and the day closed by celebrating the event in true German fashion within what might be termed "the family circle of the firm."

MR. E. HAMEL IN AMERICA.—In the current issue of the "Inland Printer," Mr S. H. Horgan records his impressions of the visit recently paid to the United States by Mr. E. Hamel, head of the photo-engraving firm of Hamel and Co., Nottingham:—On the register of a palatial New York hotel is recorded the first visit to this country in twenty-five years of a photo-engraver who learned the business in Philadelphia when that city was, in the eighties, a college of photo-engraving. Mr. Hamel foresaw the future for process-work, and, after spending three or more years with Louis Levy and Frank Manning, he returned to England and located in Nottingham, in the centre of England. To-day he is one of the wealthy Britons. His home is a palace filled with the choicest furniture and paintings. He brought over with him on this trip a few Rembrandts, Raphaels, etc., just to make some of our art museums envious of his treasures and give them the privilege of securing them at his price. There may be some few photo-engravers somewhere who are still struggling to meet the landlord, so it is a pleasure to notice those who are in the J. Pierpont Morgan class and can indulge their taste for old masters. It would be interesting to know how the other early American students of photo-engraving who pioneered our business into Buenos Aires, Mexico, Santiago, Constantinople, London, and other capitals, have been favoured by fortune. There is one at least of these fathers of our business in foreign lands who the writer has located making a hand-to-mouth living as an "astrologer" at Coney Island.

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

## THE LONDON SALON OF PHOTOGRAPHY.

To the Editors.

Gentlemen,—I am instructed to inform you that the second annual exhibition of the London Salon of Photography will be held at the Galleries of the Royal Society of Painters in Water Colours, 5A, Pall Mall East, London, S.W., from September 9 to October 21. I would mention that the receiving day is September 1 for British work, and August 21 for work from the colonies and abroad. The collecting agents are Messrs. Bradley and Co., 81, Charlotte Street, Fitzroy Square, London, W.

Entry forms and prospectus are now ready, and are obtainable, with full particulars from me, at the above address.—Yours truly,

ROBERT M. COCKS,
Hon. Secretary, London Salon of Photography.

5A, Pall Mall East, London, S.W.
June 9, 1911.

## SUNDAY CLOSING AND SHOPS BILL.

To the Editors.

Gentlemen,—I am obliged to "Lancastrian" for reminding me of the remarks made by Mr. Cooper, of Taunton, who, at the business meeting of the late Congress, pointed out that there were a number of poorer "brethren" (?) in the profession who depended upon Sunday work for their very existence, and he thought no recommendation should be made from the Congress that would press unduly hard upon that class.

At this meeting I suggested that it would be highly interesting to know how many of these poorer "brethren" had gone through the mill of apprenticeship and worked afterwards as improvers, rising step by step in a legitimate manner to qualify themselves for a decent position in a profession that is being rapidly degraded, not only by these poorer brethren and the speculator with his big windows and cheap labour, but by encroachments from, sometimes incapable, and others unsuccessful men from other businesses perhaps more lucrative than our own.

I referred to cases under my own observation where such men do a serious trade on Sundays, one formerly a cabinet maker, another a chemist, another a bricklayer, and another a sweep.

The injury caused by the cutting speculators is bad enough during the working week, but when Sunday work is brought in, to my mind, it becomes appalling.

I put it forward again, as I did at the meeting, that the man who does his postcards at 1s. 6d. per dozen, working on Sunday, compels the man doing them at 2s.6d. also to open, as a protection to his interests, on that day; he in turn is followed by the man doing them at 3s. 6d., and then also in turn comes the man at 5s. per dozen. His interests are being damaged by Sunday trading, and he must fall into line.

Here we have the 5s. man, but we start from him. "Lancastrian" states, in his letter of commendation of Mr. Cooper's views, that he gets 5s. per dozen for postcards, and also obtains a fair amount of carbon work, by which I presume he intends to convey the impression that his business is one of long standing, and consists of a class of clientèle that will pay him fair prices for his work.

Under the circumstances, I take it, "Lancastrian" does not quite wish to be classed with the "poorer brethren." Now, is not "Lancastrian" bound to influence the photographer who probably eschews postcard work altogether, but does his business in C.C., platinotype, and a "fair amount of carbon"? If the former opens on Sunday, is it not rational to expect the latter, in defence of his own interests, to do the same? It seems to me the question will soon be whether we *all* open on Sundays or not.

This is a point that seriously impresses many who, like myself, may have spent a quarter of a century or more in striving to make the word "profession" applicable to photography, and to maintain its dignity as a career to be followed by an individual of some culture and refinement.

The Sunday business has got to be levelled—either we must be all in it, or all out of it. FRANK BROWN.

London Road, Leicester.

## CHARGES FOR COMMERCIAL PHOTOGRAPHY.

To the Editors.

Gentlemen,—In the West-end of London there is a firm of photographers (technical and commercial) who will go out and take a half-plate negative, block-out same, and supply three finished enamelled bromide prints for three shillings. I am not sure if they use panchromatic plates and filters where necessary, as in furniture, etc. Surely it would be better to make no charge at all. I enclose my firm's card, and assure you that they, with hardly any idea of prices, would not believe this until another firm, who wished my firm to let me do their work, showed us these wealthy photographers' invoices. There is only one word for it, Gentlemen, and that is "Damnable."

Thank goodness, in all my professional career, I have never yet taken a half-plate for catalogue work, etc., under five shillings, i.e., for taking and one proof print, of course excepting where a very large contract was given, and even then it has been 3s. 6d. for taking a proof.

I shall be greatly interested to know what others in the commercial world of professionals think of this charge.—Faithfully yours, GOOD WORK AT A FAIR CHARGE.

## AM I TOO OLD?

To the Editors.

Gentlemen,—The above query, gentlemen, I put to you, and to your readers, in the hope that it may bring some expressions of opinion on a subject that is of some moment to me, and, I am sure, to quite a large percentage of your subscribers; so I ask in all sincerity, Am I too old at forty-three years to succeed as an operator? and my reason for doing so is my inability to get into a good situation where my services would be appreciated. There are, as we know, situations and situations, but I mean one of the old-established kind, where an assistant had to do all sorts of jobs, and—well, not one of these kind, open for a few weeks, and then—— I have replied to some hundreds of advertisements since June last year, and in no single instance was I successful. I am not out of a crib, but it is not what I have been used to. Let me say my experience goes back twenty-eight years, and my testimonials speak for me as a first-class operator, retoucher, and printer (in all processes, including carbon), enlarger, and I don't know what. I am also a marine operator and took the first pictures on the river Clyde, in 1885, for a photographer who became famous. I was also with Sir Thos. Lipton in America in 1901, and yet, as I say, no one seems to want a man of my ability. It may be I ask too much salary. I have had £5 per week. Or it may be I am too old, or it may be I know too much; but the fact remains, and I meantime eke out my time photographing furniture, which I am safe to say not 10 per cent. professional photographers know how to do successfully. I have lost dozens of sets of typed testimonials, and my photograph is all over the British Isles. There are lots of replies from some of the men from Amsterdam who work on Sunday, all through the week, and sometimes through the night, but I don't want any; having served two of that kidney is enough for me. But perhaps I have said enough to induce some one to promulgate a reason and answer my query,

Am I Too Old?

## PHOTOGRAPHERS' ASSISTANTS IN FRANCE.

To the Editors.

Gentlemen,—In the issue of your journal dated May 26 last, there appeared a question and a reply in reference to the securing of situations in France, and as I was for some years an assistant in a photographic studio there, afterwards travelling with a camera through the country, and associating with many of the provincial professionals, you may possibly allow me to supplement your reply and give a few particulars of the life and work of an assistant, as I found it.

Let me make it perfectly clear at the outset that it is twelve years ago since I had my experience there, but I was over most of the ground again last year on a holiday trip, and saw many of my old professional friends, with whom I am even now in frequent correspondence, and from what I could gather then, and know now, the conditions are practically the same as they were in my assistant days. If I am not correct I am sure I shall be corrected by yourselves or others who may perhaps think they know professional studio life in France better than I do.

There is an old French proverb which my chief was continually quoting to me, "Autant de têtes autant d'opinions," but from what I saw I am very strongly convinced that the French professional portraitists may be divided into two distinct classes, the tip-top men and the third-rate, stickyback, or postcard man. Good middle-class workers seem to me to be very scarce indeed throughout France. In Paris, of course, the best professional workers are to be found, and there are perhaps in Marseilles and Lyons a few who very nearly approach such tip-top British workers as we have, but the gulf between them and the average worker in the country towns appears to me to be a very wide one. It is for this reason that I am of opinion that a good middle-class worker would do well in France; he would, however, have to have sufficient money to enable him to play a very long waiting game, as the natives would need some time in which to become accustomed to his class of work, but it would be an innovation, and perhaps pay in the long run. The "Entente Cordiale" is known and appreciated by the most respectable of the French, but there are still many in the out-of-the-way districts, or departments, who look upon a Britisher as a not-to-be-encouraged "Sassenach." The thing for Britishers to remember when in France is that they, and not the French, are foreigners. The provincials seem to be quite satisfied with what is, in my opinion, very poor, cheap, and nasty work, simply because they have little or no idea of really good work, or, if by chance they have, they know it to be too expensive for them, and that they have to go to the big towns for it, and it is here where, I think, a good middle-class speculative worker should fill a gap.

I do not for one moment suggest that an Englishman should give up his studio and rush off to some French town and commence business. He would need, even if an expert worker, some kind of experience in a French studio, such as your correspondent is apparently in need of, because "so many countries so many customs," or, as a French photographer once put it to me, "Tant de gens, tant de guises," and the ways of the French, outside the haunts of the British and American tourist, want a little getting used to.

The life of the average French photographer outside the big towns seems to me to be a most happy-go-lucky kind of life, and assistants must be prepared to do anything, even to going out with handbills. I have known of even principals going out with them and touting for customers when business has been slack. There is being shown just now at the many picture palaces a comic film of French origin bearing the title, "They didn't budge," which all photographers should see. There is much that is true in the story, but the greater part is humorous, and most ridiculous. The photographer shown in the story is hard up, and has no customers, so he goes out with handbills and does a little touting. He comes across a simple-minded farmer, who, with his wife and child, decide to go to the studio to be photographed. He poses them very carelessly before the camera—quite a common thing to do—and just as he is about to make the exposure he repeats the time-worn formula, "Keep quite still; don't move." At that moment, however, the postman knocks, and, without troubling to take off the cap, he rushes to the street door to see what letter is for him. The letter happens to be a very important one from some lawyers in America, who tell him that a relative of his is dead and that a huge fortune is simply waiting to be fetched. He is so joyous about it that he seizes a hat and rushes off to claim the fortune, leaving his three customers posed like statues before the camera, and not daring to move for fear of spoiling the picture. He arrives in America, gets the money, falls in love with a rich American girl, marries her, and brings up a family there. In course of time he has a wish to revisit the scenes of his early photographic struggles, and goes back to his old studio a very rich man. He finds his three customers still sitting quite still before the camera; the child that was has grown to be a man, the parents have grown old, and so on. It should in common fairness be stated that the photographer at once makes the exposure, takes his fee, and his customers hobble away, apparently quite pleased that the exposure was no longer. Putting aside the gross exaggeration of events, the picture gives a good idea of the muddled-up appearance of a country studio in France, and, in its earlier stages, the life of a provincial professional as I saw him.

The assistants I associated with during my life there not only did all kind of rough jobs, but had little or no thought about hours of working. Often we were asked to be at the studio very early, and at a time when British assistants were all in bed and asleep, in order to get the early morning light for printing, and we worked on till very late at night. We had, like the average native has, coffee and rolls at about eight o'clock, but at mid-day came the meal of the day, over which we sat almost as long as we liked. Smoking while at work is rarely prohibited, and we assistants were rarely without a cigarette in our lips—home-made cigarettes, too, which were never made in a hurry. I look upon my French studio days as some of the happiest of my life, and the experience has been of considerable benefit to me. Salaries then, as now, varied, but compared with salaries in England, those in France are poor; living and clothing is, however, cheaper than in England, when one gets used to the French methods and can do as the people do and live with them without any gastric troubles.

Then there is the change of working methods and materials to consider. One cannot judge what the average French professional uses by glancing in the dealers' shopwindows in Paris, any more than one can gauge the methods of English professionals by looking in a dealer's window in London. In my time Lumière's plates were used by about 90 per cent. of the professionals I knew, and from what I can gather they still maintain their hold. I did once get permission to use a British dry plate and shutter, but had by force of circumstances to go back to French plates, for which in the end I was not sorry.

Pyro is almost exclusively used, and more with soda (anhydrous) than anything else, and albumen paper is still very largely used. Gelatine and collodion papers are, it is true, gradually replacing it, but an assistant in France must be able to not only work albumen paper, but make it as well.

One in England hears and reads a lot about the important investigations of Lumière and other French experimenters, but I never yet have met a French "bread and butter" photographer who knew much about them. They are very conservative workers, and are very loath to change any materials or methods of working.

The legal side should, I need hardly say, be gone into most fully by anyone taking a situation in France. I can give no details of the law, as it never bothered me; all that was done for me by English and French friends, without any trouble to myself. It would, however, be wise for any would-be assistant in France to consult an English lawyer before going, and pay a visit to the nearest British consul on arrival. I have not much faith in consuls as a rule, but they can do no real harm, and are likely to be useful in case the young Englishman abroad is unwise enough to get into trouble.—Yours faithfully, GODFREY WILSON.

## SEEING BEFORE THE EVENT.

To the Editors.

Gentlemen,—Re your note of June 9, on "Seeing Before the Event." "M. R." says "he always sees the wedge sink before the hammer touches it." Evidently he also knows something about throwing the hatchet. Now we do see an image of the sun before it rises, and also of the setting sun after it has set—owing to refraction. But no man ought to see a wedge sink before the hammer hits it, unless he has been to a smoking concert. The illusion would appear to be due to the fact that whilst light travels at the rate of 186,000 miles per second, the velocity of sound is only 1,120ft. per second (in dry air at mean temperature). One would therefore see the wedge fall before hearing the hammer strike it, just as one sees the lightning flash before hearing the accompanying thunder. Isn't it simple—when you know?—Yours very truly,

High Street, Wiveliscombe, J. OSBORNE.
June 12, 1911.

[Our correspondent is evidently prone to jump at conclusions. Though light travels much faster than sound, the difference is only appreciated at a considerable distance. On the other hand, the anticipation of an action is a quite common phenomenon in hand-camera work. Mr. Adolphe Abrahams has commented on this fact, and we ourselves have had experience which proves the same thing. "M. R.'s" explanation appears to us to be a good one, and perhaps the best yet put forward.—EDS. "B.J."]

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**PHOTOGRAPHS REGISTERED:**

The Lady Glenconner, Wilsford Manor, Salisbury. *Photograph of a charcoal drawing of Stonehenge by Frederick Campbell.*

**BORED.**—O. Sichel and Co., 52, Bunhill Row, London, E.C.; Oram and Robinson, 2, Academy Buildings, Fanshawe Street, Hoxton, N.E.; or W. J. Schmaltz, 21-23, Featherstone Street, City Road, E.C.

**G. STIMPSON.**—1. Apparently this is the Rodenstock 8¾ in. portrait lens for cabinet portraits, aperture *f*/3.7. Its price, new, is £5, with iris diaphragm; £4 with Waterhouse stops. 2. Why not purchase a foreground cloth or one of the many foreground accessories?

**BACKGROUNDS.**—Could you inform me where I would be able to get cloth suitable for painting backgrounds on, as I am unable to get it wide enough in this quarter?—GEO. F. ROGER.

Apply to a leading furnishing drapers, say, in Glasgow, for fine canvas, which you can get up to 100 inches wide.

**DEVONIAN.**—(1) We believe one method consists in the use of a background with an aperture in it, behind which the sitter is placed, but we are not aware of any special apparatus other than this. (2) Altogether dependent on its price and ease in use. Also Cosways are not so much in vogue as they were. (3) Better obtain provisional protection (cost £1), and then offer the design to one or two of the firms supplying professional requisites.

**PHOTOGRAPHING SILVER-WARE.**—We should be much obliged if you could tell us the best way to photograph a silver cup and how to get rid of reflection.—SILVER CUP.

Having all ready for exposure, fill the cup with iced water and wait for a faint dew to deposit on the outside. This will largely destroy the surface reflection. Another plan which is used is to deposit magnesia as a thin film on the outside of the cup by holding it over burning magnesium ribbon.

**VARIOUS.**—Kindly quote me (1) where can I obtain gaslight cards with portraits of their Majesties the King and Queen at the back of postcard?—SEPIA (Llandyssul).

(1) If you mean sensitive cards, we think you will not be able to obtain them. You will require to have the portraits printed afterwards. Apply to firms such as Hood and Co., Middlesbro', or Hamel and Co., Nottingham. (2) We think the presses sold by Messrs. O. Sichel and Co. for the Morgan dry-mounting process would answer your purpose.

**USE OF SHORT FOCUS LENSES.**—1. Are the negatives obtained with a lens of so short a focus as used in the bioscope suitable for making enlargements of 12 or more diameters? 2. If that is so, would not a small fixed focus camera with such a lens, and a focal plane shutter, be more than equal to a 3½ by 2½ reflex in obtaining negatives for making enlargements of about 12 by 10.—PORTABILITY.

1. If the lens is of sufficiently good quality they will be quite suitable. 2. Certainly, and this is the reason the Verascope and cameras of similar type and size are becoming so popular.

**PROCESS INSTRUCTION.**—(1) Will you please let me know, through the columns of the Journal, if there is a manual published on half-tone process and where obtainable? (2) Could I obtain private lessons, do you think, in Manchester? (3) I have a thorough knowledge of photography. Would it take long to learn photo-engraving?—HALF-TONE.

(1) "The Half-tone Process," by Verfasser, Penrose and Co., 5s. (2) At the Municipal Technical School—Printing and Process Department—they could perhaps help you to find a teacher, if you cannot attend the classes there. (3) A year or two to become fairly proficient in both operating, printing, and etching.

**MULLER CAMERA.**—I recently came into possession of a camera bearing the name of "Müller," 31, Graben, Vienna, size for film pack, 2¼ x 3¼, for plates 3½ x 2½. About two months ago I wrote Müller, but have received no reply. Thinking perhaps he had gone out of business or removed, I write to ask if you will not assist me in locating the maker of this camera, as I wish to procure plate-holders. The body of the camera is of aluminium, it has a Goerz-Dagor lens, *f*/4.6, and Koilos shutter. Any information you may be able to give me will be greatly appreciated.—GEO. E. CARPENTER (Newark, U.S.A.).

The firm, trading as Lechner, is still the chief one in Vienna. You have the correct address.

**BLEACHED NEGATIVE.**—If a negative is bleached with sulphide bleacher (potass. ferricyanide and potass. bromide) and left as it is (a positive), is the image permanent if washed after bleacher; or, if not, what ought to be done to it, but not to alter colour of image?—WEEDEE.

It will darken in the light, and we are unable to name any treatment except darkening in a developer, sulphide, etc., which will preserve it in a permanent state. If you want a permanent bleached negative, we should say that mercuric chloride solution would be better, but the negative would require to be varnished in order to preserve it from fumes of gas, ammonia, etc., which would cause darkening.

**ANTICIPATED INFRINGEMENT.**—I have sold a photograph from my shop which was not registered. I have reasons to believe that it is being reproduced for the purpose of a medal, which is to be distributed. I have since registered the photograph. What action (if any) can I take before or after the distribution?—X. Y. Z.

If you wish to prevent the use of the photograph, we think it will be sufficient to advise the people that the copyright in the original is your registered property, and that in the event of its being used without permission you will be compelled to maintain your rights in the usual course. After use of the photograph you had better refer to your registration and ask what they propose doing in the matter. Let them make an offer before you name any sum as payment.

**Miniature of the King.**—A photographer has asked me to paint an original ivory miniature of King George V. (not an exact copy of any one picture). Can you suggest how, without sittings or a photograph taken for the express purpose, this could be done? Would painting the head from one of the published photographs and the figure from another be an infringement of copyright? I have heard it said (though personally I doubt the truth of the statement) that there is no copyright in the case of a photograph or other picture of a king.—Miniature Painter.

You are quite right in doubting the truth of the statement. Copyright in portraits of Royalty is most emphatically the property of the photographers who secure the sittings. Copying of part of a portrait is equally an infringement of the copyright. The Copyright Act forbids "colourable imitation." We imagine that your only course will have to be to paint a portrait of the King "out of your head," with the assistance of such portraits as may be accessible to you.

**Studio Construction.**—I am about to make a studio out of a room, the measurements of which are on the enclosed plan. Could you kindly let me know at your earliest the best size of lights to use and blinds and their arrangement? My reason in writing you is I wish to lay out the studio to the best advantage. There is a building alongside 15ft. 8in. distance same height. This building is on the N.W. side; on S.E. side another building, close up.—F/6.3.

We should advise you to leave about 4ft. at either end of the roof, and side solid, and to put clear glass in from the ridge to the eaves for the remaining 12ft. The side light should be the same length, and run down to 3ft. from the floor. Festoon blinds running on wires the whole length of the light will be found most satisfactory. We suggest dark green or blue sateen, two yards wide, at each end, and white nainsook, about two yards, in the centre. These should be put up in two rows, with a six-inch lap. The building on N.W. side will not interfere with the light to any injurious extent.

**Sulphide Toner.**—Would you please oblige by telling me, through the medium of the "B.J.," whether the annexed formula for sulphiding P.O.P. is a reliable one? I have a lot of prints, P.O.P., that I intend to tone by the sulphide process, and should like to be sure that the formula is a safe one. Formula: Soak prints for ten minutes in:—

| | |
|---|---|
| Carbonate of soda ..................... | 1 oz. |
| Common salt ........................... | 1 oz. |
| Water ....................................... | 20 ozs. |

Then wash well and fix in the usual hypo bath, again well wash, then tone in—

| | |
|---|---|
| Sodium sulphide ..................... | 5 grs. |
| Water ....................................... | 20 ozs. |

for not less than fifteen minutes; then wash.—J. E. Bayles.

The formula is of the kind which is given for toning P.O.P., but it is not an entirely satisfactory process, and you must not expect tones equal to those with gold. You will get better results with the thiomolybdate (thio') toner, sold by Edmund and Co., Ezra Buildings, Columbia Road, E.

**Efficiency of Focal Plane Shutter.**—In your article of December 9, 1910, about the loss of light of the focal-plane shutter at F/5, with a ⅛ slit ⅝in. from the plate, you say that the loss is about 50 per cent. As per my diagram enclosed it seems to me that we get about the full amount of light, but that instead of getting it on a ⅛in. slit on the plate, as we should if the slit was on the plate, we get a part of the plate about ¼in. wide illuminated, but not equally, the centre receiving the full amount of light and the amount tapering off toward the sides of slit. It seems as if this were scattering the light from a ⅛in. slit over ¼in. of plate. Would not this be nearly equivalent to reducing the speed ½ as far as stopping the motion is concerned?—William H. B. Blacar (Bangor, U.S.A.).

Your diagram does not show the conditions correctly. In considering the exposure given by a focal-plane shutter you should estimate the time during which one point on the plate receives light through the shutter slit. Your diagram shows a small area of the plate receiving illumination, and any calculation based on this is meaningless so far as the question of exposure is concerned. If you try the proper method you will see that our estimate is correct.

**Developers.**—1. I have made up paramidophenol developer according to the directions given in the "B.J.," but it always seems to give very pronounced fog. I know the fog is not due to the dark-room light, which is perfectly safe, in addition to which I always turn it down low and keep the dish covered for the greater part of the time. I have used the developer at various strengths, from quite strong to quite weak—i.e., diluted with almost twenty or thirty volumes of water—the result is always the same. The sulphite used was Kahlbaum's, and should therefore be above suspicion; the paramidophenol was by the same maker. The developer was required for negatives known to be under-exposed. Should bromide have been added? Would the high temperature of the last few weeks account for the fog? I may say that in the past I have used largely diluted rodinal for under-exposed negatives, with good results. 2. Are airbells in developing caused by hot weather? I never get them as a rule, but have had a great many lately, even wiping with a plug of cotton wool does not always prevent them. I use plenty of developer; 3oz. for half-plate. 3. I should be glad to know what you think the best treatment for under-exposed negatives (as obtained in rapid focal-plane work). 4. May I point out a slight slip in the "B.J.A."? The formula given for amidol on page 872 is $C_6H_3OH\ NH_2\ HCl$. Surely this should be $C_6H_3\ OH\ (NH_2)_2\ 2HCl$, or, at any rate, $C_6H_3OH\ (NH_2)_2\ HCl$.—amidol being *di*aminophenol. This slip has been repeated in the "B.J.A." for several years past, and I have only just noticed it.—A. F. K.

1. The fog is no doubt due to the fact that you are trying to force the development of an under-exposed plate, and under-exposure always encourages fog. Bromide should improve matters, and if the weather is very hot you should try to bring things down to a normal temperature by the methods we gave in an Ex Cathedra note last week. 2. We have no reason for connecting airbells with hot weather. It is more probable that the water company have been opening up the water mains for repairs or alterations. This is a prolific source of airbells, and one that is seldom suspected. 3. You would do well to study Mr. Adolphe Abrahams' book on "The Photography of Moving Objects" (Geo. Routledge, price 1s.), in which the matter of developing focal-plane exposures is dealt with very fully. 4. We are much obliged for your correction. The correct formula is $C_6H_3OH\ (NH_2)_2\ 2HCl$.

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The British Journal of Photography.
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TERMS OF SUBSCRIPTION, Post Free
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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2668. Vol. LVIII. FRIDAY, JUNE 23, 1911. Price Twopence.

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## SUMMARY.

In an article entitled "Postcards for Profit," a contributor points out that a remunerative field exists for the photographer in the production of cards of prize-winning live stock. It is pointed out that the relatively small editions required of such subjects fail to attract the large postcard publishers. A number of hints on selecting subjects and on producing the cards will be found in the article. (P. 471.)

The method of an American professional for supervising orders for portraits by means of a slip system is described in an article on page 473.

The conditions of assistants in France, and charges for commercial photography, figure under "Correspondence."

A number of hints on the fitting of the photographer's dark-room will be found in an article on page 470.

A new construction in lenses, a reflex camera which can be used for wide-angle and other work, the "Ives" recent method of preparing colour prints on paper, figure, with other matters, under "Patents of the Week." (P. 481.)

A review of the past and present methods used in the production of dark-room safe-lights is published as a translation from our Dutch contemporary "Lux." The author, Dr. A. P. H. Trivelli, records the improvement which has been made of late years in the "efficiency" of dark-room illumination. (P. 474.)

An American experimenter, Mr. G. A. Perley, has published a lengthy paper dealing with the causes of reversal in negatives. (P. 478.)

A carrying strap for the small pocket cameras, which are now obtainable in a number of patterns, is found to be of considerable service in practical work. (P. 469.)

Dyes suitable for the staining of bromide or gaslight prints are mentioned in a note by Dr. K. Kieser. (P. 474.)

According to an American contemporary, a comprehensive historical collection of photographs is in course of formation in connection with the Smithsonian Institution, Washington. (P. 486.)

The memorial to the late Mrs. F. A. Bridge, erected by the Photographic Convention, has now been unveiled. (P. 485.)

## EX CATHEDRA.

**A Hint to Makers of Small Cameras** We think that the makers of the numerous small cameras now upon the market would be well advised to copy a device that is found on all the modern prismatic binoculars. Each of these instruments is provided with fittings to which a sling can be attached, so that the glasses can be hung from the neck free from their case and ready for use. A similar arrangement is found highly convenient on the small camera. Many good chances are lost by the time required to remove the camera from its usual case, and pockets are not always safe places for cameras with valuable lenses, generally without any protecting cap. In most patterns it is quite an easy matter to fit the camera with a small metal loop through which a strap or cord can be threaded, and when the camera is suspended from the neck it can be kept quite out of sight under the coat, and yet always ready for use. With quarter-plate cameras two attachments are generally desirable, but with the much smaller sizes now so popular a single fitting and a light strap is quite sufficient. We need hardly add that the provision of a sling is a safeguard against dropping the camera, and a fall may be disastrous in the case of a small camera made almost entirely of thin sheet metal.

* * *

**"Sketch" Portraits.** The style of picture which consists of a bromide or platinotype print of the head, and possibly the hands, the remainder of the figure being drawn in with pencil or brush, has been taken up by nearly all the higher and middle-class photographers, and there are few decent window displays without one or two specimens of it. Originally introduced several years ago, we believe by Mr. J. C. Strauss, of St. Louis, it was intended to give the effect of a rather delicate vignetted crayon drawing of moderate size, and the earliest British copies were also of this character. Latterly the tendency has been to reduce the size of the picture and to elaborate the hand-work to such an extent that the original idea is quite lost. We have noticed examples in which the whole figure was carefully and correctly drawn in pencil, every detail being clearly defined, but the effect was far from pleasing—the head did not belong to the body, and the general impression was that of patchwork. Much better than this is the use of a delicate pencil outline both of figure and accessories, strengthened with light washes of Indian ink or lamp black where light and shade had to be indicated. Judiciously produced, the sketch portrait is a very useful style, especially in the case of copies from bad originals, tarnished Daguerreotypes, scratched collodion positives, and faded cartes. With these the softly indicated figure and background form a welcome alternative to the coarse textured "solid" copy, which can never be made to look dainty, no matter how much or how good the work upon it. Above all things, an attempt should be made to keep the same texture throughout. If the body is to be drawn in pencil, let the head be finished in pencil; if the brush be used to finish the head, let the remainder of the picture be also brushwork; if there must be a mixture of textures, let the pencil work be as sketchy as possible, so as to convey the idea that it is intended to finish more elaborately at some future date; in fact, that the portrait is, to use a much-abused term, "a study."

* * *

**Effect of Light on the Eye.** It is sometimes noticed that photographs show objects in clearer detail than that in which they are visible to the eye, and while there are several well-known causes of such effects, some recent work of Messrs. Schanz and Stockhausen, of Dresden, seems to suggest an additional cause which has hitherto been unsuspected. It has been found that light waves of short wave-length below 490 produce fluorescence of the crystalline lens and retina, and in direct sunlight these waves are so numerous that a very intense fluorescence is produced, and so the vision of external objects is obscured. The effect is commonly known as "glare," but the fact that the glare which obscures the vision exists in the eye only is not so generally understood. In very bright sunlight distance will sometimes almost disappear, but this effect is only partly due to atmospheric effects, and therefore a photograph may show details that to the eye are invisible. It has been found that light of very short wave-length, 320 and under, is absorbed by the external eye, and does not reach the lens, or retina. To this light is attributed snow blindness, electric ophthalmia, and similar troubles. The light mainly absorbed by the lens is from 375 to 320, and this absorption is considered to be conducive to cataract, and most probably the cause of glass blowers' cataract. Above wave-length 400 very little light is absorbed by either lens or retina, and also very little fluorescence is produced, hence light belonging to the visible spectrum may be considered to be practically harmless. It is only the very short waves in the invisible spectrum that are injurious and that must be avoided.

## THE DARK-ROOM.

In most photographic establishments the dark-room is the very Cinderella of all the departments: studio, dressing-rooms, printing, and work rooms may all be spacious, airy, and well-appointed, but the dark-room is usually crowded in somewhere, probably convenient of access from the studio, but with no other redeeming feature. We have been in the dark-room of a large portrait business, where the floor space measured 8ft. by 4ft., where the working light was almost useless, and where there was not much room for filling a 15 by 12 slide, which, by the way, was constantly in use. In another, a damp cellar under the pavement had been pressed into service, while in many cases there is no possibility of two persons working in comfort at the same time. The dark-room is to the studio what the kitchen is to the dining-room, and should receive at least equal consideration. We can picture the dismay of the average British matron were she asked to transfer her culinary department to a room which might be compared to the galley of a coasting vessel, but it never seems to strike many photographers that they are doing something very much like it, and yet they expect their operators to turn out good work and plenty of it under such conditions. A few suggestions may not come amiss to those who are building new dark-rooms, or who, having dark-rooms of a sort, wish to improve them. The room itself should be as large as possible, within reasonable limits: for a small business 10ft. by 8ft. will suffice, for a large one 20ft. to 30ft. long and of proportionate width is a useful size. Wherever possible there should be a little lobby with two doors, so that the room can be entered at any time without risk of injury to any plates which may be exposed at the time. The bench for filling slides should be placed well away from the sink, and should be fitted with racks or ledges upon which slides not actually in use can be placed. Two light cupboards, with doors hinged at the top, will serve for unexposed plates and remove any risk of spoiling the plates by forgetting to close the door. The sink should be large and deep, and at such a height that all work can be done in a standing position; an extra board standing on edge along the front saves much splashing. A leaden or zinc "safe" or tray should cover the floor under the sink, coming out at least a foot further than the front of the sink, and in one corner of this safe there should be a waste pipe running into that from the upper sink. The taps should be of good quality, and each fitted with a length of rubber hose reaching nearly to the bottom of the sink. Swing taps are troublesome and seldom necessary. A strong wooden grid should cover the whole of the bottom of the sink. This is pleasant to work upon, and minimises the risk of breakages, either of measures or negatives.

The working light is an important item, and while the cheapness and cleanliness of daylight illumination are much in its favour, it is not to be compared for reliability and uniformity with a good artificial light. The electric lamp is ideal for the purpose, but if this is not available an ordinary gas burner or well-made paraffin lamp may be used. The incandescent gas light is not to be recommended, as being more chemically active than the flat flame, a darker medium must be used and no advantage is gained. It is, of course, absolutely necessary that when using oil or gas a flue or pipe is provided to carry off the products of combustion. In these days of colour-sensitive plates, the non-actinic medium must be ruby, or in the case of panchromatics, the greenish "safe light." As a general rule, glass is better than fabric, a tested ruby and an orange together being safe in all other cases. Inside these a sheet of ground glass serves to soften the light and also for examining negatives or transparencies when the coloured glasses are lifted out of the way. The end of the tube or chimney should be brought down as closely as possible to the flame, so that it will just not cast a shadow on the front. This safeguards the glass front, and also prevents it from becoming smoked upon the inside.

Washing tanks, racks, etc., must be provided to suit the class of work usually required, but should be of solid construction, zinc or copper always being chosen in preference to japanned tin, while lead lined fixing-tanks are more durable and safer than those made of porcelain.

A "Who's Who of Science."—The need of a book of reference containing the names, appointments, and achievements of the world's foremost scientists has long been felt in learned circles. Messrs. J. and A. Churchill have in preparation a new annual, which is designed to meet this want. It will be called "Who's Who in Science," and is to be edited by Mr. H. H. Stephenson. Schedules are now being addressed to the scientists whose names may appear, and it is hoped that they will assist the publication by filling in and returning the forms to 7, Great Marlborough Street, London, W., as soon as possible. For enabling scientists to communicate with each other all the world over, and for giving a rapid summary of the achievements and careers of great men, the new annual should soon prove itself indispensable.

# POSTCARDS FOR PROFIT.

In spite of the fact that the large publishing firms control the retail trade in postcards, making it almost impossible for the individual photographer to get a foothold in the ordinary way of business, there are still branches of the work which will pay, and pay well, anyone who cares to take them up and practically specialise in any one branch. As most of my readers are aware, the great publishing firms use costly and wonderfully complex machinery by which they are enabled to produce, literally by the mile, postcards of first-class quality, and at a price which is impossible for an individual photographer to compete against. On the other hand, "small" things are of little or no value to the large publisher, and unless the subject is of really great general interest, appealing to a large number of people, and likely to sell well, it does not pay them to take it up. By this it will be readily seen that if the individual photographer wishes to be successful in postcard work, he must tackle the subjects which will not pay the large firms to touch.

In villages and small towns there is always a fair amount of local work which may be done, though where there are subjects which are likely to have a fairly good sale, it will nearly always be found that the operator for the large firm has snapped them up. Where local events, however, are concerned, the individual photographer, being on the spot, has a far better chance of succeeding, though what will sell and what will not, is very difficult to say, and success almost entirely depends on the shrewdness and initiative of the photographer.

Personally, I do not think the ordinary run of postcard work is a game worth the candle, and I think it preferable to specialise in a branch which, so far at any rate, the large companies have not seen fit to touch at all.

The particular branch to which I refer is the photography of live stock, the orders for the work being obtained from the owners of the animal, and the cards supplied direct to them.

Prize-winning live-stock are valuable and very profitable animals, and not only will the owners pay well for good photographs of their animals, but there is a good demand for them from other breeders. At first glance it might be thought that the scope of the work would be too limited for much business to be done, but such is not the case. For instance, take dogs alone. There are hundreds of dog breeders in almost every town, and not only are they glad to get good photographs of their own stock, but of all other prize-winning dogs of the same breed. In this way they can—and all with an eye to improving their breed—compare the points in their dogs with those in other dogs they have been unable to see. Then again, a breeder may wish to make use of a stud dog with a good record which he has not seen. When he writes to the owner for his card, the owner will, if he is up-to-date, send him a photograph of the dog, which is far more "telling" than the most voluminous written description.

All that applies to dogs applies equally well to all other kinds of live stock, horses, cattle, sheep, birds, etc.

Should you go in for this work, if you have a liking for any particular animal or breed, it is advisable to make a specialty of it, at any rate at the beginning, for a lot of patience is required at times, and unless there is a certain amount of sympathy, results are apt to be other than the best. I know one photographer who makes a specialty of pigeons, especially the racing variety, and the work he turns out is very fine indeed, the luminosity of the plumage being wonderfully lifelike. Often he has more work than he can get out in a reasonable time, birds being sent him to photograph from all parts of the country.

In any case, it is absolutely essential that all the special features and points of each particular breed of animal are thoroughly understood. It is here that the specialist has the pull, for by keeping to one particular breed, he soon becomes a fairly good judge, and can pick out all the better points of an ordinary sort of animal, making a fairly good show of it, where the all-round man would probably only make an ordinary thing of it.

A lot may be learned from standard books, but it is a far better plan to attend the shows and study the animals with a good record. As a rule, breeders and fanciers are anything but reticent when once one gets into conversation with them, and they will not only tell one all the points of their own animals, but give a most exhaustive criticism of the other stock at the show.

Unless one is accustomed to the work—that is the photographing of animals—it is as well to try and gain experience by exposing some plates on likely subjects. It must always be borne in mind that prize stock are photographed to show up their points, and for this purpose a side profile view is generally the best, though an endeavour should be made to take advantage of a position in which all four legs and tail are visible.

Photographing animals often taxes the operator's patience to the utmost; work quietly, and avoid any fuss or hurry, as all animals are very nervous. A good diffused light, fastest plates, and longest possible exposure are three good maxims, but it will be found that what is wanted far more than any special advice is *patience.*

When a fair number of good negatives have been obtained, print the best of them on postcards, taking care, of course, to do the work well, and when orders are solicited, take them to show as specimens. Once one has got known, it will not be necessary to carry samples of one's work, but getting known is half the battle. If acquaintance can be made with the owners of animals which have made a name for themselves at the show, get permission to photograph them. If a little tact is used this is not by any means a difficult matter. Do not be afraid of exposing a few plates, but be determined to get some thoroughly good negatives. Print these in the best possible manner on postcards, see that your name and address is in a fairly conspicuous place, and present the owners with a few dozen copies. The benefit of this will be two-fold, the owners will give the cards to other breeders, which will help to get one's name out, and when prospective customers are approached, it is far better to be able to exhibit photographs of animals which are stars in their particular worlds than those of ordinary subjects.

As I have before mentioned, by visiting the shows one can soon get into touch with the breeders and fanciers, and by reading the advertisements and reports in the various journals devoted to live stock, the owners of likely subjects can soon be found out. I am afraid that in other articles which have previously appeared on postcards for profit, the writers have been rather lax in giving details of working and cost and profit of the production. A good many photographers seem to think that if they sell the cards for more than it costs to produce them, they are making a profit; when the cost of obtaining the business and working expenses sometimes mount up to more than the cost of production itself. If it is intended to do much work a full account of all the money spent in travelling and hotel expenses, gate money, advertising, etc., must be kept.

When the orders are fairly small, say under a thousand or so, the work can be done at home; the owners of stud animals, however, sometimes require a large number of cards, and besides their own name and address have the animal's name and pedigree printed on the card, and for this reason it is as well to have the work done by a trade printer. The owners of some of the better class stud animals are very careful whom they allow to make use of them, they charge a big fee and are usually willing to pay for good work, and as a rule prefer "real" photographs; on the other hand, some owners send out their cards wholesale, and therefore require them at a fairly low price—in these cases it is advisable to get the work done in collotype, but take good care to see that the work *is* well done. As regards home production a speedy output at a low cost depends entirely on method, and as no two photographers work alike perhaps details will be welcomed.

I find that the cost to produce the cards runs to about £1 1s. 6d. per thousand. Selling the cards to the breeders at the rate of £4 per thousand and £2 2s. per five hundred leaves one with a gross profit of close on £3 per thousand. Buying the cards wholesale in 2,000 lots they cost £1 per thousand. They are all developed in Rodinal and fixed in plain hypo; the Rodinal is bought in 16 oz. bottles, which works out at about 3d. per oz. The hypo is obtained in half cwt. lots at 4s. 3d., which is less than one penny per pound. Allowing three ounces of Rodinal for developing and seven pounds of hypo for fixing brings the amount up to about £1 1s. 6d.

The largest number of cards which an ounce of Rodinal will develop is about 450. Making a total of 1,350 for three ounces, as development was rather slow, however, it was found better to drop the number to one thousand. The developer is made up as follows: Rodinal, 2½ drams; potass bromide, 10 drops; water, 30 ozs. Two fixing baths are used, one in a half-plate dish and one in a 12 x 10, both provided with light-proof covers. When only one or two negatives have to be printed from the following is a good method: get the negatives titled and masked, cards and printing frames handy, pour three ounces of developer into a half-plate dish, also provided with a light-proof cover, and we are ready to start. When one is in a hurry, printing frames with loose backs and springs are a pest. Later on, I will describe the kind I use, which will be found much more convenient. Load the frames and expose both together, take out the cards and slip No. 1 into the developer, rock the dish and slip in No. II., rock the dish again, put on the lid, re-load the frames, expose, take out the first cards from the developer, slip in the second two, and place the developed cards in hypo No. I. Proceed as before until ten cards have been developed, then renew the developer. This is a very simple and quick method, and if the exposure has been correct the work can be kept going like clockwork and not a single card stained or wasted in any way.

When about half-a-dozen or so negatives have to be printed from the following is a much better method: A 12 x 10 or 10 x 8 porcelain shallow dish is required for developing, and a table or bench with a perfectly flat surface, covered with American cloth. Expose all your cards in one batch, take them out of the frames, and lay them in a pile face down, pour a very small quantity of developer into the dish, only barely enough to just cover the bottom of it, now taking each card separately, hold it with both hands by the opposite corners, and draw it, face down, *over* the developer. The idea is to give the emulsion an even coating of developer all over at one sweep without getting any on the back of the card. It is a very simple thing to do, but it requires a little practice before one becomes dexterous; as a rule, the cards are either drawn across in an uneven manner, with a streaky result; or they are pushed too far in and the developer gets on to the back, which is almost as bad, and it is for this reason that I advise starting with a quantity of developer only sufficient to barely cover the bottom of the dish, though when one gets more skilful a dishful of strong developer can be used with every success. It is one of the most rapid and cheapest methods I know, as about a dozen cards can be developed with one ounce of developer. After each card has been drawn over the developer it is laid face up on the American cloth and left there to automatically develop. When the last has been laid down the frames are re-loaded, by which time the cards will have developed: place them in hypo No. I., expose the second batch, and develop as before. When about fifty cards are in the first hypo transfer them to the second. When a second fifty are ready place the first in running water to wash.

The drying of a large number of cards is somewhat difficult. The best method I have been able to devise is to lay the cards face up on lengths of buttercloth stretched across a room through which there is a good draught; in this way they dry in a very short time.

The printing frames which I have before mentioned are both simple to make and to use. Get a carpenter to cut you a strip of good well-seasoned wood six feet in length and one inch by half an inch thick, and ask him to plough it out as in Fig. 1; the groove is one-eighth of an inch deep and one-tenth of an inch wide. Cut this strip into twelve six-inch lengths. Now get some fretworker's wood, cut twelve pieces each six inches by three and five-eighths; with two short flat-headed screws, fasten a strip of wood on to each of these along the edge of a six-inch side. The groove in the strip is on the top, and next to the flat piece of wood the strip forms the base on which the frame stands. To use it stand it upright, place a card face forward, the long end resting in the groove and the back of the card on the back of the frame, take the negative and place it film side against the face of the card, the end of the negative also rests in the groove, and it should be a good fit. Get a "Bulldog" letter clip, and with it clip the top of the frame, card, and negative together, now make the exposure. For further exposures there is no need to remove the negative at all, merely take away the clip, the negative will fall forward, stop it with your left hand; a flick of the finger sends out the card, a fresh one is replaced with the right hand, and the whole re-clipped.

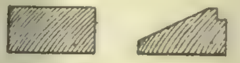
Fig. 1.

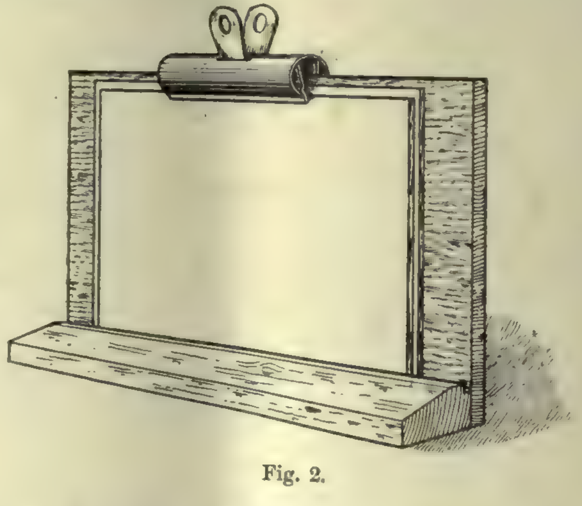
Fig. 2.

**James Everton.**

---

"Ensign" Film Competition.—Miss E. Portmann, 9, High Beach, Felixstowe, Suffolk, is the winner. Houghtons, Ltd., offer a three-guinea camera every month for the best negative on "Ensign" film. The entries close on the 3rd of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

# A BUSINESS SYSTEM FOR THE STUDIO.

[The following article by Mr. Percy King, a well-known professional photographer in the United States, has for its subject the slip system of controlling the business of a studio in regard to which many papers have appeared in our pages, yet repeated reference to this time-worn theme is amply justified by the evidence that many photographers continue to conduct their affairs in a happy-go-lucky manner which does not make for prompt and efficient execution of orders, much less give them any insight as to the distribution of cost in making photographic portraits. We are indebted to "Camera Craft," of San Francisco, for the article.—Eds., "B.J."]

In putting forward this system I am not egotistical enough to think it is the "best ever"; perhaps many who will read this have a better; but I know that wherever it has been introduced the conditions have been greatly simplified, making the work much easier for everybody connected with the studio. Not only is there an entire absence of the work and worry attending the running about for this, that, and the other thing, but the party having charge of the office can always give an intelligent answer to any question that can be put by a customer concerning the work.

After the order is taken, the customer is handed a slip, to be given the operator, reading:—

*No*........................ *Name*..........................................................

*Address*...................................................................................

| | | | | | | |
|---|---|---|---|---|---|---|
| **CARD** | **CAB.** | **5x8** | **6x8** | **8x10** | **11x14** | |
| P. | | | | | | |
| *Good* | | | | | | |
| *Bad* | | | | | | |

This is marked with an x under the size ordered and it is well to put in the price in the blank marked "P," using a code if thought necessary, so that the operator is given an idea as to about how many plates he is justified in using. If the subject looks good for a speculative order, or a larger size than the order marked, put the letter "S" in the blank space as well. It is always advisable for the operator to have the subject's name so that he can speak to him by name, although, of course, a better way is for the assistant to bring the subject into the operating room and introduce him to the artist. After the plates are exposed the operator puts the slip on the last holder and, when changing, marks all plates with the same number as the slip until he comes to the next slip, and so on, making the numbers small on the side of the plates. The next morning a strip of gummed paper, one-eighth inch wide and four inches long, is stuck to the top of the negative on the film side, and on this are put the number and name in ink, by whoever has charge of the negatives, and on the original slip is marked the number of plates exposed, any bad ones being so indicated in the proper column. The negatives and slip then go to the printer to be proofed, where the number and name are put on the back of each proof, and then the proofs and the slip go to the office. You will see that any one in the office will be able to answer any question regarding the number of plates, whether good or bad, and also be able to explain why the usual number of proofs were not turned in, should there be occasion for so doing.

But the most important part of the system is the handling of the negatives after the proofs have been made. Have a shelf made with twelve compartments, marked as follows:—

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | No No. | Hold. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

The negatives are all sorted and put in their respective compartments, face out, that is, the pen and ink strip at the top and to the front. Pay attention only to the last two figures of each number; thus, 1406 would go in the "0" compartment, 1562 in the "60" compartment, and so on. This makes it easy to pick out the negatives for any order; and mark the date that is on the proof on the outside so that at any time you might want one of these discards you will have only to look on the studio order book for the date proofs were returned and then turn to the box bearing that date. This last if you keep these discarded negatives. Should you take out one of these discards to print a sample from, as sometimes happens, a slip to that effect should be placed in the box to tell you why it is not there but among the registered negatives.

The negatives ordered from being picked out, they go to the retoucher in a tissue envelope to avoid any danger of scratches; and from the retoucher they go to the printer. Both should have a pad on which is jotted down the number of each negative as it is finished. These slips are left at the office each evening and in the morning the one in charge of the office takes the retoucher's slip and makes an "R" after each corresponding entry on the studio order book and "P" after corresponding numbers on the same book. This being done regularly, should any one call for their particular work, the one in charge of the office can always tell just how far advanced the work is and estimate just how soon the work will be done, if not already finished. One can tell in just whose hands the negative is; and should the person usually in charge of the office be absent for the moment, any one else about the studio has but to look at the book to be able to answer any questions about the order.

Each morning the printer should first go over his prints of the day before and if any orders are short the required number of good prints, immediately make up the deficiency before going ahead with the regular work of the day. He then takes them to the mounting room, where the one who does the mounting will find her orders on the back of each returned proof, the one in charge of the office having there indicated number of negatives, subject's name, style of mount, and any other necessary details; the one doing the mounting getting these proofs each morning from the office file where they were placed after the order was picked out. If any corrections are to be made in the negative, it is marked on the proof which goes to the retoucher, and is returned to the office as soon as he is finished with the negative. As soon as these orders are mounted and spotted and ready to deliver, they are taken to the office and pigeon-holed in alphabetical order, with proof enclosed. The office assistant should then drop a card to each customer who has not specified the time he will call for pictures, informing him that his work is finished. This will save delay in delivery in many cases. The compartment marked "No No." is for negatives that have been made on speculation, or for friends of some good customer; these not being given a number until an order from them has been placed, when they will be given one and entered on order book. The "Hold" compartment is for such negatives as your customers have asked to have saved for a short time pending an order. This is not necessary if you save your discards as well as the negatives from which orders are at once forthcoming. When the order is obtained, take down all the negatives bearing that number, and, after selecting the one ordered from, put the discards in old plate boxes.

Now this may, in the reading, look like a lot of red tape, but you will find, when it has been introduced as a system and is in good running order, that it will save much time, a great deal of worry, and a large amount of unnecessary running around.

PERCY KING.

# TINTED PHOTOGRAPHIC PRINTING PAPERS.

(A Note in "Photographische Industrie.")

A NUMBER of development papers are upon the market in which the support for the emulsion is not white, but is slightly coloured. By this we do not mean such papers which are coated underneath the emulsion film with a faint pink or mauve baryta film, but those which are somewhat deeply coloured throughout the substance of the paper itself. That which is most employed by makers, and finds the widest use, has a light brownish colouring, which is frequently described as "Chamois," also as "Antik." Papers of this tint are manufactured by nearly all the makers of photographic materials. The "Chamois" tone imparts to the prints an agreeable softness, and gives a softened effect to staring high-lights. It may, therefore, be thought that it might be of advantage to try if other tones, such as blue, light green, red, grey and brown could not be chosen for photographic raw papers. In the case of carbon prints a tinted ground (in the transfer paper) is regularly in use, and frequently yields most effective results, and the same thing should apply also to development papers. The photographic dealer, who may be called upon to offer his customers such papers, has frequently some difficulty in obtaining them in small quantities, since manufacturers do not look with favour on such special requirements. But the dealer may offer to his customers a process which disposes of all these difficulties, and allows of the results being obtained with certainty, according to the character of the print or the desires of its producer.

It has long been a practice, in the case of transparencies, to make use of coloured dye solutions giving a uniform tint to the whole of the transparency, and in the cinematograph film trade this process is now general and much used. It does not, however, appear to have been at all employed in order to provide photographic paper prints with a tinted ground. The reason of this, no doubt, is that the tints produced with aniline dyes are regarded as too unstable. It must also be admitted that ordinary hard-sized papers, which are dyed by bathing in watery dye solutions, are certainly not fast to light. But in the case of the photographic development papers, not only is the paper dyed, but also the gelatine of the image, and gelatine, in consequence of its proportion of nitrogen, behaves towards dyes in quite a different and more favourable way than paper fibre, approximating more in this respect to silk, which can be very readily and permanently dyed.

The dye solutions are best kept in a concentrated form—say, 1 part in 100 parts of water—and further diluted for use. The most suitable dilutions will in general be to a strength of 1 part of dye in 10,000 parts of water. The well-washed bromide or gaslight prints are placed, either wet from the washing dishes, or after drying, in a clean dish containing the dye bath, and allowed to soak until the required depth of tint is obtained. It should be noted that the tint becomes slightly deeper on drying. In immersing dry prints, air-bubbles are liable to form, and should be removed with the tip of the finger or a tuft of cotton-wool. After dyeing is completed, the prints are passed for an instant through a dish of clean water and hung up to dry. Care should be taken that no drops of solution adhere to the film side, otherwise the prints will be spotted. They should be removed with a fragment of filter-paper, or taken up with a tiny portion of cotton-wool. It is best to mount the prints as quickly as possible, whilst they are still wet, with a good paste; but, if preferred, prints can be allowed to dry, and mounted after a further short immersion in water.

The diluted dye solutions, after use, may be repeatedly employed; they may be strengthened from time to time with small quantities of the strong stock solutions, being preferably filtered each time before use. In the case of using combinations of dyes, it is best to immerse the prints in a bath containing one dye only, and then in one containing another: the result is less certain if both the dyes are used in a single bath, although this, with some knowledge of the dyes, may frequently be done. Some dyes will scarcely colour the paper side of the prints, whilst others will stain the image itself, and the paper back to an equal degree of intensity. By taking care in the selection of the dyes the colours are of good permanence, but will, of course, not stand prolonged exposure to sunlight without altering to some extent. A few of the dyes found suitable for the above process are as follows:—

Alazarin saphirol for soft blue tones.
Naphthol green B for soft green tones.
Chloromin brown G for brownish tones.
Papier-echt-bordeau B for purplish tones.
Brilliant crocein 3B for yellowish-red tones.
Echt-light-gelb 3G for yellow tones.

By mixing concentrated solutions of the two last-named dyes an intense fiery red tone is obtained, very suitable for firelight and similar effects. The photographic dealer might well turn his attention to preparing these dyes in concentrated solutions for sale to those demanding these special tints.

DR. K. KIESER.

# SAFE-LIGHTS FOR THE DARK-ROOM IN THEORY AND PRACTICE.

[The following is a translation of a review of modern methods of dark-room contributed by Heer A. P. H. Trivelli to "Lux," and published in French in recent issues of the Bulletin of the "Association Belge de Photographie."—EDS., "B.J."]

IT is universally recognised that the illumination of the dark-room plays a most important part in the development of plates, films, and papers. If in 1894 Dr. E. Vogel[1] could write that much could be desired in this respect, it may be said, after more than sixteen years, that little progress has been made in general practice and that it is common to find the old ruby glasses still in use. It would almost seem that little benefit has been derived from the publication of all the researches which have been made during this time for the improvement of dark-room illumination. Dr. C. E. Kenneth Mees writes :—"It is surprising to find the photographic worker content to use red or yellow glasses which are almost always unsafe and most frequently so opaque as to be useless."

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[1] Eder's "Jahrbuch," 1894, p. 301.

Although the photographer, by means of his defective red light, is able to develop almost without fog his extra rapid plates, and even those of the orthochromatic kind, his attention cannot be directed too emphatically to the fact that the means of illumination have been much improved. In other words, he would obtain the same result but with a much brighter and safer light.

The filters, or "safe-lights," which are generally used in the dark-room, are either pot glass (coloured throughout) or singly or doubly flashed (coated on one or both sides). These latter are supplied under the name of gold or copper ruby glass and consist of a colloid solution of gold or copper in the glass. Frequently such glass is issued with the legend "tested in the spectroscope." If the glass has been found suitable as the result of this test, it is passed as such without further experiment. Yet I have been able to show that a glass so "tested in the spectroscope" may still pass a great deal of the highly actinic ultra-violet light. Likewise, the yellow and green glasses in use are of a low degree of safety. This is not to say that there is no safe yellow or green glass, but that the test for verifying the safety, or otherwise, of this glass is commonly neglected. If the spectroscope is used the test is confined to the visible spectrum, on the presumption apparently that the ultra-violet actinic rays are certain of being absorbed.

A note should also be made of the fact that little attention has been paid in the past to the degree of transparency of colouring matters towards ultra-violet light. Yet all our sources of light give out these rays in greater or less quantity. In 1895 Eder and Valenta[2] published their researches on the absorption spectra of coloured glasses. According to them, ruby glass made with gold, the blue-green glass due to oxide of copper, cobalt glass and that made with nickel and lead, violet manganese glass due to silicate of potassium and uranium, yellow-orange glass made with silver, green glass prepared with ferrous oxide, and reddish glass in which selenium is used as the base, all allow a greater or less quantity of ultra-violet light to pass. Still, despite this fact, silver orange yellow glass is frequently used as a "safe-light" for the dark-room, largely as the result of the erroneous statement of Hunt that it does not transmit any chemically active rays.

Complete absorption of the ultra-violet light would appear to result in the case of the copper ruby glass, the green chromium glass, and the yellow green glass made with copper chromate.

In the development of orthochromatic plates it is naturally incumbent upon the photographer to give still greater attention to the illumination of the dark-room. The copper ruby glass, largely used, still allows to pass a small quantity of green light, capable of strongly fogging plates which are sensitive to the yellow-green. As a rule development has then to be done in an illumination which is much too dark. This light is still not sufficiently safe for the more modern orthochromatic plates, which have gradually replaced those sensitised with erythrosine, and it has become necessary to use a light which is still darker. On this subject Dr. E. König[3] writes :—"The ruby glasses which are sold are rarely completely safe, and when they are safe they are frequently so dark that one might as well replace them by a sheet of granite." This will be understood from what follows.

The following table, published in the "British Journal of Photography" in 1901, shows the quantity of light absorbed by the various materials in use as safe-lights for the dark-room, and proves at the same time the improvement which is necessary in the illumination.

| | Loss of luminous intensity per cent. |
|---|---|
| Two thicknesses of double-flashed orange glass ............ | 97.5 |
| Double - flashed orange with ruby glass ...................... | 98 |
| Deep ruby glass .................. | 99 |
| Cherry-coloured fabric............ | 98.6 |

It will be seen that for the illumination of the dark-room only about two per cent. of the light actually used is allowed to pass.

Given that the ordinary light contains only a small quantity of non-actinic rays, it will be understood that by cutting out the actinic portion by means of a filter there must always be a great loss of light, but this loss should not reach the enormous total of 98 per cent.

The great reduction of light is due to the fact that the coloured glasses not only possess the great drawback of incompletely absorbing the actinic rays, but also that of absorbing, at the same time, a part of the non-actinic rays. If one wishes to obtain complete absorption of the actinic light it would be necessary to cause the light to pass through several sheets of glass, or through a darker glass, and under these circumstances the absorption of the non-actinic rays is naturally much greater. The ideal would be to find a filter which would possess an absolute absorption for the actinic light with complete transparency towards the non-actinic rays. One should be able to place two or more filters one on the other without noticing any change in the absorption spectrum. Although this result may not yet be completely attained, a very considerable approach to it has been realised by the use of organic colouring matters.

### Safety of the Dark-Room Light.

From the purely scientific point of view there is no light which is perfectly non-actinic towards the photographic plate: all light exerts some degree of action. It might thus be thought that there is no light which is safe for the dark-room: even filters tested by the spectroscope might allow actinic light to pass. This latter, in the case of a sufficiently prolonged exposure, is able to fog any kind of plate in the developer. It follows from this that (1) the successive actions of the light accumulate on the photographic plate, though they do not do so in the case of the retina of the eye. (2) In testing with the spectroscope it is difficult to observe the rays of low intensity, particularly the strongly actinic blue and violet rays which, on this account, are frequently overlooked, and (3) direct observation of the transparency of a filter to ultra-violet is not possible.

The first of these causes can be overcome: the photographer is able to obviate it by exposing his plates to the direct light of the dark-room to the smallest possible extent. The less he exposes his plates directly to the dark-room lamp the brighter may be the light used for development, and, on the other hand, the more plates are exposed the deeper does the "safe-light" require to be. The skilful operator will thus be able to develop a plate without signs of fogging by the aid of quite a bright light, while one less experienced will obtain fog even when working with a deep light. Dr. E. König, on this account, gives the following good advice[4] :—"A practice should be made of turning one's back to the dark-room lamp and handling the dry plate only in the shadow of the body: the red light should not be allowed to fall directly on the plate during development."

In the course of this article the expression "non-actinic" should thus be taken as meaning only a light allowing of a given type of plate being developed without fog. The term

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[2] Eder's "Jahrbuch," 1895, p. 310

[3] "Die Farbenphotographie," 2nd edition, p. 38.

[4] "Das Arbeiten mit farbenempfindlichen Platten," p. 55.

"non-actinic" in photography has only a relative meaning, and, without taking into consideration the skill of the operator, is chiefly dependent upon the description of plate.

The second and third causes of unsafe illumination may be removed by replacing a spectroscopic test by one, which is frequently much more exact, in the spectrograph. The best method consists in employing the Wratten spectrum panchromatic plate on which the whole of the absorption spectrum of the light-filter may be recorded.

Precht[5] has published a number of researches on the "safety" of dark-room light-filters. He placed the ruby pot glass of Putzler as much better than the copper flashed ruby which is usually used. This is confirmed by H. Hinterberger[6], who arranges filters according to their safety in the following series in which the first filter is safest and each following one less "safe" than the preceding.

(1) Ruby pot glass (Putzler).
(2) Double cherry fabric.
(3) Cobalt ruby glass (Miethe).
(4) Silver gelatine chromate plate.
(5) Single cherry fabric.
(6) Copper flashed ruby glass.
(7) Double Ruby Christia fabric.
(8) Two collodion plates dyed in aurantia and rose bengal.
(9) Single Ruby Christia fabric.

Hinterberger draws the following conclusions from his experiments in which he used an incandescent electric lamp:

(a) None of the filters protect a plate absolutely against fog during brilliant illumination.

(b) The Putzler pot ruby glass gives the best result, the double cherry tissue comes next, and the Miethe cobalt ruby glass is also fairly good.

(c) The single Ruby Christia fabric and the double filter of Dr. E. Vogel, consisting of collodion plates treated with aurantia and rose bengal and bound film to film together, allow much actinic light to pass.

(d) Arranged according to their brightness the nine filters examined fall into the same order but in the opposite direction as that in which they are arranged according to safety.

(e) Experiments showed that no filter combined great safety and great brilliance.

The safety of these filters was tested by using an ordinary extra rapid gelatino-bromide plate.

The results of numerous experiments have likewise been published by Houdaille[7]: they related solely to different varieties of coloured glass and the results are as follows:—

Table I.

Brightness of the light passing through various coloured Media.

| Without glass. | Yellow silver glass. | Green glass. | Red glass. | Green and yellow glasses. | Yellow and red glasses. | Red and green glasses. |
|---|---|---|---|---|---|---|
| 1000 | 207 | 152 | 15 | 29 | 8 | 1 |

Table II.

Intensity of the active light passing through various coloured media: action on silver bromide emulsion.

| Without glass. | Yellow glass. | Green glass. | Red glass. | Yellow and green glasses. | Yellow and red glasses | Green and red glasses. |
|---|---|---|---|---|---|---|
| 1,000 | 13·8 | 25·2 | 0·75 | 116 | 0 1 | 0·03 |

Table III.

Ratio of brightness of active rays transmitted by the glass to that of direct rays from light-source.

| Without glass. | Yellow glass. | Green glass. | Red glass. | Yellow and green glasses. | Yellow and red glasses | Green and red glasses. |
|---|---|---|---|---|---|---|
| 1 | 1 : 15 | 1 : 6 | 1 : 20 | 1 : 25 | 1 : 25 | 1 : 30 |

Table IV.

Time during which a bromide plate, at 1 metre distance, can be exposed to the light of the candle (filtered through the various media) without fogging.

| Without glass. | Yellow glass. | Green glass. | Red glass. | Yellow and green glasses. | Yellow and red glasses. | Green and red glasses. |
|---|---|---|---|---|---|---|
| 1·25secs. | 90 secs. | 50secs. | 28ms. | 18 mins. | 3½ hrs. | 11 hrs. |

## Historical Notes on Red and Yellow Light in the Dark Room.

More than twenty years ago endeavours were made to produce filters to replace the flashed copper ruby glass which is still widely used. These filters were of coloured paper or fabric; they also consisted of a sheet of glass the surface of which was coated with a coloured collodion film, or one of varnish, or gelatine. All these filters aim at increasing "safety" and at the same time the brightness of the light used in the dark-room. Attempts were also made to use scattering media, such as paper or fabric, in order to render the light more uniform and, therefore, more agreeable to the eyes. In order to obviate the great loss of light produced by the use of coloured paper or fabric, these filters were specially designed to filter ordinary daylight; or else paper or fabric of a lighter tint was used. One also finds it advocated to use only the yellow and orange for this description of filters and to use red only in the case of transparent filters.

The first attempt which I know towards improving the red light of the dark-room is due to Baden Pritchard.[8] He was the first to show, in 1884, that red light is not necessary for the development of dry plates. He proved that work may be done with sufficient safety in a deep diffused yellow light, much brighter to the eye than ordinary red light. He advised combining an orange glass with a thick colourless ground glass, or using thick yellow fabric. If the method of Baden Pritchard has been gradually abandoned, this is not to say that it was not satisfactory. The progress made in the preparation of emulsions during recent decades has rendered the photographic plate more and more sensitive, and has compelled photographers to have recourse to the old copper ruby glass, which is much "safer."

The first note which I can find concerning the application of dyes to the making of safe-lights for the dark-room is that of E. Vogel in 1890. Vogel[9] made filters with gelatine plates coloured with aurantia and rhodamine. He dissolved 1 gm. of Agfa aurantia in 100 ccs. of warm water, adding a few drops of ammonia if the dye did not dissolve completely. He mixed 1 part of this coloured liquid with an equal volume of a solution of 20 gms. of gelatine in 100 ccs. of water. This mixture, after filtering through flannel, was coated on to glass plates, using 30 ccs. for a plate measuring 18 x 20 cm. These plates are yellow, and absorb the actinic blue rays completely; they are suitable for the preparation of iodide-collodion plates, as

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5. "Phot. Centralblatt," III., p. 177.
6. Eder's "Jahrbuch," 1898, p. 137.
7. "Bulletin de la Société française de Photographie," 1894, p. 536.
8. "Photographic News," 1884, p. 17.
9. "Photographische Mitteilungen," 1890, p. 135.

also for slow chloride, bromide and chloro-bromide plates and papers. The light will not do for sensitive bromide plates nor for orthochromatic plates, as the filter allows all the yellow, green, and red rays to pass. For this reason Vogel used rhodamine of the Badische Anilin und Soda Fabrik. This dye has two bands of absorption in the green; in strong solution it absorbs the yellow-green and violet and transmits the blue and red. In order to prepare a rhodamine filter Vogel dissolved 8 gms. of rhodamine in 250 ccs. water and 20 gms. gelatine in 100 ccs. water; 20 ccs. of the gelatine solution are then mixed with 30 ccs. of the rhodamine solution and the whole filtered through flannel. For a plate 18 x 24 cm. 30 to 50 ccs. of this mixture are used. By combining this filter with that made by aurantia a safe-light is obtained which allows only the red rays to pass.

These filters were incapable of resisting the heat of badly ventilated dark-room lamps. Frequently the gelatine would melt, or would crack and fall away. In 1894 Vogel[10] improved the filters, and advised covering the glass plates with coloured collodion. For the yellow filter 2 gms. of aurantia are dissolved in 50 ccs. of alcohol, the solution filtered, and to 20 ccs. of it 60 ccs. of 4 per cent. collodion are added. For the red filter 2 gms. of aurantia are dissolved in 40 ccs. of alcohol, and 5 gms. rose bengal in 20 ccs. of methyl alcohol. The two solutions are mixed and filtered, and to 20 ccs. of the mixture 60 ccs. of 4 per cent. collodion are added. When using dark-room lamps which are not well ventilated it was advised to cement two of these filters together by means of Canada balsam and to bind with paper edging. Not only is it difficult to cement two filters in the size of 18 x 20 cm., but in the heat of the dark-room lamp the Canada balsam becomes so fluid that the least defect in the paper binding allows it to leak out. The filters thus did not come into general use.

Somewhat previously to this Burton[11] had used the strong yellow of picrates as the material for filters. To a cold saturated solution of picric acid was added ammonia, until the solution had a distinct smell of free ammonia; 4 to 6 gms. of gelatine were then added to 100 ccs. of this solution, the whole heated, and coated as a thin film on a plate of glass, using from 250 to 300 ccs. for a 40 x 40 cm. plate. These filters were found much inferior to those of Vogel. Apart from the drawback of the action of the heat Eder[12] showed that they allowed actinic blue rays to pass and were still less safe than the silver orange glass in use.

Fruitless attempts to obtain better filters for the dark-room did not, however, discourage those engaged in these experiments. The trend of experiment reverted to coloured glasses. Miethe[13] combined blue cobalt glass with a red filter. This glass does not give yellow and green in its absorption spectrum but only red at the C. Fraunhofer line, and would thus be relatively brighter. The glass obtainable in commerce did not give these results. The blue cobalt glass was so pale that it did not absorb yellow and green sufficiently, and a deeper cobalt glass reduced the brightness of the red too much, with the result that Miethe subsequently abandoned its use.

E. Vogel[14] suggested combining ruby glass prepared with copper oxide with one prepared with gold. The advantage consisted in the fact that the gold glass completely absorbs the green, whilst a thin copper ruby glass allows it to pass. On the other hand, the red is not greatly reduced, as was the case with Miethe's glass. Eder notes that advantage can be taken of the copper ruby glass, which is darker. An improvement was effected by H. W. Vogel in inducing manufacturers to produce copper-coloured ruby pot glass and to introduce it on the market. The colour of the copper glass is so intense that up to this time a flashing on ordinary white glass had seemed sufficient.

The detailed experiments of Precht and Hinterberger, already referred to, have shown that this glass (Putzler pot ruby) may be considered as the "safest" of all the filters for the illumination of the dark-room.

Attempts to improve the illumination of the dark-room appear to have been discontinued after this period, but this was soon altered by the greater use of cooler sources of light, such as electric incandescent lamps, with the result that a return was made to the gelatine filters, which previously were found impracticable. On many hands the results of experiments were published and new filters introduced upon the market. These filters may be classified as follows:—

I. Semi-transparent filters (coloured paper, fabric).
II. Transparent filters.
    1. Liquid filters:
        (a) Mineral colouring matters.
        (b) Organic colouring matters.
    2. Coloured colloid filters (gelatine, collodion, varnish):
        (a) With mineral colouring matters.
        (b) With organic colouring matters.

This classification is not rigorously exact, since there are combinations of the different types. For example, Abney uses a gelatine filter with a coloured glass, and Wratten a paper filter in conjunction with a film of gelatine.

In this classification also filters of coloured glass have been omitted, since no improvement was made in them subsequent to 1894. The green light of the dark-room and the light-filters for Autochromes will be treated separately.

### Semi-Transparent Filters.

The oldest filter of this kind is the thick yellow fabric already mentioned as recommended by Baden Pritchard in 1884. Fourteen years later there appeared on the market a fabric sold as "cherry," of red colour but very dark, also the yellow canary fabric. Subsequently Precht[15] advises the use of red silk, and Henry and Courtier[16] use yellow screens of paper treated with a mixture of auramine and aurantia. These filters were "safe" for the development of gelatino-bromide plates. Of lighter tint than the "cherry" fabric mentioned above is the "Ruby Christia," issued by Messrs. Thomas Christy and Co., which is strongly recommended by Szekely.[17]

In France Bellieni in 1903 prepared paper under the name of "Papier Anactinochryne," a yellow-coloured paper which, according to Zuntz,[18] can be replaced by a paper coloured with thioflavine. A more exact formula is given by L. Castellani.[19] Stout white paper is immersed in a solution containing 5 gms. of aurantia, 10 ccs. of a solution of safranine in water, and 10 ccs. of glacial acetic acid in 1,000 ccs. of water. Namias suggests the making of a non-actinic paper with a solution of 10 gms. tartrazine and 1 gm. rhodamine in a mixture of water 500 ccs. and alcohol 500 ccs.

In Germany in 1907 a product was introduced under the name of "Antelumine," by Thomas and Co., Crefeld. It was a highly resistant paper impregnated with a colouring matter, and could be applied to glass by means of gelatine solution. Two thicknesses were taken for the development of orthochromatic plates.

A. P. H. TRIVELLI.

(*To be continued.*)

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[10] Eder's "Jahrbuch," 1894, p. 301.
[11] "Photographisches Wochenblatt," 1893 p 367.
[12] Eder's "Jahrbuch," 1894, p. 355.
[13] "Atelier d. Phot," 1894, p. 67.
[14] "Photographische Mitteilungen," 1894, p. 86.
[15] "Photographische Korrespondenz," 1898, p. 425.
[16] "La Photographie," 1900, p. 12.
[17] "Photographische Korrespondenz," 1901, p. 308
[18] "Bulletin de la Société Lorraine de Photographie," 1903, p. 90.
[19] "Revue de Photographie," 1904 p. 25; "Photographische Chronik," 1904, p. 605.

# EXPERIMENTS ON SOLARISATION.

A paper in the "Journal of Physical Chemistry."

FROM a consideration of the literature bearing upon the reversal of the photographic image[1] we find that many conflicting conclusions have been drawn, and at times we find the same phenomenon accounted for in two entirely different ways. The differences in many cases are due to slight inaccuracies in the statement of facts. In order to systematise and bring into one general order all the various views as previously held upon the action of solarisation, two assumptions have been made as to the behaviour of the silver halides[2] and the theory has been outlined in a brief manner as follows:—

(1) The action of light on a silver halide corresponds to that of a direct current or of a fairly weak reducing agent. It causes the silver halide to pass through all possible stages.

(2) A fairly strong reducing agent (a developer) does not cause the silver halide to pass through all the possible stages and does reduce certain silver halogen solid solutions or subhalides faster than others which contain less halogen.

In the following I shall attempt to show how closely the observed facts coincide with the theory and diagrams as previously given. The work has been restricted to two grades of plates, which for convenience of illustrating with the original plates by means of a lantern have been the lantern slide transparency plates of both Seed and Cramer. A standard lantern slide made from a photograph of a prominent French physicist dressed in his academic robes was utilised in much of the work as a copy plate; by the utilisation of such a plate with contact printing in front of a Welsbach burner at known distances for specified times much more constancy of the numerous variables entering in the exposures could be obtained than out of doors. By such methods we could feel more certain of changing only one variable at a time. In out-of-door work we must consider that the quality of light is never the same for two successive days, and many have obtained erroneous results merely by neglecting to consider this seemingly small factor. When photographs of exteriors were desired, they were obtained by aid of an American Optical Co.'s camera, made about twenty-five years ago, using a number eight stop. As an example of the importance which such a small thing as the deterioration of a Welsbach gas mantle by its continued use had on some of this work, it might be interesting to note that at a given distance for a specified time, entirely different results were obtained when a new or a two weeks old (constantly used) mantle was used. At one time, for the degree of exposure then used, it made the difference between a negative and a positive. Since the actinic value outdoors is much more variable, the importance of accurate observation and check plates is at all times essential in this line of work. In order to continue as nearly as possible in the argument of constancy of variables, one type of developer was used, as it seemed to be best adapted for all grades of work, and the following may be considered as a kind of stock solution.

A. Water ........................ 1,000 ccs.
Soda Sulphite ............ 126 ,,
Hydroquinone ........... 21 ,,

B. Water ...................... 1,000 ccs.
Soda carbonate anhydrous..................... 252 ,,

Pyro and metol developers were at first tried, but with these poor results were obtained as compared with those when using the above solutions. This was due partly to the rapidity of such developers. In work on solarisation a contrasting plate facilitates the powers of observation to a great degree. All the above work was carried on in an especially prepared dark room which admitted no outside light, and was illuminated by means of red light.

As has been noted, it is first necessary to study the qualitative nature of the latent reversed image, and to determine whether or not we actually are dealing with a silver oxybromide of the general type $AgBr_xO_y$. Following the theory of Abney, that oxidising agents facilitate the reversal of the image and reducing agents restrain it, the effect of hypobromous acid was determined. The hypobromous acid was first made by the repeated action of bromine water upon mercuric oxide, but the excessive amounts of free bromine present with the acid caused us to adopt a much better method. An aqueous solution of silver nitrate was just saturated with pure bromine water, and the straw-coloured liquid thus produced was distilled *in vacuo* and the distillate collected under ice water as the hypobromous acid decomposes very readily above 30°C. Such a solution contains approximately 0.74 per cent. of hypobromous acid; and in all the work the container was surrounded with ice, for even at the temperature of the dark room there was present on the surface a little free bromine. Solutions of this acid of varying concentrations were used as a bath for the plate previous to exposure with the following results:—

| No. | Concentration of the above acid (previous to developing). | | Time of exposure behind given plate min. | Distance cm. | Result. |
|---|---|---|---|---|---|
| | Parts of acid. | Parts of water. | | | |
| 1 | — | — | 4 | 25 | positive |
| 2 | 1 | 100 | 3 | 25 | negative |
| 3 | 1 | 50 | 3 | 25 | negative |
| 4 | 1 | 10 | 3 | 25 | negative |
| 5 | 1 | 1 | 3 | 25 | negative |
| 6 | 5 | 1 | 3 | 25 | negative |

In all the above experiments there was no action that would tend to show the production of a positive image, while in No. 2 there was but a slight difference between the appearance of this and a plate without previous immersion developed under the same conditions. As the concentration of the hypobromous acid was increased, there was a decided elimination of fog, and for No. 4 an ideal negative was produced of remarkable clearness. The presence of the hypobromous acid then may be considered not to facilitate reversal. Its effect is to produce clearness, or, in other words, for the amateur we have an ideal solution for the production of a transparency were it not for the ease of its decomposition, and hence the disagreeable manner of manipulation. If oxidising agents did facilitate the reversal of the image we should expect that it would be caused, in the case of a long exposure, by the reaction of the moisture in the film with the bromine liberated forming hypobromous acid, which in turn would act as a vigorous oxidising agent on the normal image. From the above data it appears that this is not the case.

The action of oxidising agents was studied additionally by determining the effect of permanganate solutions, because Abney[3] seemed to think that reversals took place much more rapidly with potassium permanganate, potassium dichromate, etc. A solution of 0.1 gram of potassium permanganate in 200 grams of water was made, and the following results were obtained by an immersion in this bath with subsequent exposure and development.

| No. | Concentration. | | Time of exposure min. | Distance cm. | Result. |
|---|---|---|---|---|---|
| | Potass permanganate gms. | Water gms. | | | |
| 1 | 0.0 | — | 4 | 25 | positive |
| 2 | 0 1 | 200 | 3 | 25 | clear negative |
| 3 | 0.1 | 200 | 3 | 25 | clear negative |
| 4 | 0.1 | 200 | 3½ | 25 | clear negative |
| 5 | 0.0 | — | 3½ | 25 | fogged negative |
| 6 | 0.1 | 200 | 4 | 25 | clear negative |
| 7 | 0.1 | 200 | 5 | 25 | transparent positive |

After exposure the plates were developed in one part of solution A, one part of solution B of the stock developer, with an equal volume of water. In many of the films there were irregular stains due to the drying of the permanganate in spots, so that an ideal image was not obtained in all cases. The effect could be easily detected, however, and in all cases there was an appreciable and distinct clearing effect over the corresponding unimmersed plate. This is shown by the difference between Nos. 4 and 5. As all the above plates were from the same original emulsion, and as each variable was kept very closely under control, there is no evidence of an oxidising agent producing solarisation. In fact, the difference between Nos. 1 and 6 for the same degree of exposure seems rather startling at first; but when we consider that there is a certain amount of absorption of light by the wet permanganate it will account for the seemingly checked reversal, and is therefore not an important point. More work was carried out with another concentration of permanganate with the same results as previously obtained.

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[1] Bancroft: Jour. Phys. Chem., 13, 1, 181, 269 (1909).

[2] Ibid., 13, 456 (1909).

[3] Phil. Mag. (5), 10, 204 (1880).

| No. | Concentration. | | Time of exposure min. | Distance cm. | Result. |
|---|---|---|---|---|---|
| | Potass permanganate gms. | Water gms. | | | |
| 1 | 0.0 | — | 4 | 25 | positive |
| 2 | 0.1 | 100 | 3 | 25 | negative |
| 3 | 0.1 | 100 | 3½ | 25 | clear negative |
| 4 | 0.1 | 100 | 4 | 25 | negative |
| 5 | 0 0 | — | 3½ | 25 | fogged negative |
| 6 | 0.1 | 100 | 4½ | 25 | fine positive |

With this concentration more trouble with stain was encountered than in the previous case, but it was always noticeable that the oxidising agent had a tendency to improve the tone of the plate rather than to produce solarisation. Even when a positive was obtained by increased exposure, as in No. 7 of the first case or No. 6 of the last, a much better positive was obtained than in the absence of permanganate. This is just the point to the whole experiment, for what Abney really meant was that for an equivalent exposure with immersion a much better positive is obtained than without such a treatment. We obtained lantern slides of Nos. 1 and 7 and Nos. 1 and 6, which showed this effect remarkably well. The explanation for this action has been previously given in presenting the theory, but it is perfectly evident that, in the absence of an oxidising agent, a sufficiently long exposure produces an intense reversed image and a feeble normal image on the plate after development. The presence of an oxidising agent retards the formation of the last image, and we have the production of a better positive because our final product is the difference that we see between the two images on the same plate. From these data, taken with closely checked plates under practically constant conditions, we find that the oxybromide theory is of no avail, and must conclude that the latent normal image consists at least in the beginning of silver and bromine only.

The various stages which a plate undergoes in the study of solarisation are well known, but if different exposures are developed for a given time under the same conditions the following hypothetical curve will show very clearly the effect of light.

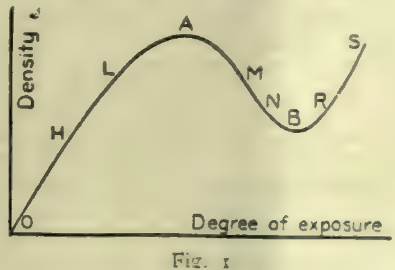

Fig. 1

Although this is by no means a quantitative curve, still it is verified by the following qualitative data:—

| No. | Length of exposure. | Distance from Welsbach cm. | Type. |
|---|---|---|---|
| 1 | 10 sec. | 25 | negative (O—H) |
| 2 | 3½ min. | 25 | partial (L—M) |
| 3 | 4½ min. | 25 | positive (M—N) |
| 4 | 30 min. | 25 | negative (R—S) |

From this point we see that there are three distinct stages, and that the final one is a negative, which is undoubtedly due to the reduction of silver bromide to metallic silver by light. It was interesting to watch the continuous action. In No. 1 we have the degree of exposure of the high lights as point H greater than those of the shadows, and the resulting picture is a negative. For No. 2 we have the degree of exposure of the high lights at a point similar to M, with the shadows back on L, and we get a partial negative, with the high lights reversed and the shadows as negatives. As we continue from M to N we have our high lights as the lightest and a positive results. With a very long exposure we obtain a negative of reduced silver. The above diagram then enables one to picture clearly the progress of the three distinct stages, and although the above was obtained with exposures behind the standard lantern slide with the stock developer, still with increased exposure the same results may be obtained using a camera and photographing landscapes.

It is a well-known fact that by using a weak developer the best results may be obtained with over-exposed plates, or the other method is to restrain the developer by means of bromide, etc. To account for this it has been pointed out[4] that the rate of development of an unexposed plate is nearly zero, that there are definite rates of development for exposed plates, and that the developability of the final silver is zero. We must consequently have at least one maximum rate of development for a specific developer as the composition of the halide changes under composed silver bromide to silver. The action of a developer of two different concentrations was studied in the light of the diagram as previously shown. The ordinates are rates of development, while the degree of exposure was plotted as abscissas. It was also considered that we might use the variation of undecomposed silver bromide to silver as abscissas, since beyond a certain point the degree of reduction of the silver bromide is some direct function of the intensity of the light by the time of exposure. In the following experiments the stock developer was used, and its applications to Fig. 2 will be easily seen.

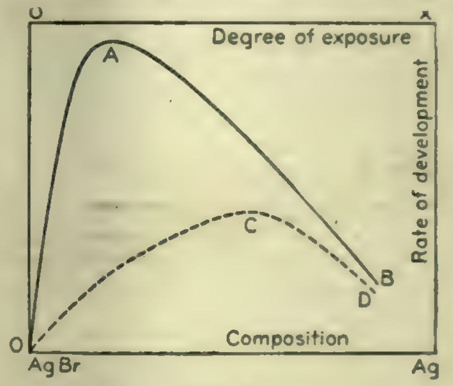

Fig. 2.

| No. | Time of exposure min. | Distance from Weisbach cm. | Developer parts. | | | Type. |
|---|---|---|---|---|---|---|
| | | | A | B | $H_2O$ | |
| 1 | 4 | 25 | 1 | 1 | 2 | positive |
| 2 | 4 | 25 | 1 | 1 | 5 | poor positive |
| 3 | 4 | 25 | 1 | 1 | 10 | mongrel |
| 4 | 4 | 25 | 1 | 1 | 20 | negative |
| 5 | 6 | 25 | 1 | 1 | 20 | fog |
| 6 | 7 | 25 | 1 | 1 | 20 | positive |

From this it was seen that for a normal developer we have a higher rate of development than for a dilute one, and hence we are able to get a fair negative with a developer represented by OCD for the same exposure which would produce a poor image with the developer as represented by OAB. From the above we see that for two exposures of the same time Nos. 1 and 4 we can obtain a positive by normal development, but a negative by weak development. The reversal of an image is therefore checked by the use of a weak or restrained developer. For exposures below 3½ minutes in the above work we are along the curve OA, and for all grades of developers obtain negatives, but of varying degree of contrast according as the degree of dilution is decreased. For the normal developer an exposure beyond A produces a positive, as No. 1 shows. It requires nearly twice the length of time to produce a positive in the weak developer, as is indicated by No. 6. In the above work all of the plates were developed for the same length of time, in order to obtain comparable results. The important point is to notice that we have confirmed the fact that point C lies to the right of A, as seen from Nos. 1 and 4, but as to the relative positions of the curves beyond C we have not even qualitative data, as this is unimportant at present.

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[4] Bancroft: Jour. Phys. Chem., 13,457 (1909)

By first defining a depolariser as any substance which eliminates bromine in this particular work, we may prevent the confusion arising from the term reducing agent. After we had observed the manner in which oxidising agents behaved under carefully checked conditions it seemed that the next logical step was to determine the real and not apparent effect of the depolariser, especially in the light of the previous theory and diagrams.

Abney found that on bathing a plate before exposure in a 5 per cent. solution of sodium nitrite for a long time the reversal was prevented even for long exposures. Such a fact was cited in favour of the oxybromide theory. Likewise Lüppo-Cramer confirmed Abney's results by dipping dry plates for about two minutes in a 2 per cent. solution of sodium nitrite and then drying before making the exposure. Subsequently development after an exposure along with check plates which solarised presented only dense negatives. Lüppo-Cramer also noted that such a plate as the above changed more in a few minutes' exposure to diffused daylight than the unwashed check plates after several hours' exposure to direct sunlight. In this work apparently a 2 per cent. solution of sodium nitrite was employed; however, after drying, the real concentration was not known. From such a result Abney believed the cause of the forcing back of solarisation was the reducing action of the nitrite, while Lüppo-Cramer maintains, from the analogous action of sulphites, etc., that there is an acceleration in the splitting off of bromine from the silver bromide, and that really we do not know why these act in such a manner. However, Eder found that even the traces of silver nitrate which cling to the silver bromide after long washing with water cause a very dense plate, masking the reversal, but a short treatment with nitric acid (sp. gr. 1.20) after the exposure caused a positive to appear. Reversal has taken place in reality, but has been masked, which is quite an important point.

With a knowledge of such actions and the previous theory, solutions of sodium nitrite were made up and the plates given a preliminary bath in those solutions. Development in the regular stock developer brought out the following:—

| No. | Conc. Soda Nitrite. | Parts of Water. | Time of immersion. | Exposure. | Type. |
|---|---|---|---|---|---|
| 1 | 1 | 50 | 2 min. | 30 sec. | dense neg. |
| 2 | 1 | 75 | 2 min. | 1 min. | dense neg. |
| 3 | 1 | 100 | 2 min. | 1 min. | dense neg. |
| 4 | 1 | 150 | 2 min. | 1 min. | dense neg. |
| 5 | 1 | 200 | 2 min. | 50 sec. | blurred neg. |
| 6 | 1 | 300 | 2 min. | 50 sec. | positive. |
| 7 | 1 | 100 | rapid with slight washing in water. | 5 min. | fogged pos. |
| 8 | 0 | wet plate | none. | 1½ min. | positive |
| 9 | 1 | 300 | 2 min. | 1½ min. | partial |

We see from this that it is possible to obtain positives even in the presence of nitrites with the type of plates and the source of light as used, and with development in the regular stock solution. Previous failure, then, was due to the presence of too high a concentration of nitrite in the film, to too long an immersion, or, as was undoubtedly more often the case, to too long an exposure for the given concentration of nitrite. Under such conditions only the third stage as previously given was obtained, and the rapid deduction to metallic silver in the presence of nitrite by too long an exposure always produces this third stage of the second negative.

After such observations, a continued study was made on the action of depolarisers in the form of a hydroquinone developer present in the film during exposure. The solution, for the sake of uniformity, was some of the regular stock developer. With very rapid work and after many unsuccessful trials the following data were obtained, which could be easily checked after proper experience in the manipulation and haste required for such work.

| No. | Concentration of developer. | | | Length of exposure. min. | Distance from Welsbach. cm. | Type. |
|---|---|---|---|---|---|---|
| | Sol. A | Sol. B. | $H_2O$ | | | |
| 1 | 1 | 1 | 10 | 1 | 125 | negative |
| 2 | 1 | 1 | 10 | 1½ | 125 | partial |
| 3 | 1 | 1 | 10 | 2 | 125 | partial |
| 4 | 1 | 1 | 10 | 3 | 125 | positive |
| 5 | 1 | 1 | 10 | 3½ | 125 | partial |
| 6 | 1 | 1 | 10 | 4 | 125 | negative |
| 7 | 1 | 1 | 10 | 5 | 125 | negative |

In order to avoid the intense fog 10 cc. of a 10 per cent. solution of potassium bromide was added to 50 cc. of the above developer. The final development was accomplished by means of the following stock developer:—

Solution A, 20 cc.; solution B, 40 cc.; 20 per cent. potass. bromide, 2 cc.

With these plates there was a great tendency for blotches and irregular development, but this eliminated to a slight extent by shaking the plate vigorously before exposure and by taking care to obtain a surface of contact with the copy plate as free from air bubbles as possible. In all cases the plates were far from perfect, yet the principle could be shown very clearly, and here again we find the depolariser acting as a masking agent rather than a restrainer of solarisation. The general result obtained by one unfamiliar with the work would be a negative due to over-exposure and the excess of silver thus deposited. It was interesting to note that with No. 3, where the change occurs from the first stage to the second, or from a negative to a positive, the high lights were even in this case the first to be transparent, and fall in line with the requirements of Fig. 1. However, when the transformation from the second to the third stages, or from positive to final negative occurs, the high lights were the first to reverse again, and No. 4 was utilised as a slide showing the shadows as still positive while the high lights were a dense negative. Since the time for a solarisation is so greatly decreased this last mongrel effect might be in some cases produced, and taken as the next stage towards solarisation. By noticing the high lights we have an indication as to what portion of the course we are on, and the time of exposure may be controlled accordingly. In a way the above coincides with the general belief as stated by Trevelli[5] that the stronger the developer and the longer one develops, the more marked is the solarisation. By regulating the development one can prevent or cause the appearance of solarisation[6], and we have increased the rate of the reaction when we have a depolariser present.

## Positives from Short Exposures.

According to our previous statements the presence of a developer or depolariser in the film during exposure to light should make the image appear as a negative or positive, depending upon the concentration of the developer and the degree of exposure. It should therefore be possible by carefully controlling the concentration of the developer within the film to obtain a positive upon very rapid exposures. In this case, as with the previous ones, the same copy lantern slide was used with a Welsbach burner as the source of light, but for considerable time only bad negatives or fogged plates were obtained after a short exposure. It also required extreme haste between the time of exposure and the time of final development; however, after using every possible precaution and by freeing the contact surfaces from air blotches the following results were obtained, although the plates were somewhat spotted:—

| No. | Time of exposure secs. | Developer in film. | | | Type. |
|---|---|---|---|---|---|
| | | Sol. A. | Sol. B. | $H_2O$ | |
| 1 | 1—2 | [illegible] | 5 | 100 | negative |
| 2 | 1—2 | 5 | 10 | 100 | negative |
| 3 | 1—2 | 10 | 10 | 100 | negative |
| 4 | 1—2 | 15 | 10 | 100 | partial |
| 5 | 1—2 | 15 | 15 | 100 | positive |
| 6 | 1—2 | 20 | 20 | 100 | negative |
| 7 | 1—2 | 25 | 25 | 100 | negative |

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[5] Bancroft: "Jour. Phys. Chem.," 13, 297 (1909).

Eder's "Handbuch der Photographie," 3, I, 114 (1902).

The plates were immersed in the solution of the given developer for two minutes and then the surface was made more uniform by sweeping the plate through the air for a few seconds. The final development was accomplished by means of the same developer as used in the previous cases. By varying the composition of the developer and the degree of exposure it was found possible to obtain nearly any degree of thickness in the film. However, this method has but narrow and limited application, inasmuch as it requires too hasty a development after the exposure and too long a practice to obtain just the right conditions for any specified developer. The slightest over-development causes disastrous results. It was interesting, however, to see how much acquaintance with a process has to do with its successful operation, as well as the importance of changing only one variable at a time.

With the above data some interior work was attempted in order to see to what extent an exposure could be decreased for a negative, and hence apply the theory practically. For the illumination of a room on a cloudy day at about four o'clock in the afternoon of the month of May it was found that with the correct concentration of a developer in a film the time for exposure could be decreased appreciably as the following plates indicated. The results depended upon the personal observation rather than upon density measurements.

| No. | Time of exposure sec. | Developer in film. | | | Type. |
|---|---|---|---|---|---|
| | | Sol. A. | Sol. B. | $H_2O$ | |
| 1 | 1 | 1 | 1 | 0 | good negative |
| 2 | 12 | — | none | — | good negative |
| 3 | 1 | — | none | — | thin negative |
| 4 | 1 | 1 | 1 | 5 | thin negative |
| 5 | 1 | 2 | 2 | 0 | clouded plate |

The above was taken with the camera mentioned previously. Although the illumination was rather poor, still there was present an appreciable amount of the blue rays. This might be of some value in certain cases where interiors were of such a nature as would demand a short exposure in the presence of weak illumination. This method also requires the proximity of a dark room in which to accomplish development immediately, so it has decided limitations. For final development the same stock solution was used as before. The annoying feature of such a process appeared when its application in place of flashlight powders was undertaken, for with the artificial illumination by electric light only badly fogged plates could be obtained when a depolariser was present in the film during exposure. At first this was accounted for by postulating: that the quality of the light was entirely different than in the previous experiment, so that there was a noted absence of the blue and active rays of light; or that the action of the light was so slow as to allow the developer to reduce as rapidly as the light sensation acted, and hence cause a uniform fog. We must confess that there are as yet important factors, such as the quality of the light, etc., entering into this work. Until such effects have been studied, the data as given above cannot be considered absolute. More must also be known about the decomposition of the silver bromide by the first traces of light before the visible image is developed in order to solve this method of sensitising. However, from these preliminary observations for certain qualities of lights it would seem that we have again the confirmation of the previously stated theory.

G. A. Perley.

*(To be continued.)*

* * *

Presentation to Mr. F. A. Bridge.—At a "Vicar's at home," on June 15, at St. Bartholomew's, Dalston Lane, a very interesting part of the proceedings was the presentation to Mr. F. A. Bridge of a testimonial and souvenir in the form of a gold fountain pen, as a token of the high esteem in which he is held by the vicar, wardens, and congregation of St. Bartholomew's Church.

The Vicar, after a few remarks on topics of general interest, read the testimonial, which expressed the gratitude of all for the kindly, courteous, and helpful way in which Mr. Bridge had carried out his duties as "people's warden" during the past two years, a position which he only relinquished a short time since on leaving the neighbourhood, much to the regret of all concerned.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between June 6 to June 10:—

View Finders.—No. 13,454. View finders for the automatic focussing of photographic cameras. John Talman.

Apparatus.—No. 13,517. Machine for forming designs by means of photography. Henry Conrad Heide, for the Print Weave Company, United States.

Cinematographs.—No. 13,564. Method of, and apparatus for, advancing cinematographic films in a continuous manner. Carlo Rossi.

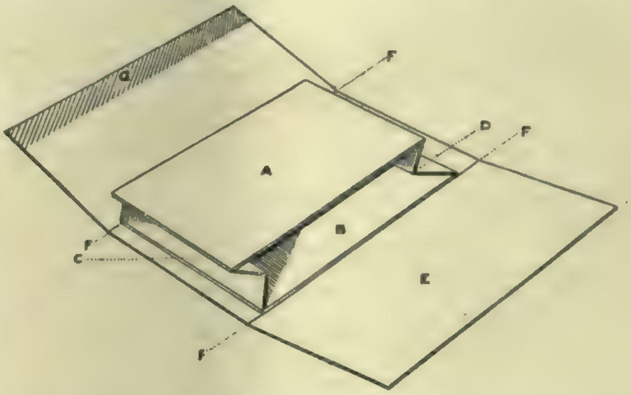
Cinematographs.—No. 13,818. Production and displayal of cinematographic and other pictures. Harry Hamilton Moon and Henry James Price Wood.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Photograph Wrappers.—No. 14,347, 1910 (June 14, 1910). The invention consists of an improvement in postal wrappers for photographers. The wrapper is composed of two square-shaped cards—A and B—of the same size, facing one another. Along the right and left hand side (in the longest way of the cards) a strip of paper, C and D, is stuck between the cards in such a way so as to be able to raise one card from the other, thus forming a gusset at each side. By raising the top card, space is obtained for placing articles, and by lowering it will clamp the contents between the two cards, thus making ready for wrapping up.

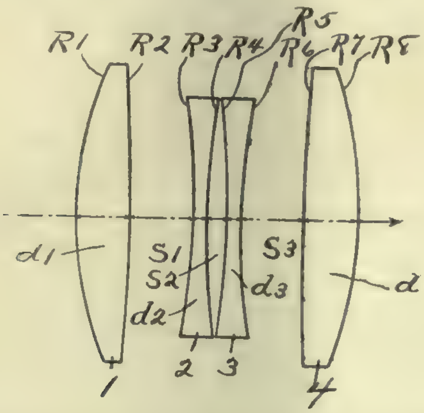


A band of paper, E, long and wide enough to fold and cover the whole, is stuck on the bottom card, F. The drawing shows crease in the paper-covering indicating the folds. At one of the ends the paper is gummed (G). Louis Canesi, 366, City Road, London, E.C.

Anastigmatic Lenses.—No. 22,400, 1910 (September 27, 1910). This invention relates to a compound lens consisting of several spaced negative and positive lenses of substantially the same refractive index and having curvatures of such a character that the inner negative lenses are symmetrical with respect to each other, and the outer positive lenses unsymmetrical with respect to each other, thereby forming a compound lens, which, as a whole, is unsymmetrical.

This invention embodies not only a new construction but a new principle of construction, in that the three chief aberrations—spherical aberration, coma, and astigmatism—are expressed as functions of the eight radii of curvature, thus making an exact algebraic solution for the radii necessary to bring these aberrations to zero. Such a solution would not be possible without first securing flatness of field by using glass all of the same index and gaining nearly all the focal power by separation.

An object of this invention is to provide an optical instrument which can be easily manufactured and easily corrected, and which will have none of the defects, such as spherical and chromatic aberration, astigmatism, convexity of the image, coma, distortion or the like, and which will also take a picture with great sharpness and detail.



The objective is preferably composed of four lenses, 1, 2, 3, and 4, spaced apart from each other so as to form positive air meniscuses. The radii and thicknesses of the various lenses and their distances apart are set forth in the following table, in which R represents the radii, *d* the thickness of the lens, and *s* the thickness of the space between the lenses, the successive characteristics being individualised by sub-script numerals ascending from left to right :—

| Radius of Curvature in Millimetres. | | Glass Constants. | Thicknesses of Lenses and Air Spaces in Millimetres. | |
|---|---|---|---|---|
| | | Positive. | | |
| $R_1$ | 46.2 | D 1.6110 | $d_1$ | 7.0 |
| $R_2$ | 241.6 | G 1.6253 | $s_1$ | 8.0 |
| | | Negative. | | |
| $R_3$ | 92.25 | D 1.6095 | $d_2$ | 2.0 |
| $R_4$ | 95.4 | G 1.6253 | $s_2$ | 2.4 |
| | | Negative. | | |
| $R_5$ | 95.4 | D 1.6095 | $d_3$ | 2.0 |
| $R_6$ | 92.25 | G 1.6253 | $s_3$ | 8.0 |
| | | Positive. | | |
| $R_7$ | 417.5 | D 1.6110 | $d_4$ | 6.5 |
| $R_8$ | 52.70 | G 1.6253 | | |

It is to be noted in the above table that the G-line for all of the lenses has the same refractive index, and inasmuch as this G-line is very important in photographic lenses, it is of vital interest to this case. The diameters of the lenses 1 and 4 are preferably 37 millimetres, and the diameters of the lenses 2 and 3 are preferably 30 millimetres.

The two outer lenses 1 and 4, which are similar but not identical, and are preferably unsymmetrical with respect to each other, are positive or collecting lenses. Better corrections can thus be obtained, the cone of light entering the lens being of much smaller angle than that leaving in ordinary photography. No symmetrical lens can give images of very high quality. The lenses 2 and 3 are symmetrical with respect to each other, and are negative or dispersing lenses—that is to say, these two middle lenses 2 and 3 are identical in curvature, glass, and thickness, but face in opposite directions.

It is to be noted that the separation of the first and second lenses 1 and 2 is 8.0 millimetres, the same as the separation of the third and fourth lenses 3 and 4, while the separation of the lenses 2 and 3 is 2.4 millimetres—just sufficient for the insertion of the stop.

The focal power of the combination is obtained almost entirely by separating the component lenses—that is, if the component lenses were shoved together the combination would have a focal length so great as to be useless. For example, in the lens of equivalent focal length 160, the focal lengths of the components are respectively +62, −75, −75, and +75. The separations are 8, 2, 4, and 8. If the lenses were shoved together the equivalent focal length would be 356. The purpose of these first two principles of construction is to secure a flat image field without restricting the curvatures of the lens surfaces, leaving these free to take care of the five remaining aberrations.

There is thus formed an objective with the first and last lenses positive and unsymmetrical, and the second and third lenses negative and symmetrical, and all the four component lenses of which are made of glass of the same index of refraction, 1.6253, and in which the three chief aberrations—spherical aberration, coma, and astigmatism—are functions of the eight radii of curvature. Christopher Graf, 312, Steinway Avenue, Long Island City, Borough of Queens, New York, U.S.A.

**Combined View-finder and Telemeter.**—No. 10,740, 1910 (May 2, 1910). The view-finder consists of a reflector A (preferably the size of the plate or film used), arranged on a camera at an angle of 45°, as shown in the drawings, with a small hole B through its centre, and a certain mark C on its surface, which is arrived at by multiplying the vertical dimensions (in this case the length) of the reflector A by the sine of its angle with the axis of the lens; also an adjustable pointer D to be set by hand to a scale E which corresponds to the different focal lengths and the centre of the lens field, arranged by means of a strut K and a cramp L on the lens mount, vertically above the lens, and approximately at a distance in front of the mark C on the reflector A equal to the focal length of the lens.

The range-finder or telemeter is used in conjunction with the position- and view-finder, and consists of a tangent scale F, or a scale representing linear measurement, in the form of a quadrant which is suspended from the side of the camera and free to swing in a plane at right angles to the lens field unless held by a small cramp G; also an index pointer H, free to swing from the same centre in the same plane along the scale when released by a separate cramp I.

To find the range of an object to be photographed, the adjustable pointer D is set in any convenient position easily viewed—for example, as shown in the dotted position J—and is to remain in the same position till the range is found; the operator stands erect and holds the camera so that he can observe a fixed point on the object through the small hole B through the reflector A; the camera is tilted till the adjustable pointer D is brought into register with his eye; the tangent scale F is then cramped. The operator now releases the index pointer H and places the camera at his feet, and again brings the same fixed point on the object, the adjustable pointer D, and the small hole B into register on the surface of the reflector A, the index pointer H is now cramped; by reading off the tangent scale F at the index pointer H and multiplying this reading by the height the camera is held from the ground, he obtains the distance of the object from him.

In operating to find the position, the lens may now be focussed and the adjustable pointer D must be set to correspond to that focus, then the reflections of the adjustable pointer D and the centre of the view to be photographed are brought into register on the mark C, which now corresponds with the centre of the plate. Stanley Hutchinson, Rock Lodge, Roker, Sunderland.

**Cinematograph Mechanism.**—No. 10,779, 1910 (May 2, 1910). The invention consists in a device adapted to permit of unlimited masking control of a cinematograph film with or without means for simultaneously adjusting the time-relationship of the shutter. It consists in the employment, in a cinematograph film-driving train, of a device whereby the amount of film intermittently moved and the celerity of each movement can be diminished or increased without altering the relative number of revolutions of the film-driving and film-feeding sprockets. The mechanism requires the drawings and text of the full specification for its description. Cecil Milton Hepworth, 17, Cecil Court, Charing Cross, London, W.C.

**Separable Reflex Camera.**—No. 14,011, 1910 (June 9, 1910). According to the present invention, a part of the camera provided with a hinged mirror and its focussing-screen is made separate from the other part, and is capable of insertion between the lens and the plate or film carrier.

A convenient method of carrying this invention into effect comprises a front box-like part *a* having an open back and a hinged baseboard $a^1$, on which is adapted to slide—when let down into proper position—the usual travelling base $a^2$ and front $a^3$. The front $a^3$ and body part *a* are fitted with the usual bellows $a^4$. The front board $a^1$ is capable as usual of assuming either a horizontal position at right angles to the body part, or an inclined position as illustrated, for use particularly with a wide-angle lens. The usual slide and rack mechanism for focussing purposes is provided, and the lens-carrying front $a^3$ may be provided with rising, falling, swinging, and cross movements, as in the usual type of camera.

A separate second box-like body *b*, having an open back and front, is provided, to carry the horizontal focussing screen $b^1$, swing mirror $b^2$, and operating mechanism, such as indicated by dotted lines, and a third part or frame is provided essentially with means $c^1$ for carrying a focussing-screen and a film or plate carrier.

These three parts *a*, *b*, and *c* are also furnished with any suitable means so that they may be interchangeably locked together in a light-tight manner; that is to say, the front body or lens part *a* may be locked together with the "reflex" part *b*, to which is locked the back or film or plate carrier *c*, so forming a "reflex" camera, or the front or lens part *a* may be locked directly to the back or film or plate carrier part *c*, so forming an ordinary camera in which an extremely short-focus lens may be employed. The top of the part *c* is provided with an opening $c^3$ to allow of the use of the mirror $b^2$ when said part is locked to the part *b* for use as a reflex camera, and when said part is attached directly to the front part the said opening is closed by means of a hinged flap $a^6$ carried on the top part of *a*.

A suitable method of coupling the parts together is to extend the walls in a reduced manner at the back of the front part *a*, which said reduced part $a^5$ is adapted to enter a suitably shaped extension $b^3$ on the front of the second part *b*, the back part $b^4$ of which is also reduced in a like manner to the front part $a^5$, adapting it to enter a suitably shaped recess $c^2$ on the front of the back part, and any suitable latches or locking means are provided to secure the parts to each other, such as those illustrated, comprising spring-controlled latches *d* carried by the parts *a* and *b* adapted to engage pins $d^1$ carried within suitable recesses $d^2$ formed in the front part $b^3$ of the part *b* and the front part of the part *c*. A bolt *e*, free to slide in a suitable recess in the part *b* is connected with the pivoted lever carrying the usual operating knob $e^1$ of the mirror-releasing mechanism. The mirror pivot *g* is geared with the shaft *h*, so that the mirror is set by turning the winding-piece *i*, and when released is raised by a spring on the shaft *h*. The one end of the bolt *e* is adapted to contact with the end of a slide or bolt carried on the front part *a* and adapted to be operated by the knob $e^2$. This slide or bolt, when the part *a* is connected directly with the part *c*, is adapted to directly operate the shutter mechanism, and when the part *b* is interposed between the parts *a* and *c* it also operates the shutter mechanism by communicating motion through the bolt *e*. Charles George Lumley Cator, 64, Upper Berkeley Street, London, W.

DARK-SLIDES WITH EXPOSURE INDICATORS.—No. 20,756, 1910 (May 4, 1911).—The dark slide *a* with sliding shutter *b* is fitted with the ordinary spring *c* for holding fast the sensitised plate in the correct position for exposure. To the spring *c* is attached either at one end as in Fig. 1, or in the middle, an indicator plate *f* which through a sight-hole *g* (covered with red) shows a letter E or the word "charged" after a plate is inserted and the spring displaced from its first position and straightened out.

In this manner it is easy to ascertain from the exterior whether the magazine is filled or not.

In order to know whether the charged plate has been exposed the shutter *b* has at the side a small recess *d*. On the back of the dark-slide there is a lever *h*. The lever *h* has a pin *m* which is moved along a slot in the edge of the dark-slide. By removing the shutter *b* for exposing the sensitised plate the lever *h* is taken along, through its pin *m*, by the edge of the recess *d*, and then remains in the upper position, because the curved lower portion of the shutter passes without moving back the pin (see Fig. 1).

After filling the dark-slide and inserting the shutter, the lever *h* is lowered by hand, by moving the button *p* at the back of the dark-slide into the lower position shown in Fig. 1, and it remains there until again lifting the shutter *b*. In drawing the shutter out, the lever *h* is moved by its pin *m* and brings the letter B in sight, thus indicating that the plate has been exposed. Hans Reiser, Burghausen Ober Bayern, Germany.

COLOUR PRINTS ON PAPER.—No. 21,410, 1910 (September 14, 1909).—The invention is an improvement upon the known process of making coloured photographic prints which consists in providing a transparent support with a sensitised gelatine coating, exposing said coating through the support to light passing through the negative and finally developing and dyeing the exposed coating to produce a coloured relief print graduated in thickness.

By the improved process, previous difficulties and defects are substantially eliminated, the time and labour involved greatly reduced, and the quality of the results improved.

These improvements have been effected by substituting a film of amyl-acetate collodion, or other heat-resisting and non-absorbing collodion, for the transparent support, and a coating of bichromated fish-glue for the bichromated gelatine coating.

The amyl-acetate collodion film, containing no camphor, is unaffected by water and by any temperature to which the prints are ever legitimately subjected. So much bichromate salt may be incorporated with the fish-glue without crystallisation in drying, by heat, that a much thinner coating is sufficient for the purpose than when gelatine is employed. Furthermore, the development may be made in cold water and completed in a few seconds, the dyeing and finishing of the colour-print may be effected in a few minutes, and the relief of the print is so slight as to be practically unobjectionable.

In carrying out the invention, the procedure is as follows:—

Clean sheets of glass are levelled and evenly coated with liquid amyl acetate collodion, and allowed to dry spontaneously, though afterwards they may be subjected to heat to drive off the last traces of volatile matter.

The collodion surface of the plates is flowed with a solution of fish-glue and bichromate of ammonia, spread with a photo-engraver's whirler, and dried by moderate heat while whirling.

The collodion film, bearing the bichromated fish-glue coating, is stripped from the glass and exposed to daylight or suitable substitute such as the electric arc, under the photographic negative, with the collodion side next to the negative.

By immersion in running water, the print is fully developed in a few seconds, those portions of the sensitised coating which have not been acted upon by the light, being dissolved and washed away, leaving a relief print, which may be at once immersed in an aqueous dye bath, such as a solution of "neptune green" for a peacock blue print, a mixture of rhodamine and eosine for a crimson pink print, and brilliant yellow for a yellow print. They are sufficiently coloured in a few seconds, or in a few minutes at most, then rinsed off and hung up to dry. The print is in low relief because of the very thin sensitised coating in which it was produced.

The finished film-colour prints may be superposed in register between glasses to make trichromatic lantern-slides or window-transparencies, or upon paper or other opaque white surface to make composite colour prints to be viewed by reflected light.

In making trichromatic lantern-slides it is best to reduce the number of reflecting surfaces by cementing two of the film-colour prints to glass, doing this by laying them down on a wet gelatine-coated glass and putting them aside to dry overnight or longer if necessary. They are then placed face to face, and the third print, on collodion film, held in place between them, with the images all brought into register, after which they are bound together to complete the lantern-slide.

To superpose the colour-prints on paper, we may paste one face down on the paper, and after it has become perfectly dry by evaporation through the paper, the collodion film may be pulled off, leaving the print on the paper. The second print may then be pasted down on the first one, and when perfectly dry its collodion film pulled off. The third print may then be put down in the same way. In this process it is better to use freshly-made starch paste than gelatine or glue, using a liberal amount and pressing out the surplus by means of a squeegee. Care should be taken to use a suitable paste and to thoroughly dry the print before attempting to pull off the collodion film. It is evident that the collodion film might be dissolved off with amyl acetate instead of pulling it off, but the best and quickest method is to pull it off. Prints intended for application to paper should be coloured up in a much weaker dye bath than is desirable for making lantern-slides and window transparencies.

The amyl acetate collodion may be made by dissolving soluble gun-cotton in amyl acetate, but substantially such a collodion of suitable consistency is a trade product, known as "albaline."

It should be understood that while a substitute for amyl acetate collodion may be used which is an equivalent therefor, within the scope of the invention, such, for instance, as an amyl acetate acetone collodion, the substitute should be heat-resisting and should not be so porous as to absorb colour in the dye baths, and for this reason the ordinary alcohol-ether collodion is unsuitable.

The coating is also, by preference, one which is soluble in cold water, and which, in solution, is of uniform character, and so fluid that it can be evenly distributed over the surface of its support by means of a whirler, and dried by the application of heat.

Instead of washing the print before immersion in the dye bath, the latter may also serve as a washing bath, the dye bath being so inexpensive that the limit to its period of usefulness, due to its gradual saturation with the fish-glue, need not be considered. Frederick Eugene Ives, Woodcliffe and Hudson, New Jersey, U.S.A.

PRINT TRIMMERS.—No. 12,567, 1910 (May 24, 1910).—The invention relates to improvements in print trimmers, as described in previous patents, Nos. 2,922, 1899, 20,922, 1907, and 22,735, 1909, "B.J.," April 1, 1910, p. 251.

The object of the present invention is to keep the rear cutting blade and cutting bar in contact during the operation of trimming by means of a wire coil spring working either on a spindle affixed direct to the base frame or on a spindle in a metal bracket, and so affixed to the base frame in such a way that the compression arm of such spring shall engage with the rear cutting blade and keep the same in working contact with the cutting bar on the cutting board during the whole cut or trim.

Also, to bevel that part of the cutting board covered by the cutting bar to such an extent that the cutting bar when affixed has a slight downward angle towards the rear cutting blade whereby the print or material to be trimmed when placed in position for trimming will automatically engage with the cutting bar and will not have to be pushed up to the cutting bar by the action of the rear cutting blade before the cut commences.

The various parts are marked and lettered as follows:—A, base frame; B, cutting board; D, coil wire compression spring fixed in metal bracket; E, cutting bar; G, rear cutting blade; R, compression arm of said spring; U, stop on rear cutting blade; P, metal bracket for spring; Q, holes in metal bracket; S, paper or material being trimmed. John Merrett, Hill Street, Trowbridge.

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The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

FILM-CHANGING DEVICE.—No. 11,611. Device for removing changed films from the packets. Tonnies.

## New Trade Names.

THE STEREO-PANORAM CAMERA.—An eight-page circular, illustrative of the Leroy camera, allowing of the production both of stereoscopic and panoramic (wide-angle) negatives, has been issued by Messrs. Ross, Ltd., and may be obtained on application to their factory, Clapham Common, London, S.W., or to either of the West-End branches, 31, Cockspur Street, and 111, New Bond Street, W.

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### FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Entries close September 1 (Britain), August 21 (foreign). Sec., Robert M. Cocks, London Salon of Photography, 5A, Pall Mall East, London, S.W.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Development with Pyro.

IN an article in the June number of the "Sinclair Sign-Post," the writer expresses his preference for pyro as a "perfect" developer:— "From two to four grains of 'pyro' are sufficient to develop a quarter-plate, and one ounce (437½ grains) quickly made up into solution will last most amateurs a considerable time. The formula we recommend for all-round work is as follows:—

No. 1 Stock Solution, Label Pyro 10 per Cent.

| | |
|---|---|
| Pyrogallic acid | 1 oz. |
| Potass metabisulphite | 1 oz. |
| Water, to | 10 ozs. |

No 2 Solution, Label Soda 20 per Cent.

| | |
|---|---|
| Soda carbonate | 4 ozs. |
| Soda sulphite | 4 ozs. |
| Water, to | 20 ozs. |

"A simple plan is to get 10-ounce and 20-ounce bottles, and use them for the purpose of the developer. The quantities given are not quite correct scientifically, but they are practically, which is the main thing. An extra bottle may be had containing:—

| | |
|---|---|
| Potassium bromide | 1 oz. |
| Water, to | 10 ozs. |

but bromide is rarely necessary with good plates.

"To develop, we usually take 1½ ozs. water, add from 40 to 80 minims of 10 per cent. 'pyro' solution, and make up 2 ozs. with 20 per cent. soda solution. We say from 40 to 80 minims of 'pyro' solution, because some plates, such as a Wratten Panchromatic, will not require more than 40, while an Ilford Monarch will usually want 80 if a strong and brilliant negative is required. Temperature is important, so far as time of development is concerned, and a temperature of about 65 deg. F. is advisable. In very hot weather, or with plates prone to fog, from 10 to 20 minims of bromide 10 per cent. may be added to the 2 ounces of the mixed developer. The time of development must, to a great extent, be left to the worker, and is 'according to taste.' In such a developer as we have described for bromide printing or enlarging, three to four minutes would be ample, for negatives for platinotype about eight minutes will be necessary."

### Matt Surfaces on Glossy P.O.P.

A very effective matt surface can be given to glossy P.O.P. (says a writer in "Photography and Focus" for June 13)—quite distinct in character from the surface of prints on matt P.O.P.—by drying the prints in contact with matt celluloid. The celluloid requires no preparation beyond seeing that it is quite clean, and the prints, which, after the washing is complete, should be placed in the usual formalin bath to harden them, are squeegeed down upon it without being previously dried. The drying process, which is advisable when the prints are to have a glossy surface, is omitted in this case, as it is apt to lead to the presence of shiny patches on the prints, showing where their surface has not been in perfect contact with the celluloid. The squeegeeing is easy, as the prints do not slip about, as they do on a shiny surface. Care must be taken to avoid any speck of grit between the print and the celluloid, and no attempt must be made to strip the prints until they are thoroughly dry.

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MR. W. H. SCAGELL, the Irish representative of Messrs. Houghtons, Ltd., was married on June 2 to Miss Bessie Martin, of Crosshills, Glasgow. The ceremony took place at Queen's Park Church, Glasgow, and at the conclusion of the service a reception was held at the Dixon Halls, Crosshills, where about 100 guests were invited. After the usual toasts, during which a series of congratulatory telegrams were read and photographs taken by Messrs. Turnbull, the happy couple departed for Ireland, where the honeymoon is being spent.

## New Books.

Trade Names in the German Trade.—Our contemporary, "Photographische Industrie," has just issued a third edition of the useful directory of trade names of photographic appliances and materials upon the German market. The directory is evidently most comprehensive, and will be found to include a great number of names representing British manufactures. The names follow an alphabetical arrangement, appended to each being the name of the firm making or marketing the goods, and the nature of the goods themselves. The list is published from the office of "Photographische Industrie," 31, Blücherstrasse, Berlin, S, 61.

Using Small Negatives.—A little manual of thirty-eight pages has just been published by Messrs. Charles Mendel, 118, Rue d'Assas, Paris, under the title of "Utilisation des Petits Clichés." The author, M. J. Carteron, deals with the manipulation of the small negatives, such as 9 x 6 cm., which are now so largely used. He describes developing formulæ which have been found most advisable in this class of work, and deals with the making of enlargements and lantern-slides. The price of the volume is 60 c.

Balloon Photography.—Under the title, "La Photographie en Ballon," Messrs. Charles Mendel have published a recent paper on practical balloon photography by M. G. A. Guyer, contributed to the "Bulletin" of the Swiss Aero Club. The author deals with the choice of apparatus, the use of light-filters in aerial photography, and with methods of working.

## New Apparatus, &c.

**"Professional" Embosser. Sold by John J. Griffin and Sons, Ltd., Kingsway, London, W.C.**

A useful appliance for the professional photographer, and one, too, of which the amateur can make effective use in enhancing the appearance of his prints, is supplied under this name by Messrs. Griffin. It consists of a board of hard wood, provided with a series of indentations running the length of the board. By means of a hard vulcanite disc, mounted in a handle so that it can rotate, the various forms of the grooves in the board can be imparted to thinnish mounts. These latter may be made either face or back down on the board, so that the changes may be rung on an embossed or sunk effect. For improving the appearance of prints of odd sizes and for devising experimentally new styles in plainly decorated mounts, the embosser should be of considerable service. The price is 5s.

Legal Notices.—A Receiving Order has been made in the case of Frederick George Clapham, dealer in photographic apparatus, etc., the Medical Hall, West Street, Farnham, Surrey.

## Meetings of Societies.

### MEETINGS OF SOCIETIES FOR NEXT WEEK.

Saturday, June 24.

South Suburban Photographic Society. Excursion to Chaldon and Caterham.
Southport Photographic Society. Excursion to Tarleton.
Southampton Camera Club. Outing to Christchurch.
Balham Camera Club. Outing to Shoreham (Kent).

Sunday, June 25.

West Surrey Photographic Society. Outing, Epsom to Leatherhead.

Monday, June 26.

Bradford Photographic Society. "Backyard Photography."
Southampton Camera Club. "Developers—Old and New." Discussion opened by W. R. Olney.

Tuesday, June 27.

Hackney Photographic Society. "Exposure—Calculations and Variations." A. E. Morton.
Manchester Amateur Photographic Society. Postal Club Exhibition.

Wednesday, June 28.

Worthing Camera Club. Excursion to Amberley and Stoke.
North Middlesex Photographic Society. "Salted Papers and Platinotype." C. Wille.
Sale Photographic Society. Monthly Meeting.
Borough Polytechnic Photographic Society. "Making and Testing Filters for Orthochromatic Work." J. McIntosh.
Manchester Amateur Photographic Society. Ramble to Dane Valley.
Southport Photographic Society. Excursion to Sandhills.
West Surrey Photographic Society. "Toning Bromide Prints." Mr. Collyns.
Balham Camera Club. "Home Portraiture." R.P.S. Lecture and Slides.

Thursday, June 29.

London and Provincial Photographic Association. Annual General Meeting.
Handsworth Photographic Society. Exhibition of Excursion and other Prints.

## Commercial & Legal Intelligence.

The public examination of Samuel Hodge, photographer, etc., Spohr House, Fore Street, Sidmouth, Devonshire, took place at Exeter on June 14. Debtor said he began business in December, 1908, with a capital of £5 only. His net profits for three years had been £140, while his living expenses had been more than this, viz., 30s. a week. His deficiency was £77. He first discovered that he was insolvent about a month before he filed his petition. The examination was concluded.

## News and Notes.

Coronation Postcards.—In reference to the recent inquiry of "Sepia" for postcards bearing a portrait of the King on the face, Mr. C. C. Mather writes: "I have much pleasure in sending herewith a card with a portrait of his Majesty. This card was supplied to me by Messrs. Rajar, Ltd., Mobberley, Cheshire, and can be obtained, I believe, in P.O.P. gaslight and bromide. The little information herein contained may possibly be of use to your correspondent."

The Late Mrs. Bridge.—In accordance with a resolution passed by the Council of the Photographic Convention of the United Kingdom in November last, there has just been unveiled in Abney Park Cemetery a handsome monument to the late Mrs. F. A. Bridge. It consists of a panelled Celtic cross about 8ft. high, in pure Sicilian marble, and bears the following inscription:—

In loving memory of
Mary,
The devoted wife of Frederick Albert Bridge,
who passed away October 14, 1910.
"I wait till my change come. Thou shalt call and I will answer thee."—Job, xiv., v., 14, 15.
Erected by the Photographic Convention of the United Kingdom
to the memory of a dear friend.

The work has been carried out by a sub-committee consisting of Messrs. Chas. Winter, G. W. Atkins, and Walter F. Potter, the latter acting as Hon. Sec. and Treasurer of the special fund formed for the purpose.

Daylight Effects with Mercury-Vapour.—According to the "Electrical Times" of June 15 an installation avoiding the unnatural illumination of the mercury tubes has been installed in an American cinematograph film-making theatre. The equipment comprised six frames, eight 48in. mercury-vapour tubes, in two rows of three, placed parallel to the front of the stage at an angle of 30 deg., 12ft. from the floor. On the left-hand side of the stage were four more frames at a similar height and at an angle of 43 deg. Then, 2ft. from the floor, directly under these, were four other frames of eight tubes each, but in a vertical position. These frames, however, were provided with special diffusers, as a well-diffused light has been found to be highly essential. Just above these frames, and in a line parallel to them, eight arc lamps were suspended in pairs, being fitted with diffusers. In front of the stage, 7ft. above the ground, was suspended a row of twelve arc lamps, also fitted with diffusers. By this means an average illumination of 500 candles-foot was obtained. This installation covered an area of 324ft., so that the useful light flux reached 62,000 lumens. The results attained on this stage have proved highly satisfactory. Film developing has become a standardised process, and extremely uniform results have been attained.

Wellington and Ward at the Turin Exhibition.—The reproduction shown below is from a photograph of the stand which Messrs. Wellington and Ward will install in the British Section of the Turin Exhibition. The stand has been constructed entirely in the Wellington factory, Elstree, from designs by Mr. George Walton. Inside is a collection of pictures made on the "Wellington" papers from negatives on the "Wellington" plates. The pictures are intended to illustrate photography in its different applications and demonstrate the quality of the "Wellington" products.

An Historical Collection of Photography.—A recent issue of the "Albany Evening Journal" (U.S.A.) publishes an article in which it is stated that Mr. Thomas W. Smillie, official photographer of the Smithsonian Institution, is preparing an exhibit of photographs which, when completed, will illustrate the development of the photographic art from the time of the discovery of the first process by the Frenchman, Niepce, in 1824, to the present time.

This exhibition will consist of a collection of 5,000 photographs, which, when gathered, will be placed on exhibition either in the National Museum or the Smithsonian Institution in Washington. The collection will be catalogued and each photograph described in detail, as to the process used and the inventor thereof.

Mr. Smillie has been connected with the Smithsonian Institution since 1868, and is regarded as one of the foremost photographers in the country. He is the inventor of the process of photographing on wood, and is the author of many books and pamphlets.

Perhaps the most interesting pictures of the collection are two Daguerreotypes of Daguerre himself. One of the photographs of the inventor of the most perfect method of photography was loaned for the collection by Mrs. Vallentine, of New York, while the other was presented to the National Museum by Mr. Cramer, of St. Louis. He paid $500 for it.

The exhibit will contain over 300 "models" pertaining to photography, transferred from the United States patent office permanently, as this exhibit is to be one of the perpetual features of the Smithsonian displays.

The national museum exhibit of photography will be of unusual interest, not only to photographers, but to the public in general. It will be the only one of its kind in the world, and unusual care is being used in preparing, cataloguing, and indexing. Among the pictures shown, one series will illustrate the development of colour photography, and another will show the beginning and progress of spectrum photography.

Mr. Smillie has made photography his life work, and the results obtained by him are the fruit of years of thought, experiment, and endeavour. He is a recognised authority and expert in his line. When the exhibit is put on view, the Smithsonian Institution will have a collection and history of photography from its inception which it would be practically impossible to duplicate.

Reduction of Silver Chloride.—Mr. Edgar H. Booth, Sydney University, writes to the "Chemical News" of June 16 as follows:—In the laboratory it is often required to make small quantities of silver nitrate from a silver coin, or from a small accumulation of silver chloride. The method of reducing the silver chloride by fusing with sodium carbonate in a fire-clay pot is long and inconvenient; the method of reduction by contact is also tedious, and, moreover, is often rendered unsuitable for analytical work owing to impurities in the zinc. The best laboratory method would then seem to be the well-known one of reduction by boiling with sugar and potassium hydrate. This, however, is also at fault, owing to the fact that the first portion of metallic silver produced forms a protective coating around the unaltered silver chloride, thus preventing complete reduction. It was thought that this difficulty in the last method could be entirely obviated, or at least minimised, by first dissolving the silver chloride in ammonium hydrate, before boiling with the sugar and potassium hydrate.

This idea was tested, and was found to work so well in practice that the filtrate from the reduced silver was entirely free from the metal, and, moreover, after thoroughly washing the reduced silver with hot water, the metal dissolved completely in dilute nitric acid, leaving no trace of silver chloride. The reduced silver formed a non-adherent mirror on the sides of the vessel, which broke into a more or less spongy mass on continued boiling. The above idea led to another method of reduction to metallic silver.

Remembering that hydrogen peroxide reduces silver oxide to metallic silver, it was thought probable that the addition of sodium peroxide to a cold ammonia solution of silver chloride would lead more conveniently to the same result. This was found to be the case when actually tried, and no silver could be detected in the filtrate, provided a sufficiency of sodium peroxide were used. Instead of adding the peroxide to the solution, it was found to be a saving of the former if the solution were poured gradually on it, less peroxide being required for a given quantity of solution.

When action had apparently ceased, the mixture was boiled diluted, and filtered. The silver formed by this method also dissolved completely in dilute nitric acid, being free from all traces of the choride.

These suggestions are put forward as quick and convenient methods of converting small quantities of silver chloride into metallic silver, from which the nitrate may be obtained.

Whilst no claim is laid to this being novel, I have seen no previous mention of these methods, so they may be found useful.

The Action of Euphorbia Peplus Juice on Photographic Plates.—H. G. Chapman and J. M. Petrie, of the University of Sydney, write to "Nature":—"In August, 1909, our attention was directed to certain properties of surgical importance possessed by the milky juice of *Euphorbia peplus*, a spurge naturalised in this colony. During the examination of the milky juice or latex, we exposed during two days in the dark a highly sensitive photographic plate some millimetres above a sheet of glass, on which we had dried a few drops of the juice. On development, a sharp image of the dried juice appeared on the plate. We propose to describe briefly a few results from the many experiments since made to determine the conditions and nature of the action on the photographic plate.

"Thirty drops of the juice were spread on a sheet of glass as the letters EUPHORBIA, and the glass dried in an oven at 100 deg. C. for two hours. A sharply defined image of the letters was produced on development of a photographic plate (speed 325), placed 5 mm. above the dried juice after an exposure of forty-eight hours or longer. The density of the images increased with greater length of exposure, with thicker films of dried juice, and with less distance between the plate and the film. The edges of the images were well defined, as if focussed on the photographic plate. No image appeared with short exposures of twenty-four to forty-eight hours unless the films were very thick. With long exposures, up to thirty days, the images were more dense, but showed a little diffusion at the edges of the letters. When a distance of 15 mm. separated the photographic plate from the film, the plate was unaffected. Action on the plate diminished rapidly when the distance from the film exceeded 5 mm. The dried juice retained the action with undiminished effect for months. When the dried films were heated from 150 deg. C. to 200 deg. C. they charred, but did not lose their action on the plate. As the temperature was raised further the power of affecting the plates was diminished, as the ash of the juice became white. Even the white ash had a slight action on the plate (potassium salts).

"The introduction of screens between the film and the photographic plate led to notable results. The interposition of tissue paper slightly delayed the action on the photographic plate. Thick black paper (0.13 mm.) employed by the makers to enclose photographic plates, and found by us impenetrable to the rays from phosphorescent salts, served only to delay the time in which an image of a definite intensity was formed. The effect was produced through a celluloid screen (0.07 mm.) and through paraffined paper (0.03 mm.). We were unable to obtain screens of glass or mica less than 0.02 mm. in thickness. These screens completely protected the plates from action by the film. Screens of aluminium foil 0.002 mm. thick made no alteration in the intensity of the image of the film. When eight layers of the aluminium foil were superimposed, the density of the image on the plate was increased.

"Examination of the dried material with a zinc sulphide screen failed to show any scintillations due to the $\alpha$ particles.

"When a rapid current of dried air was passed obliquely between the plate and the film at the rate of 330 cc. per minute the image of the letters on the film was sharp and well defined. The distance between the plate and the film was 0.5 mm. Any gas or emanation would have been carried along by the current, especially any gas having such a slow action on a photographic plate."

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

### CHARGES FOR COMMERCIAL PHOTOGRAPHY.

To the Editors.

Gentlemen,—Re letter under above heading in your last issue, can things be as bad as here in Kidderminster (worse is impossible)? A fortnight ago the representative of a large local printing firm called and asked the price for six postcards of Kidderminster, with the right to reproduce as Christmas cards. I quoted 2s. each, and the price was scoffed at as being absurd. He was seen again later on, and told us he had been to another studio here, and had made a selection of views, with reproduction rights, at 6d. each. That is 2d. each for the print and 4d. each reproduction fee.

I have also seen groups printed on 12 x 10 cards, right up to the edge of print (whether contact or enlarged I know not), of school and fancy dress groups, and have been told the customers paid 6d. each for them from the same studio mentioned above. I should like to know if such charges are possible, and if anyone could be supposed to live on them.—Yours faithfully, H. Esury.

Kidderminster.

June 18, 1911.

### ASSISTANTS IN FRANCE.

To the Editors.

Gentlemen,—Will you allow me a few brief remarks in reference to your correspondent's letter in your issue dated June 16, page 466? Mr. Wilson is undoubtedly right when he concludes that good middle-class workers are very scarce over here, but I do not agree that living and clothing are cheaper than in England. As a matter of fact, they are about double in most medium size towns, and salaries are about equal, as in England. Conditions of working have changed since twelve years ago. English materials, plates, and papers are extensively used, and phenolic developers have replaced pyro. Albumen is very little used; collodion papers of the "Van Bosch" type have long since replaced it.—Yours truly,

Excelsior.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood *& Co., 24, Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**Photographs Registered:**

F. W. Vidler, 48, Langler Road, Willesden, London, N.W.—*Two photographs of the late Mr. Joseph Chamberlain.*

J. Hughes, 27, Bell Street, Ludgershall, Wilts. *Photograph of Sergeant Currell, of the 18th Hussars, mounted on drum horse.*

**Devonian.**—We doubt if you could obtain a patent for the method. A very similar method was used for obtaining photographs with natural backgrounds by exposure through a transparency in the camera. Even if you did obtain a patent, it would be very difficult for you to prevent other photographers from making for themselves the transparencies and masks which you presumably offer for sale.

**Printer.**—We have reason to say that there has been no change in the paper. We think it is likely that yellowness may be caused by too short a time of development. Owing to its harder surface the paper requires a longer time than the ordinary variety. This might account for odd prints which are yellow, but if the trouble is general, we recommend you to apply to the manufacturers, at the works, stating as precisely as possible your working.

**Old Negatives.**—On taking over a business at the above address I find there are numbers of negatives which have been in stock for years. Could you tell me whether I should be wise to keep them, or could I dispose of them for a reasonable sum as old glass?—Tintype.

It entirely depends on the subjects, but usually nowadays, in the cheaper classes of business, there is a much smaller demand for re-orders. One or two firms purchase old negatives—*e.g.*, Charles Bowen, 58, Grove Road, Holloway, London, N.; A. Smith, 72, Norton Street, Hockley, Birmingham; and J. and S. Smith, 6, Lennox Road, Finsbury Park, London, N.

**Enlarging Optics.**—Will you be good enough to inform me as to the best method of calculating the position of the light in relation to the condenser in an enlarging lantern, assuming that the distance from the projecting lens to the negative and the focal length of the condenser are known, or can you refer me to any published table relating to this subject?—W. Edwards.

The position cannot be calculated owing to the fact that much depends on the relative correction of condenser and projecting lens and also on the diameter of the latter. Further than this, the focal length of a condenser is a very indefinite quantity owing to the amount of aberration present. The only method of arriving at the correct adjustment is by trial.

Charge for Evidential Photographs.—Having taken some photographs to be produced as evidence in law proceedings at the forthcoming Quarter Sessions, and having also to attend personally under subpœna to testify that same are bonâ-fide, I should esteem it a favour if you will kindly say what would be a fair price to charge. The photographs required are three 12 x 10 bromide enlargements (unretouched), and one 15 in. panorama enlargement. Each of these enlargements is from a separate half-plate negative, and I have also to produce contact prints from each negative. The work has required two journeys into the country, a distance of three miles each way, and the day on which the trial takes place is market day, when one reasonably expects extra customers at the studio. Not having done this class of work previously, I shall be glad of any information that will assist me in drawing up my account.—Subpœna.

We should say charges might reasonably be as follows :—Taking four negatives and making the enlargement from each, at 10s. 6d., £2 2s. ; contact prints, 4s. ; attendance at court £1 1s. ; total, £3 7s.

Right to Reproduce.—Will you please tell me, through your "Answers" column, if I can prevent reproduction of a photograph under the following circumstances :—I arranged to take a large group of an association. It had to be taken on the street. After I had been at the trouble of making all arrangements, getting forms, tables, rugs, etc., and arranging the group, two press photographers appeared on the scene, and secured snapshots of it. As the group was taken by me solely on the chance of selling copies, and without any guarantee, the copyright of my own photograph, I suppose, belongs to me; but have I any copyright in the group itself by which I could prevent the reproduction of photographs taken by others of the group which I had arranged? I may say that I am registering my photograph at once. It seems rather unfair if a chance snapshotter may step in and rob a photographer of a source of profit on his work which he has counted upon. Your opinion will much oblige.—Copyright.

You have no means of restraining the use of the other negatives. It is unfair, and a thing which for the credit of professional photography we should like to see discontinued. But there is no legal remedy.

Printing From Wet Negatives.—I do a cheap class of trade of the while-you-wait order, using a thin sheet of celluloid between the wet negative and the printing paper. I suppose this method is used by most while-you-wait studios, and now I want to ask you about a point which a friend of mine has told me of. He has shown me the paragraph in a back volume of the "British Journal," page 816, 1908 volume, where it is said that a patent has been granted to this method of covering a negative with celluloid while printing it wet. My friend would have me believe that, in view of this patent, I cannot go on using this method without rendering myself liable for prosecution. I should like to have your advice on the matter. If a patent has been granted I suppose the person has the power to stop people from using his method.—Stripling.

We think you need have no cause for alarm. In granting a patent the authorities search only among previous patent specifications, but a patent cannot be said to be fully valid unless it has been contested in the Courts. Supposing an action was taken, which we think in the highest degree unlikely. the people would have to prove that the method was unknown prior to their application for patent, and in view of the fact that reference is made to four previous patents, we should think that this would be rather difficult to do.

Lens, etc.—I desire to buy one lens (which must be reasonable in price) for general purposes, such as half-plate groups, busts, three-quarter, and full-figure portraits. Studio 27ft. long, camera 30in. extension. Can satisfactory portraits as above be obtained by using one general lens, and what class and focal length would suit? I have a vignetter as sketch. How would this be fixed to camera stand, and does the vignetter fit on to clips as dotted lines, and are the vignetters bought specially or can same be cut as required? Could you tell me the maker's name?—Novice.

As your work will probably consist chiefly of portraits, your best course is to get a large aperture portrait type of lens, of 11 to 12 inches focus. This will do for full-length figures as well as for busts, but it is too long a focus for groups in your studio. For this you require a good R.R. or anastigmat of about 8 or 9 inches. Look up the particulars of lenses contained in the Almanac, 1911, on pages named under "Lenses," p. 1343. 2. Apparently the long bar is fixed to the side of camera baseboard. Any vignetting card may be cut. We are sorry we are unable to identify the apparatus.

Toning P.O.P.—1. I am at present using a combined bath for P.O.P. post-cards, for trade purposes, which tones in five minutes, by which time it is hardly likely that they are fixed. I, therefore, immerse in a 10 per cent. hypo bath, but I find that this alters the tone considerably. Can you suggest a better method, please? 2. According to Namias ("B.J.A.," 1910, p. 548) an acid bath prior to toning is desirable; but, surely, this is against most of the recognised authorities? If fixing before toning is preferable, how long should the washing between fixing and toning be? 3. If prints are toned in a combined bath, and then fixed in a hypo bath, would they be as permanent as if toned and fixed fully in a combined bath in one operation?—Combined.

1. Without knowing either the composition of your toning-bath or the way in which the tone is affected by the hypo, it is impossible for us to advise. 2. Boric acid as advised by Namias is a very feeble acid, but we think with you it is better to use plain hypo for fixing before toning. The objection to this process is the degree of over-printing which is necessary. The wash between fixing and toning need not be long—about five or ten minutes. 3. Quite, we should say.

Intensification.—1. Why is it that when intensifying with mercury-ammonia I often find the ammonia does not thoroughly blacken the image after bleaching? Looking on the glass side of negative by reflected light, it is seen that though a portion of the negative is blackened, yet some of it still looks white, even after prolonged immersion in the ammonia. 2. What colour should P.O.P. be toned for reproduction work—red or blue?—W. F. B.

1. Similar effects are sometimes seen in negatives without any intensification. Are you sure that intensification is the cause? In any case the white deposit is probably only silver in a different physical form, but we can see no reason why the intensification process should produce it. If you use mercury and ammonia you are always liable to produce strange effects. We suggest that you would do well to drop this unsatisfactory intensifier, and use the chromium method instead. See details in Almanac. 2. It should not matter at all, but engravers are perhaps most used to the ordinary P.O.P. purplish tone.

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TERMS OF SUBSCRIPTION, Post Free

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THE BRITISH

JOURNAL OF PHOTOGRAPHY.

No. 2669. Vol. LVIII. FRIDAY, JUNE 30, 1911. Price Twopence.

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## SUMMARY.

Several points which deserve consideration in the design of studio cameras are dealt with in an article on page 490.

The tests which can be made in the shop in order to judge of the quality of a spotting brush are described in a paragraph on page 489.

A method of using the spotting brush for fine work may be recommended to those who find difficulty in this branch of retouching. (P. 490.)

The advantages of the hand-camera over the stand type of instrument in photographing processions etc., were strongly in evidence in the recent Coronation festivities. A convenient form of finder, for use when a stand-camera has to be used, can be readily made by the photographer himself. (P. 490.)

A series of photographs by Mr. A. H. Blake illustrative of picturesque and historical aspects of London are now on view at the Camera Club. (P. 500.)

Sunday closing, the prospects of assistants, charges for commercial photgraphy, etc., are the subjects of letters from correspondents. (P. 505.)

Sentences of thirty days' and three weeks' imprisonment were inflicted in two cases of fraudulent canvassing last week. (P. 503.)

Methods of producing colour prints, a process of printing with iron, silver, and mercury salts figure, with other topics, under "Patents of the Week." (P. 500.)

Dr. C. E. K. Mees and Mr. C. Welborne Piper, in a recent paper before the Royal Photographic Society, have described a preliminary series of investigations of fogging by developers. In the case of the hydroquinone developer they have found that variation of the proportion of alkali does not affect fog. They have worked out a formula containing only hydroquinone and caustic soda, which, when development is complete within a moderate time, works without fog or stain. (P. 491.)

The record of experiments into the cause of reversal of negatives and into the production of positives direct by short exposure is continued in the paper by Mr. G. A. Perley. (P. 496.)

Safe-lights for the dark-room of various descriptions are further considered in the article by Dr. A. P. H. Trivelli. (P. 494.)

## EX CATHEDRA.

**The Technical Section at the R.P.S.** An article in "Country Life" on the technical section at the R.P.S. Exhibition seems to have roused the opponents of this new section to a state of enthusiasm, but without any reason that we can see. The pictorial and the technical sections were, it is true, very much alike, but this resemblance was due to the disappointing character of the work submitted as technical. A great deal of it was by no means of good technical quality, and though the exhibition contained much work that could be classed as of high photographic technique, this was, unfortunately, in evidence mainly in the trade and scientific sections, and not very noticeable in the one particular section where it was most wanted. It is contended by some writers that all good pictorial photography is also good technical photography. This is, however, only a statement of what should be, not of what is, for it is obviously absurd to contend that good technique is much in evidence in any collection of modern pictorial photography. The real lesson to be learnt from the comparative failure of the R.P.S. technical section is that modern amateur photographers are lamentably deficient in technique. If we want to collect good technical photographs, we must trust mainly to the professional photographer, for exhibiting amateurs as a body have apparently become so demoralised by the slovenly methods that too often pass muster in pictorial work that they are either unable to distinguish good technique from bad, or else too lazy to attempt it. There is perhaps no task in photography so difficult as that of producing a result that is technically a perfect representation of the subject. To the average worker it means an expenditure of many plates and much time and money. The difficulty is increased by resorting to enlargement; hence, as a rule, direct large negatives have to be produced, which, of course, means that a series of failures represents considerable expense. Some pictorialists, of course, take just as much trouble as this, and, as the result, their work is of high quality, but they are exceptional, and not typical of the general run of pictorial workers. We trust that the R.P.S. will make it its business to encourage good technical work as far as possible, and that it will not be induced to drop the technical section in future exhibitions simply because it has not been a great success at the start.

* * *

**Brushes for Spotting.** Many find it difficult to spot a negative well owing mainly to want of skill in the use of the brush, which skill is not easily acquired. Yet another reason for trouble is the use of bad brushes. The average brush used for spotting is a cheap, very inefficient tool, that the artist would reject at the first trial, and, indeed, it is not at all unlikely that it has already been rejected by some artist or other, for such gentlemen are particular in the matter of brushes, and reject five out of every six offered to them. The brush for spotting must stand the artists' test or it is useless, and this test is a simple one, easily applied. When purchasing, go to an artist's colourman, and when the brushes are produced ask for a glass of water. There is nothing unusual in this request, and the glass is always kept handy for the use of purchasers. In fact, the request for it is taken by the dealer as a sign that the customer knows his business, while failure to ask for it implies the opposite. Dip the brush in the water and, thoroughly wetted, draw the brush sharply over the edge of the glass, so as to drain the water out of it. If all the hairs spring back to a sharp point, the brush is worth further test, but if they do not it is useless and can safely be rejected. If a point is formed, examine it carefully to see that the point does not consist of a single hair, but of a number of hairs all meeting. If this test is passed apply the final one, which is designed to test the manner in which the brush retains its point. To do this work the brush about on the thumbnail as if writing with it, twisting it at the same time in all directions. If the point is retained on removing the brush from the nail, one can rely on its being a good tool, worth a fair price, and worth taking care of. For fine work a fairly large brush is always best, and it is a great mistake to select small ones. For spotting we prefer a red sable brush of the large goose or small swan sizes, costing something from a shilling to half a crown, and also we prefer a long quill mount to the heavier albata and ebony handle. Such a brush kept with reasonable care will last a lifetime, and so forms a very good investment.

* * *

**A Tip for Spotting.** We have already said that many fail in spotting owing to a lack of skill with the brush. That means usually that they do not know how to charge a brush or how to keep it charged, nor yet how to keep it sharply pointed while full of colour. The unskilled may, however, take a tip from the Easterns, who use brushes for writing and for the very finest and most minute line work. These brushes are generally of large size, bigger than the small swan we have recommended, and very perfectly made and formed. To facilitate their use they are dipped in gum, which is allowed to harden, and when dry the extreme point only is moistened with ink and used for writing. For spotting we have tried a very similar dodge and with considerable success. A brush was dipped in "Photopake" and allowed to harden. When dry, the point only was moistened with water, and spotting proceeded with at once. If "Photopake" is not favoured, any pigment can be used if mixed with weak gum water. The point will harden when the brush dries, so we must be careful to see that the point is properly formed when putting the brush away after use. It is not advisable to use quill-mounted brushes in this fashion, but albata mounts (not tin on any account) should be selected if this mode of working is to be adopted.

* * *

**Ceremonial Photography.** One cannot fail to notice the way in which many of the older photographers handicap themselves by persisting in the use of large cameras when photographing processions and other public functions. It is no uncommon thing to find a photographer struggling with a 12 x 10 camera, which he has fixed in what he thought a suitable position, for which he has paid heavily, while another man is getting much more saleable pictures with a half-plate folding camera, with which he can follow his objects, often getting three chances to the fixed camera man's one. Even the reflex camera has fallen into comparative disuse for this class of work because it requires more room to work and in half-plate size is too heavy. We can only attribute this unwillingness of photographers to use a hand camera to a distrust of focussing by scale, and also to the very inefficient finders which are usually supplied even with good cameras. It is difficult to persuade the old-style photographer that even with his 12 x 10 camera he could mark two or three positions on his baseboard, which would give him as sharp pictures as he would get by his separate focussings. With the finder the case is different. It is difficult, if not impossible, to form a correct idea of what will be obtained in the negative by relying upon the finder alone. Practised hand-camera workers get to know the capabilities of their lenses so well that the finder is simply used to centre the image and to see what amount of view is included, and even this, with the direct-vision finders now so generally used, requires an intimate knowledge of the particular instrument in use.

* * *

**A Finder for Large Cameras.** A large ground glass finder, so arranged as to give a half scale view, with the screen well shaded, will do much to remove the prejudice against hand cameras, as it presents the image in a way to which the stand photographer is accustomed. A pattern which we can recommend is a tube of light wood or even cloth-covered cardboard, equal in length to the camera when extended. In the front of this is fitted a spectacle lens, with a focal length exactly half that of the camera lens. About half-way up the tube is placed a ground glass, the linear dimensions of which are half those of the plate, e.g., for a half-plate, 3¼ x 2⅜. The remainder of the tube serves as a hood to shade the ground glass, which, by the way, should have the rough side outwards to avoid reflection. The spectacle lens should only be stopped down enough to give good enough definition to enable the picture to be composed, illumination being more important than sharpness. Most camera makers would construct such a finder to order, but probably most photographers would prefer to utilise a dull day by making one for their own use. Such a finder is even useful upon the 12 x 10 camera itself, as a more accurate idea of position can thereby be obtained than by the usual method of looking over or under the camera.

## THE STUDIO CAMERA.

Although undoubtedly the most important article in a studio, the camera has not received the attention of photographers to anything like the extent that might reasonably be expected. It is a remarkable fact that very few camera makers or designers have ever exposed a plate, even on a landscape, and we have never met one who has ever taken a portrait in the studio. It may be thought that the camera maker works to designs supplied or suggested by the portraitists, but it is not so; the latter only grumbles at the camera he has until he purchases a new one, which in its turn becomes a worry, and so on *ad nauseam.* Were it a question of lens construction it would not be remarkable to find the photographer doing his best with the instrument ready to his hand, but in the case of the camera the conditions are different. No mathematical training or long mechanical experience is necessary to enable a man to devise an improvement in working a dark-slide or adjusting the swing back. Nor is it because the present models are so excellent that there is little room for improvement; for, although studio cameras are more complicated than of yore, they are certainly not more convenient. There is a fashion now to have one huge camera in the studio, often for plates 24 x 20, and to use this for all sizes down to carte de visite. This may seem a very reasonable thing to do, but in most cases it means a vast amount of unnecessary work and a loss of time in manipulating so cumbrous a machine. This was impressed upon us the other day when visiting a busy studio, where the place of honour was occupied by a splendid 15 x 12 camera, with all the latest movements to both body and stand. Pushed on one side was an old form whole-plate studio camera with winch screw focussing and repeating back for two half-plates. In reply to our remark that the old camera had been put out of service, the proprietor assured us that this was by no means the case; that, in fact, when sitters were plentiful, it was preferred, as it could be manipulated in half the time required by the new one. Watching him operate, we soon discovered the reason for this difference; it lay in the fact that when using the larger camera with a cabinet lens the ground glass was nearly eighteen inches from the back of the camera base, the focussing handle and swing back adjustments having to be worked while bending over, so as to be able to use a focussing magnifier upon the screen, while the focussing arrangement was clumsy, consisting of a lever with a more or less jerky movement, which necessitated several trials before the maximum sharpness could be obtained. One curious omission on the part of camera-makers is that of any provision for shading the lens or supporting the focussing cloth. This has always to be done, usually in a very amateurish way, by the photographer himself. It would seem such a simple thing to provide, as a part of the permanent fittings of the camera, the necessary clamps and framework for this purpose, yet it is rarely, if ever, done. The dark-slides or plate-carriers also need more attention than is generally given to them. One point in particular which must be disturbing to the sitter is the noise made by most of the blind shutters fitted to the larger slides. Just as the sitter has settled down for the picture there comes a ripping, tearing noise, which is enough to spoil the sweetest expression ever made to order. A plentiful supply of French chalk dusted in between the slips composing the blind, as well as in the grooves, will go a long way towards securing a perfectly silent action. The position of the focussing screen might be altered with advantage in many cameras. The screen is too often made to fold on to the top of the camera, so that it is impossible to use a frame for the focussing cloth. It is much better to open to the side, or better still to slide to the side, so that the dark slide pushes it out of position when inserted. There is rarely any provision made for carrying masks to show the trimming size of the picture on the ground glass; pencil lines are of little use, and one sees the poor operator struggling with a loose cardboard gauge, which he either holds in his hand or fixes in a precarious way with pins. Many cameras, we are aware, have masks in the frame, but this is only to protect the second half of the plate when using the repeating back.

In conclusion, our recent observations lead us to believe that the single camera for all purposes is somewhat inconvenient, and that a second and smaller camera for work up to cabinet or whole-plate size conduces greatly to speed and comfort in working; secondly, that there is a want of co-operation or exchange of ideas between camera-users and camera-makers, which should not be allowed to continue. We suggest that at the next P.P.A. Congress an evening should be devoted to this important subject, and we might well follow the example of our American brethren and give a premium or medal to the member bringing the best suggestion for improvement. We have said nothing about the lens shutter, as this deserves an article to itself.

# THE FOGGING POWER OF DEVELOPERS.

[The following is the text of the paper recently read before the Royal Photographic Society by Dr. C. E. Kenneth Mees and Mr. C. Welborne Piper. The authors describe it as the general introduction to the subject which they are at present investigating in the research laboratories of Messrs. Wratten and Wainwright. Their results at present will be found to relate chiefly to the hydroquinone developer.—EDS. "B.J."]

In a paper delivered before this Society last November ("Photo. Journ.," Dec., 1910) it was explained that the condition which determined the susceptibility of a silver bromide grain to attack by a developer was the presence of a nucleus, which nucleus was usually supplied by a substance formed by the action of light. Since, once reduction of a grain has begun, it proceeds until the grain is completely developed, the point which has to be considered is only the beginning of reduction.

A developer then is a chemical substance which can start the deposition of silver in a silver bromide grain which has been exposed to light, that is, which can reduce the "latent image" substance (whatever that may be) to silver.

For our purposes we do not need to consider the nature of the latent image substance at all. All we need assume concerning it is that it is a substance produced from the silver bromide which is more easily reduced (that is, at a lower reduction potential, *vide infra*) than the original silver bromide.

When a developer also develops unexposed silver bromide, it is said to "fog" the plate: that is, a developer can reduce the latent image substance, but not normal silver bromide (in an emulsion); a fogging agent can reduce normal silver bromide.

The difference between a developer and a fogging agent is thus one of reduction intensity, or, as it is more usually called, "reduction potential." The reduction potential of a developer is rarely referred to in photographic literature, but an analogy, which is indeed suggested by its name, will serve to make the matter clear.

Suppose that we have a source of electric energy and wish to use it to run an arc lamp. Then it is not sufficient that the source should be able to supply the necessary energy, it must be able to supply it at a certain potential (or voltage). For a carbon arc, for instance, the potential must be about 40 volts, and below this the arc will not burn. For an arc with iron poles about 65 volts are required, and other metals require other voltages. In the same way, to reduce a given body a given potential (or intensity) of chemical affinity is required, and this potential is the limiting resistance potential of the substance.

In order to understand the relation between the "latent image" substance and ordinary silver bromide we may represent a plate by an electric circuit with a carbon arc and an iron arc in parallel. If we raise the voltage of the circuit to 40 volts the carbon arc will light, but the iron arc will not, until the voltage rises to 65 volts, when both arcs will light. Thus there exists a range of voltages, from 40 to 65 volts, where the carbon arc can burn but the iron arc cannot. In the same way there exists a range of reduction potentials which can reduce the latent image substance, but not unexposed emulsified silver bromide, and all substances whose reduction potentials fall within this range are developers.

If the reduction potential of a substance falls below the lowest limit it cannot develop a silver bromide emulsion at all; if it exceeds the highest limit it will develop exposed and unexposed silver bromide alike; that is, it will "fog" the plate.

The potential necessary for reduction will depend upon the salt of silver present; e.g., silver chloride is developed by ferrous citrate, which can only develop silver bromide very slowly indeed, while some developers which give no fog with silver bromide reduce exposed and unexposed silver chloride alike.

The reduction potential necessary for development is directly proportional to the solubility of the silver salt (Sheppard and Mees, Investigations, p. 189), whence it would seem justifiable to conclude that the "latent image" substance has a greater solubility than silver bromide.

From theoretical considerations (v. Sheppard and Mees, loc. cit.), it can be shown that the reduction potential of a developer should be increased by the addition of alkali, which is not confirmed by the results found by us for hydroquinone. On the other hand, owing to side reactions, excess of reducer should lower the reduction potential, with which the fact, found by us, that excess of hydroquinone diminishes the fogging power of the developer, agrees.

An interesting illustration of reduction potential is afforded by the reversal which Major-General Waterhouse discovered to be produced by addition of thiocarbamide to a developer. The thiocarbamide increases the solubility of the silver bromide and therefore lowers the potential required for reduction below that of ordinary developers, so that a developer containing thiocarbamide reduces the whole of the silver bromide in a plate to a black-brown deposit of silver.

Owing to the time required for solution before the resistance potential falls sufficiently, this development of the unexposed silver bromide does not commence immediately, and the developer first begins to develop the ordinary latent image; the bromide liberated by this first development then raises the resistance potential of the unexposed silver bromide grains where the first development has taken place, and so prevents the development of the fog, the extent to which the fog is prevented being proportioned to the amount of bromide locally liberated, that is, to the amount of latent image present, so that finally a reversed negative (positive) is obtained.

### The Hydroquinone Developer.

In the course of our experiments we adopted the following system of measuring and expressing the results obtained.

In the development of an exposed plate the rate at which density grows is usually expressed by what is called the "velocity constant," which quantity is denoted by the symbol K ("Photographic Journal," December, 1910). The value of K for a given plate and developer is easily determined, and if we can find some equally simple means of determining and expressing the rate at which fog grows in an unexposed plate, it is obvious that a comparison of the two constants should give an idea of the fogging power of the developer used.

For example, if the rate of growth of fog on an unexposed plate is exactly equal to the rate at which the density grows in exposed parts of the same plate, it is obvious that no image can result, the fogging power being so great that we can only obtain a uniform deposit over exposed and unexposed portions alike. A developer giving such a result will be useless, and it is in all cases necessary that the velocity of the fogging action shall be less than that of development.

If we express the fogging velocity by the symbol F, just as we express the developing velocity by the symbol K, then the ratio of F to K can be taken as a measure of the fogging power of the developer, and therefore we measure F and K separately, and then dividing F by K obtain a quantity which can be used as a measure of the fogging power.

This fogging power we denote by the symbol $\phi$ (Greek phi), and our investigations have been devoted to determining the value of $\phi$ with different modifications of the developer. To simplify the work and shorten the time of the experiments we have measured F and K on different plates. K has been measured on a standard plate, while F was measured on an emulsion specially prepared to give slight fog. On account of this our F values are higher than they would have been if measured on the same plate as K.

### Measurement of F and K.

In determining K we exposed strips of plates in a sector-wheel exposing machine, giving a graduated series of exposures, and then developed at a constant standard temperature for varied times. Measuring the resulting densities and plotting the curves gave all the data necessary for calculating K by the ordinary formula, but the method being somewhat lengthy we sometimes avoided useless repetition by observing the time of appearance.

When modifications of the developer fail to produce any alteration in the time of first appearance of the image it can be taken for granted that K is also constant, for the time of appearance varies directly with this factor.

Time of appearance tests are easy and rapid, and though alone they give no indication of the absolute value of K, they serve to show when the lengthier process of measurement is necessary and when it can be omitted.

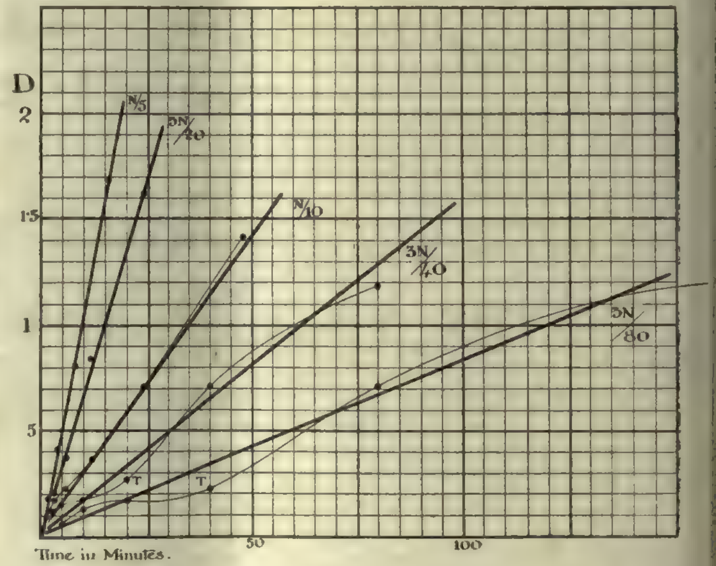

Fig. 1.

To determine the value of F, the fogging velocity constant, we simply took the density of the fog produced in ten minutes' development. This was decided upon as the result of a series of tests with a hydroquinone and soda hydrate developer with which six various strengths of alkali were tried. With each formula six unexposed plates were fogged for varying times, the resulting densities were then plotted against the times of development, and, the curves obtained being practically straight lines radiating from one point of origin, it became evident that the fogging rates for the different formulæ were proportional to the densities obtained at any one time. Later experiments with other modifications of the developer showed that this was not quite a satisfactory method of finding F in all cases, but for the purpose of these preliminary investigations it has afforded some interesting information.

### Method of Development.

Fig 1 shows the curves obtained in the tests just referred to, and presents some interesting features, the considerations of which induced us to revise our methods of development. The ordinates in this slide are fog densities, and the abscissæ times of development.

We were testing the fogging effect of developers containing a fixed proportion of hydroquinone and variable quantities of soda hydrate, as indicated on the curves. No sulphite or bromide being used, these were exceptionally difficult developers to deal with when a large excess of alkali was used. The chief trouble was irregular heavily stained fog of a quite abnormal nature, which we found to be caused by aerial oxidation of the developer. A developer of the kind described oxidises with great rapidity wherever exposed to the air; a very strongly coloured deposit is formed which produces local markings wherever it touches the plate, and to avoid this trouble we had to develop the slips in enclosed tubes from which all air was excluded. It was impossible to work in a developing thermostat as the necessity of rotating the plate allowed air to obtain access to the developer. We had therefore to hold the tube in the hand and to keep it continually shaking during development. This method worked well with the higher concentrations of alkali, but with the lower concentrations very long periods of development were necessary, and, quite apart from the inconvenience of shaking a tube by hand for an hour or so, it was impossible to preserve uniform temperature for anything beyond a short period. We therefore began development in the hand and finished it in the thermostat, and the curves shown for the low concentrations show the exact amount of transference by a change of flexure at the point T. The temperature fell while the tube was being manipulated by hand, and rose again in the thermostat; and these variations, which are very marked in the lower curves, and unavoidable by the system described, induced us to modify our method of development.

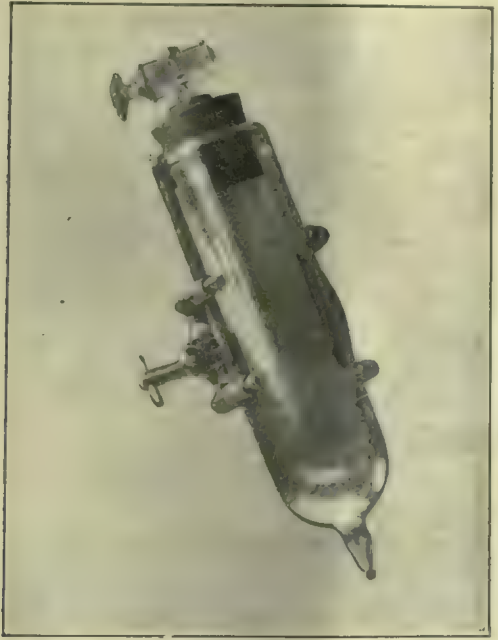

Fig. 2.

For all the later experiments we have used a Dewar's tube which can be manipulated by hand for periods up to twenty minutes or so without showing any measurable variation of temperature, and will keep its contents at a practically constant temperature for hours if the air temperature is about normal.

Fig. 2 shows the tube in use with the inner tube filled with developer. We did not find a silvered tube to be necessary, and the unsilvered one shown serves perfectly.

When filled with developer the plates, which are 4¼″ by 1″ slips, are dropped in and the rubber cork inserted. The tube being held vertically, the air tap in the cork is opened and the cork is pushed down until the developer spurts out through the vent, the tap is then closed and thus air is completely excluded. The developer being made up with distilled water free from air, all trouble due to air oxidation is avoided.

### Results of Preliminary Experiments.

To simplify our preliminary experiments and assist us in laying the foundation of a systematic research into the matter of fog, we decided to confine our work for the time to the hydroquinone and sodium hydrate developer. This appeared to be one of the best to begin with, for it is an alkaline developer that has already been studied in considerable detail, and also is one that is apparently simple in composition.

### Variations in Alkali.

The first tests made were to ascertain the influence of alkali on fog, and the following table summarises the final results. In all cases the developer contained N/10 hydroquinone, which is equal very approximately to 1.1 per cent. by weight.

HYDROQUINONE CONCENTRATION = N/10 OR 1·1 PER CENT.

| Alkali Concentration | Fogging Velocity = F. | Velocity of Development = K. | Fogging Power = $\phi = \frac{F}{K}$. |
|---|---|---|---|
| N/5 = ·8 per cent. | 1·04 | 1·32 | ·785 |
| 3N/20 = ·6 ,, | ·65 | ·81 | ·80 |
| N/10 = ·4 ,, | ·29 | ·36 | ·812 |
| 3N/40 = ·3 ,, | ·16 | ·27 | ·593 |
| N/20 = ·2 ,, | ·11 | ·14 | ·80 |
| 3N/80 = ·15 ,, | ·08 | ·09 | ·91 |

Average $\phi$ = ·84.

As already explained, these tests were exceedingly troublesome owing to the peculiar nature of the developer, and at this stage of the work the advantages of a Dewar's tube had not been appreciated. Nearly half a gross of plates was used before readable results, giving reasonable curves, could be obtained, and considering all the difficulties it is not to be wondered at that one $\phi$ value (that for a concentration of 3 N/40 alkali) should be discordant. In this case the value of F is obviously too low, therefore that of $\frac{F}{K}$ or $\phi$ is also too low. The other $\phi$ values, however, agree so very closely that it is evident that the fogging power of a simple hydroquinone and soda hydrate developer is practically constant for any proportion of alkali.

This is an interesting fact in view of the popular belief that the addition of alkali to a developer increases fog. Possibly it may do so with some of the other developers that we have not yet investigated, but it appears clear that it has no such effect with hydroquinone and soda hydrate throughout the range of concentrations used by us.

The mean value of $\phi$ obtained in these tests is .84, which is very low compared with the $\phi$ values we have since obtained for other variations in the developer. The change is partly due to the use of a different batch of plates, but apart from this there is no doubt that the fogging power of a developer containing only hydroquinone and soda hydrate is small if oxidation fog be avoided.

Such a developer has, however, powerful staining properties, and slips show a considerable amount of stain deposit left in the film after all the silver has been removed by a solvent.

As we will show later, the amount of stain depends a great deal on the proportions of the ingredients, and the time of development, and the fogging power being low it is possible to mix a simple hydroquinone and soda hydrate developer that gives practically no stain and no fog unless the time of development is very much prolonged.

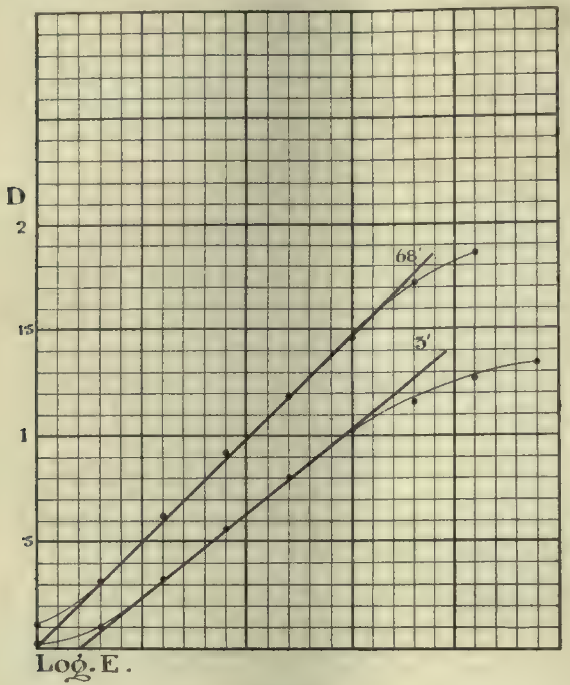

Fig. 3.

### Variations of Hydroquinone.

When the amount of hydroquinone is varied, that of soda hydrate being kept constant, some very interesting results are obtained. The concentration of the alkali being kept constant at N/10, or .4 per cent., the fog produced diminishes rapidly as the concentration of the hydroquinone is increased. At the maximum concentration tried, 2 N/5, or 4.4 per cent., the fog produced in ten minutes on the special plates was only .23; on the standard plates three minutes' development gave fog equal to only .03, which is a quite negligible amount, and 68 minutes' development produced only .43 fog.

The maximum contrast obtainable with this developer on the standard plates used was .97 for 68 minutes, but .78 was reached in three minutes.

Fig. 3 shows these two curves, and it will be noticed that the straight line part of the curve practically runs through the zero point of the log-exposure scale, which means that the speed of the plate is abnormally high with this particular developer.

With short times of development such as three minutes or so, it gives not only a fogless image, but one that is also stainless. An hour's development gives a fairly strong stain, but much shorter times than this will doubtless be quite sufficient in practical work.

We have not yet determined the point at which stain appears, neither have we determined the exact value of the fogging power, but we consider the developer so promising that we intend to go more closely into its properties.

Briefly, its formula may be described as five per cent. hydroquinone and half per cent. soda hydrate, which is possibly the simplest developing formula ever published.

C. E. Kenneth Mees.
C. Welborne Piper.

*(To be continued.)*

# SAFE-LIGHTS FOR THE DARK-ROOM IN THEORY AND PRACTICE.

## II.

### Transparent Filters.

The liquid filters of this class were long employed in certain branches of photographic work, but, with one exception only, not as dark-room safe-lights. This was possible only when a dark-room lamp was obtainable from which the light could pass through a glass cell containing the colouring matter. Such lamps were made by David Allan, Watson, Eggenweiler, C. F. Kinderman and Co., and others, following the publication of a note by Howard Farmer.[20] The latter, as the result of tests on the majority of dark-room filters in use, recommended a six per cent. solution of potass bichromate, which, in conjunction with an incandescent electric lamp, supplied a bright yellow light of about ten candle-power and "250 times safer" than the ordinary orange-yellow glass made with silver as ordinarily used. Parzer Mühlbacher[21] recommended this filter in preference to all others for dark-room work. Dr. Eder[22] recommended as still "safer" a solution of ammonium bichromate of ten per cent. or greater strength. An improvement on the Farmer formula was suggested by Eggenweiler[23] by the addition of potassium ferricyanide to the bichromate solution. This mixture, however, has the drawback of not keeping well. It appears somewhat strange that among such recommendations no one should have advised a solution of ferric chloride and sulphocyanide, which allows, as I have found, of development with a high degree of "safety."

Following the use of these inorganic solutions, attention was naturally directed to the various organic dyes, the great number of which allows of a better choice and of adjusting the limit of spectrum absorption more perfectly. Eggenweiler[24] recommended a solution of Tolan-red, 1:4,000. Davenport[25] advised an orange solution of "mandarine" as superior to potass bichromate, whilst B. H. Wordslay[26] gave the following formula for a dye filter:—

| | |
|---|---|
| Eosine | .016 gm. |
| Metanile yellow | .388 ,, |
| Water | 1,136 ccs. |

For a more intense filter the formula is:—

| | |
|---|---|
| Eosine | .032 gm. |
| Metanile yellow | .194 ,, |
| Water | 680 ccs. |

Better formulæ for liquid filters were published later, when Stenger constructed a dark-room lamp of a kind very suitable for liquid filters, and for use with which he gave the following formulæ:—

1. For collodion plates, bromide papers, lantern-plates and slow dry plates:—

| | |
|---|---|
| Potass bichromate | 100 gms. |
| Water | 1.000 ccs. |

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[20] "Photographic Journal," 1900. p. 194.
[21] "Photographische Mitteilungen," 1903, p. 234.
[22] "Handbuch de Photographie," 1903, III., p. 352.
[23] Eder's "Jahrbuch," 1901, p. 560.
[24] Eder's "Jahrbuch," 1901, p. 560.
[25] "British Journal of Photography," 1901. pp. 504 and 590.
[26] "Photography," 1901, p. 684.

For wet collodion this solution may be diluted with 25 to 50 per cent. of its volume of water.

2. For extra rapid dry plates:—

| | |
|---|---|
| Potass bichromate | 100 gms. |
| Fuchsine | 5 ,, |
| Water | 1,000 ccs. |

or

| | |
|---|---|
| Tartrazine | .5 to 1 gm. |
| Methyl violet 6B or acid violet 7BN | .2 to .4 gm. |
| Water | 1,000 ccs. |

3. For orthochromatic and panchromatic plates the last formula was used, using the dye in the greater proportion named in the formula.

Fr. Haberkorn[27] gave for the preparation and development of red-sensitive collodion plates the following formula, which is in use at the present time:—

| | |
|---|---|
| Acid green 3 per cent. solution | 25 ccs. |
| Naphthol green 4 per cent. solution | 1.5 ,, |
| Tartrazine 3 per cent. solution | 1.2 ,, |
| Water distilled | 800 ,, |

For a lighter red filter, which allows only wave-lengths 700 to 620 $\mu$ to pass, Dr. E. König[28] gave the following formula:—

| | |
|---|---|
| Tartrazine | 16 gms. |
| Solid red D. | 8 ,, |
| Water | 2,000 ccs. |

Extra rapid and orthochromatic plates are developed in this illumination.

The good results obtained with liquid bichromate filters led to experiments in the preparation of dry bichromate filters. By immersing a gelatine plate in a solution of potass bichromate, a yellow screen is obtained which, though it possesses a certain degree of "safety," is greatly inferior to the liquid bichromate filters. Moreover, it is sensitive to light and is decomposed with formation of oxide of chromium, the light passing through which is still less "safe" than that of the original bichromated plate. A good filter may be prepared with silver bichromate in gelatine, and in 1908 X. Jeannett and E. Manvillum[29] took out an English patent for a yellow dark-room filter composed of lead chromate in gelatine. They mixed 10 ccs. of 10 per cent. solution of lead nitrate with 10 ccs. of strong gelatine solution, adding to the mixture 10 ccs. of 10 per cent. potass chromate solution. This emulsion was allowed to set, washed, and, after melting, coated on glass plates.

For dry filters, as in the case of the liquid filters, the inorganic colouring matters were replaced in course of time by organic dyes. The use of acaroide as a colouring matter for the windows of the dark-room may be mentioned, but it makes a bad filter of a lower degree of "safety" than silver yellow glass or copper ruby.

In 1898 Abney[30] recommended, specially for the development of orthochromatic plates sensitive to yellow and green, a formula of a filter which is still considered excellent in practice. A violet dye, such as methyl violet, which allows the extreme red and blue-violet rays to pass, is combined with an orange-yellow filter which absorbs the blue-violet, producing a filter which transmits only the extreme red. In a solution of methyl violet a gelatine-coated plate is immersed, washed, and after drying bound up with a piece of silver yellow orange glass.

The experiments of Miethe and Traube[31] in 1902 led to the discovery of a new series of colour sensitisers, the isocyanines (ethyl red). These experiments were continued by Dr. König and by others and led to the production of many important sensitisers, such as orthochrome, pinachrome, dicyanine, isocol,[32] etc., which gave such increased sensitiveness to gelatine plates in the red and orange regions that it was no longer possible to develop these plates without fog by means of the safe-lights then in use. Before this date plates which were sold as sensitive to red could be quite well developed in the light of pot ruby glass. This was due to the fact that the majority of red-sensitive plates lose this portion of their sensitiveness in the developer. The introduction of the new colour-sensitisers introduced new conditions. True, these plates lose much of their sensitiveness to the orange and red rays in the developer, but they retain sufficient sensitiveness to red to give absolute fog when developed in safe-lights of the "safest" kind known at the time of their introduction. A plate sensitised with pinacyanol or dicyanine cannot be developed in such illumination, for the least ray of red light immediately produces intense fog.

Whilst up to this point attempts have been directed towards obtaining an *improvement* in dark-room illumination it became necessary to find a filter with which the new description of plates could be developed. The best filter at the time was that of Abney, which was further improved upon by Miethe. He replaced the orange-yellow glass by a gelatine-coated plate soaked in 1 : 30 of brilliant yellow. This filter, combined with the Abney methyl violet screen, gave a safe-light with which plates sensitised in ethyl red could be developed. The formula was afterwards improved by using tartrazine (which absorbs blue and violet to a high degree) in place of the brilliant yellow. The Vereinigte Gelatine und Flitterfabriken A.G. at about this time manufactured coloured gelatine filters, samples of which were sent to various authorities, among them to Miethe, who supplied a number of new formulæ according to which the Company manufactured a series of safe-lights which were placed upon the market.

Safe-light I. is of yellow colour and intended for dark-rooms used for wet collodion work, or for slow development paper.

Safe-light II. is of bright red colour, absorbing light up to 594. It allows of the development of extra rapid plates and is very "safe" in spite of its great brightness.

Safe-light III. is likewise red, allowing light up to 610 to pass, and is perfectly "safe" for colour-sensitive plates.

Safe-light IV. is dark red, passing light only up to 650, and is specially intended for the development of plates sensitised with ethyl red.

The other filters are those for green dark-room light. These evidently gave an extremely permanent light. R. Neuhauss[33] showed that there was no change in their spectral absorption after having been exposed for 100 hours to direct sunlight. However, they were not found satisfactory in practice, as the film was quickly affected by changes of temperature and humidity of the air. The same Company, and later W. Hess, of Cassel, attempted to use gelatine specially treated for greater strength, but this was likewise of little practical use. By coating the safe-light films on each side with japon lac and placing them on glass plates they were rendered more practicable, but they nevertheless gradually ceased to be used. Later attempts were made to use Miethe's formulæ for yellow, green, and red filters in paper or silk, but with what results in practice I am unable to say.

The Abney methyl violet filter combined with tartrazine was strongly criticised in 1904 by Lüppo-Cramer.[34] In opposition to the emphatic advocacy by others he found this deeply coloured filter actually less safe than old copper ruby glass. He found that the methyl violet allowed to pass certain green rays which, though they could not be detected in the spectroscope, were nevertheless able completely to fog the plates. I think that these results of Lüppo-Cramer may be put down to the fact that the methyl violet used by him had not the properties of that employed by others. Several descriptions of methyl violet are obtainable in commerce, and the methyl violet BBR of the Hoechst Works does allow an appreciable quantity of green to pass, whilst the CB brand of the same Works and the Bayer methyl violet B do not transmit any green. Methyl violet was subsequently replaced by crystal violet, which is a better absorbent of the green.

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[27] "Photographische Korrespondenz," 1906, p. 344.
[28] "Das Arbeiten mit farbenempfindlichen Platten," p. 56.
[29] "British Journal of Photography," 1908, p. 740.
[30] "Photography," 1898, p. 697; "Photographisches Wochenblatt," 1898, p. 371.
[31] "Atelier des Phot.," 1904, p. 88.
[32] According to Dr. E. König, isocol is a mixture.
[33] "Photographische Rundschau," July, 1904.
[34] "Photographische Korrespondenz," 1904, p. 186.

Although Miethe's filters did not prove satisfactory in practice, their composition remained secret, and further researches were necessary. Newton and Bull[35] recommended for yellow screens the coating of glass plates with a solution made as follows: A gelatine solution of 8 or 10 per cent. strength is prepared; to it is added tartrazine in the proportion of 1 milligramme per 20 ccs. of gelatine. This supplies a coating mixture sufficient for 100 sq. cm. of glass. In the same way red filters are prepared by adding to 20 ccs. of gelatine 1 milligramme of tartrazine and .5 milligramme of rose bengal. For dark red filters a further addition is made of .5 milligramme of methyl violet, such filter passing only the extreme red from 700 to 650. It is known that these filters have been extremely satisfactory in practice. A. P. H. Trivelli.

*(To be continued.)*

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[35] "Photographic Journal," 1905, p. 20.

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# EXPERIMENTS ON SOLARISATION.—I.

## II.

After clearing up a few of the elementary snags in this line of work, and having a little knowledge as to the real action, it was attempted to learn how to produce positives with very rapid exposures in the most practical way. Nipher[7] has shown under what widely different conditions a positive may be obtained by an exposure to white light after the exposure to the specified object. However, a fairly long exposure was required in order to obtain good positives. The same general idea was followed in our attempt to produce rapid positives, and as white light failed to give good results the action of various coloured lights was first studied. Solutions of varying concentrations of copper sulphate, potassium dichromate, cyanine, fuchsine and orange crystals (a dye) were made up, and, with the proper dilutions of these various materials, light-absorption bands covering any portion of the spectrum could be obtained. Potassium dichromate at a proper dilution served as a fine filter for the blue bands, while orange crystals make a fine filter for all but the green-blue portion. In this work the cell serving in the capacity of a filter was placed in front of the Welsbach burner which was used in the previous experiments. By properly enclosing the excess light the light-values along the whole system could be controlled. Before utilising these filters the light was examined by means of a spectroscope in order to tell exactly what lights were being used. Instantaneous exposures were then taken and by developing with the regular stock developer in the presence of the following lights we obtained:—

| No. | Light composition. | Distance of developing solution cm. | Type. |
|---|---|---|---|
| 1 | red | 25 | fine negative |
| 2 | yellow | 25 | fine negative |
| 3 | green | 25 | fine negative |
| 4 | blue | 25 | fogged thin pos. |
| 5 | blue-violet | 25 | fogged plate |
| 6 | yellow-green | 95 | good negative |
| 7 | green-blue | 25 | positive |

It was surprising to see the splendid quality of the negative developed even in the green rays. When the blue-violet is used a very rapid action takes place, with the result of a thick fog; however, with the continuation of the green-blue at last positives were obtained. Even for exposure during development to white light the results were far inferior to the green-blue combination. In spite of the fact that we had anticipated a greater sensitising effect for this mixture, only comparatively thin positives resulted from rapid exposures. Although this work failed to bring us any nearer the solution of instantaneous positives, it did, however, give an insight into what were the active rays of light during such an operation, and this may aid in some way in later studies.

When we examine Fig. 2 it may be seen that if the reducing power of the developer is increased, the maximum of the curve changes. Consequently by increasing the alkalinity of the developer we should change our conditions to a more suitable method of development. When the plates were given a rapid exposure and developed in the green-blue light combination with the following stock developers we obtained decidedly different results, as may be seen.

With No. 3 the plate resembled a very thin transparency positive. With No. 5 a splendid dense image was obtained. The least over-development in the light caused a surface fog; but, with proper precautions, plates from instantaneous exposures were obtained which were too dense to make satisfactory lantern slides. Although the general method of procedure as adopted in the last two experiments for the production of rapid positives is well known, still we have shown that since the sensitiveness of the plate changes during exposure for lights of given wave lengths we can control the amount of contrast by varying the wave lengths of the fogging lights, and can hence obtain more dense plates for shorter exposures.

| No. | Developer used. | | | Type. |
|---|---|---|---|---|
| | Sol. A. cc. | Sol. B. cc. | 20 per cent. potass. bromide cc. | |
| 1 | 20 | 10 | 10 | thin fogged positive |
| 2 | 20 | 20 | 10 | thin positive |
| 3 | 20 | 30 | 10 | thin positive |
| 4 | 20 | 40 | 10 | more intense positive |
| 5 | 20 | 50 | 10 | quite dense positive |
| 6 | 20 | 60 | 10 | badly fogged |

Another general method of rapid positive production involved a slow change in the latent image before final development. There are many cases on record where films have remained in a camera for several months or perhaps years, and upon development have resulted in partial or total positives. This has been accounted for by the fact that the silver bromide has been reduced to some lower stage by slow decomposition, and in that way resembles the effect produced by an over-exposure. If such is the case we can utilise this as a method for obtaining more dense positives on a short exposure, but under conditions which may be more easily controlled. The plates were given a rapid exposure as before and left in varying dilutions of the stock developer for varying times, and then were finally developed by aid of the green-blue fogging light with the results in table below.

| No. | Initial developer. | | | Time min. | Final developer. | | | Type. |
|---|---|---|---|---|---|---|---|---|
| | Sol. A cc. | Sol. B cc. | Water cc. | | Sol. A cc. | Sol. B cc. | 20 p.c. potass. bromide cc. | |
| 1 | 0 | 0 | 0 | 0 | 20 | 30 | 10 | thin positive |
| 2 | 1 | 1 | 200 | 30 | 20 | 30 | 10 | thin positive |
| 3 | 1 | 1 | 100 | 30 | 20 | 30 | 10 | thicker positive |
| 4 | 1 | 1 | 75 | 30 | 20 | 30 | 10 | more dense |
| 5 | 1 | 1 | 75 | 50 | 20 | 30 | 10 | good positive |
| 6 | 1 | 1 | 50 | 30 | 20 | 30 | 10 | good positive |
| 7 | 1 | 1 | 50 | 10 | 20 | 30 | 10 | thin positive |

The desired contrast in the densities of Nos. 5 and 6 when compared with No. 1 would indicate that here we had a slow decomposition aiding very much in the final quality of the positive obtained. The final development in these cases required decidedly less time for the correct density than in the case where no slow action was allowed to take place. In the previous experiments the fogging time while in the developer was very close to two minutes. With the slow decomposition the best results were obtained with a fogging period of slightly less than one minute.

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[7] Trans. Acad. Sci., St. Louis, 10, 210 (1900).

Before continuing with the remainder of the sensitising experiments it might be well to review briefly the three previous general methods for the production of positives from rapid exposures. In the first, where we exposed with a dilute developer in the film, the light acts in the presence of a strong depolariser, with the consequence that for a given exposure the chemical action is greatly increased. This method was extremely poor, and such a wet-plate process would never receive any general application. The second was a dry method, and, since the fogging green-blue wave-length of light can be readily prepared, this would seem to be quite practical provided direct positives of good density were desired (as will undoubtedly never be the case). The third method involving a slow reduction requires too long a time with no better results than by exercise of proper care in the second method, hence its application may be somewhat limited. However, the theoretical side of the whole presents very interesting aspects in which all three of the above methods have their decided bearing as has been shown.

Carey Lea[8] has suggested the analogy of the action of sodium hypophosphite to that of light, showing that we obtain a negative effect with a 25-30 per cent. solution, while with a 2 per cent. solution we have the positive action with silver bromide plates. If this solution had an action similar to that of light we were obtaining decided contradictions to our previous results, since with a concentrated solution or an intense light we obtain a negative, while with a dilute solution or a weak light we obtain a positive effect. Upon the supposition that the final negative effect was that of the third stage of our original diagram there should exist another negative for dilutions below that of 2 per cent. With the idea of determining this concentration we began our study with the faint hope of its application to rapid positives. Several plates were immersed after exposure in sodium hypophosphite solutions of varying concentrations, but in no case was there any appearance of reversal. As the concentration increased, the thickness of the film was found to decrease. This seemed to indicate that we were dealing at least with a solvent action, so unexposed plates were treated in the following manner, and these results were obtained upon development in the regular stock developer without washing.

| No. | Conc. of sodium hypophosphite per cent. | Time of immersion. | Type. |
|---|---|---|---|
| 1 | 1 | 1 min. | No darkening ; positive |
| 2 | 2 | ,, | ,, ,, |
| 3 | 3 | ,, | ,, ,, |
| 4 | 10 | ,, | ,, ,, |
| 5 | 15 | ,, | ,, ,, |
| 6 | [illegible] | ,, | ,, ,, |
| 7 | 25 | ,, | ,, ,, |
| 8 | 30 | ,, | Film is mostly dissolved |
| 9 | 35 | ,, | Film dissolved |
| 10 | 40 | ,, | ,, ,, |
| 11 | 35 | 2 sec. | Blackening ; negative |
| 12 | 40 | ,, | ,, ,, |

From this we find that sodium hypophosphite may act as a reducing agent or as a solvent for silver bromide according to whether the plate remains in the solution for a long or a short time. Immersion for a long time with a concentrated solution produces a positive effect, since the solvent action is greater than the reducing. With a short immersion we have the reducing action as the important feature, and we obtain a blackening of the silver bromide. In all the above work only half of the plate was immersed in the solutions in order to make the correct comparisons with the untouched bromide. We see, then, that Lea's apparent reversals with dilute, and non-reversals with concentrated sodium hypophosphite are due to the action of this re-agent both as a solvent and a reducing agent towards silver bromide, and hence its action is really not analogous to that of light.

Another method for the production of positives with extremely rapid exposures was that of Waterhouse, using a thiocarbamide solution. Since but few logical explanations had been given for the action of this developer a more detailed study was pursued with the aim of possibly finding the application of other substances in a similar manner. Lüppo-Cramer[9] decided from his work on this Waterhouse developer that metallic silver is precipitated from the solution, obtained by the action of the thiocarbamide dissolving some of the silver bromide, and hence a heavier deposit on the portions where we have the large amount of silver bromide with the result of a reversal. However, from our results obtained with other materials it was suggested that the real action of the thiocarbamide might be due to a change in the curve of the second diagram[10] similar to the case of displacement in the experiments with the weak and strong developers. The first point to be tested was the fact that on a very short exposure a positive was obtained, and not a negative as would follow from the previous diagram. The following experiments were tried in an attempt to locate the first negative.

| No. | Developer. | | | | Time of Exposure. | Type. |
|---|---|---|---|---|---|---|
| | Sol. A cc. | Sol. B cc. | Water cc. | Thio-urea sol. cc. | | |
| 1 | 25 | 25 | 5 | 20 | 2 seconds | fogged plate |
| 2 | 25 | 25 | 5 | 20 | 1 second | partial positive |
| 3 | 25 | 25 | 5 | 20 | Instantaneous | positive |
| 4 | 25 | 25 | 5 | 20 | Fraction of second (poor illum.) | fogged plate |

The above pictures were taken by means of a camera in a lecture room where the illumination could be changed by means of dark shades. Below a certain exposure for the given illumination only a fogged plate could be produced without the least trace of a developable image. The lowest good result obtained was then a positive, and since we could not obtain a negative with shorter exposure the previous hypothesis fails to account for the production of a positive with such a short exposure.

The thiocarbamide used in the above experiments and also in all the following was made by heating ammonium sulphocynate for quite a time until the dense white fumes were given off in abundance; the material was then cooled rapidly to 80 deg. C. and dissolved in an equal volume of water. Upon standing, fine needle-like crystals of thiocarbamide were obtained. A standard solution of 1 gram of these crystals in a litre of water was made, and it was this solution that is mentioned in the above data.

Several plates corresponding to No. 3 in the above were made in order to examine what really happened in each case. On every plate a negative first appeared followed by a positive. The appearance of both images could be detected after fixing with hypo, because, by reflected light, the negative image appeared on the surface side, while the positive image readily appeared upon the glass side of the film. On all of the plates there seemed to be a fairly dense surface deposit, and the idea of a screening effect was brought forward, but an exposure with the plate's glass surface out for the same conditions as No. 3 in the above still yielded a positive, and no negative was observed to appear upon the film surface side during development as was true in the other cases. From these results we must conclude that the effect is not due to a screening action. In order to determine whether the negative appearing during such a development was a normal negative or not, the plate was given a preliminary development in a weak solution. Final development in the thiocarbamide developer produced the same results as in the first case, and since the negative was obtained thus we must conclude that it is the normal negative with which we are dealing. Whether the negative image was essential to reversal or not was shown by developing first in the weak developer of the following composition: Sol. A, 5 cc.; Sol. B, 5 cc.; water, 25 cc.; and after dissolving out the negative image thus produced by means of permanganate solution a positive was developed with the regular thiocarbamide solution. Instead of utilising permanganate as a solvent for the silver, far better results were obtained with chromic acid, since a more compact film is left than is the case where permanganate or nitric acid was used as a solvent. With the exception of the stain obtained from the silver solvent a better positive was obtained by this method than in the previous case, since we do not have the jumble effect caused by the negative image. It therefore follows that the negative image is not important in the development of the positive by the Waterhouse process.

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[8] "Am. Jour. Sci." (3), 33, 482 (1887).

[9] Photographische Probleme, 189 (1907).

[10] Bancroft: Jour. Phys. Chem., 13, 459 (1909).

In all of the plates obtained with the thiocarbamide developer there was not the usual characteristic black deposit, but a brownish violet colour led us to suppose we were dealing with a sulphide. With such a supposition the following solutions were tried as reversing agents, but failure resulted in each case:

All the solutions mentioned below were first tried in the developer, and then by a previous immersion, but in no case was there any sign of a reversal taking place. The surface was coated with a brown fog when either hydrogen sulphide or ammonia were used. From this it would seem to follow that there must be some complex reaction in case a sulphide were formed.

| No. | Solution. | Dilution. | Exposure sec. | Type. |
|---|---|---|---|---|
| 1 | Hydrogen sulphide aqueous | Saturated | 1 | fogged negative |
| 2 | Ammonia | Normal solution | 1 | ,, ,, |
| 3 | Hydrogen sulphide | Sat. diluted ½ | 1 | ,, ,, |
| 4 | Hydrogen sulphide | Sat. diluted ⅕ | 1 | thin fogged negative |
| 5 | Ammonia | N/2 solution | 1 | fogged negative |
| 6 | Ammonia | N/5 solution | 1 | negative |
| 7 | Urea | 5 g in 100 cc $H_2O$ | 1 | ,, |
| 8 | Urea | 1 g in 100 cc $H_2O$ | 1 | ,, |
| 9 | Am. sulpho-cyanide | 5 g in 100 cc $H_2O$ | 1 | ,, |
| 10 | Am. sulpho-cyanide | 1 g in 100 cc $H_2O$ | 1 | ,, |
| 11 | Hydrogen sulphide + ammonia | Conc. of 1 and 2 | 1 | fogged negative |
| 12 | Hydrogen sulphide + ammonia | Conc. of 4 and 6 | 1 | ,, ,, |

When a plain negative was immersed in a solution of thiocarbamide no visible reaction was seen to occur. However, when simply silver bromide was treated with the thiocarbamide of sufficient concentration there was an appreciable solvent action, so the reaction must involve some change with the silver bromide. If the thiocarbamide reacted with the decomposed silver bromide in the film yielding a positive, because the least exposed parts contained the largest amount of unchanged silver bromide, we should obtain a positive by development with thiocarbamide alone, provided the exposure was long enough. This was tried, and the following results were obtained:—

| No. | Developer. | | | Exposure. | Type. |
|---|---|---|---|---|---|
| | Thiourea cc. | soda carbonate (sol. B) cc. | Water cc. | | |
| 1 | 20 | 25 | 20 | 1 sec. | fogged plate |
| 2 | 20 | 25 | 20 | 30 sec. | ,, ,, |
| 3 | 20 | 25 | 20 | 1 min. | ,, ,, |
| 4 | 20 | 25 | 20 | 2 min. | ,, ,, |
| 5 | 20 | 25 | 20 | 3 min. | ,, ,, |

Unless the plate were exposed a sufficient length of time to produce a reduced silver negative there was no appearance of any image. The presence of a developer or depolariser is essential to the successful operation of the development. However, when a plate is treated in the following developer—

| No. | Developer. | | | Exposure. | Type. |
|---|---|---|---|---|---|
| | Thiourea cc. | Sol. A cc. | Sol. B cc. | | |
| 1 | 20 | 25 | 0 | 1 | slight fog |
| 2 | 20 | 25 | 5 | 1 | partial positive |
| 3 | 20 | 25 | 10 | 1 | ,, ,, |
| 4 | 20 | 25 | 25 | 1 | good ,, |

we see that it only requires but a little of the carbonate to increase the reducing power sufficiently to produce an image. It was interesting to note the decided difference in the colour of the two completely fogged plates produced in the above two cases, for with only sodium carbonate present we have a light brown fog, but with the hydroquinone and sulphite there is formed a dark brownish purple fog. When two plates were treated in the same manner as the No. 1 in each case and were then fixed, the remaining silver bromide was dissolved off first in every case in the portion corresponding to the shadows.

Some silver bromide was precipitated in the dark, and, after complete washing, was treated with the previous thiocarbamide developer. The excess of undecomposed silver bromide was dissolved, and after thorough washing the residue was dried. A portion of this was analysed by precipitation as silver chloride, and weighed—with the following results:—

Wt. of original material, 0.1701 gram.
Wt. of silver chloride, 0.2236 gram.
Ratio of original material: wt. of silver chloride = 0.1701 : 0.2236; 0.1701 : 0.2236 = 109.1 : 143.45;

and we see that without any outside reduction by light, we have the final product not in the ratio of silver sulphide, but of metallic silver; still, minor side reactions might form a small amount of sulphide, which, however, is negligible.

This final result showed that the sulphur in the thiocarbamide was not at all essential, and that there must be some specific property of the thiocarbamide as a whole. The effect of a thiocarbamide and a regular developer was then tried upon plates exposed the same length of time to the same object and under the same light-intensity. For ease in controlling all these details the lecture room, which was illuminated by ordinary electric lights and equipped with very dark window shades, was utilised, and the following exposures were made with this illumination:—

| No. | Thiocarbamide Developer. | | | Regular Developer. | | Exposure. | Type. |
|---|---|---|---|---|---|---|---|
| | Thiourea cc. | Sol. A cc. | Sol. B cc. | Sol. A cc. | Sol. B cc. | | |
| 1 | 20 | 25 | 25 | — | — | 15 min. | good positive |
| 2 | 0 | 0 | 0 | 25 | 25 | 15 min. | thin negative |
| 3 | 20 | 25 | 25 | 0 | 0 | 13 min. | fair positive |
| 4 | 0 | 0 | 0 | 25 | 25 | 13 min. | very thin negative |
| 5 | 20 | 25 | 25 | 0 | 0 | 12 min. | partial positive |
| 6 | 0 | 0 | 0 | 25 | 25 | 12 min. | nothing |
| 7 | 20 | 25 | 25 | 0 | 0 | 10 min. | partial positive |
| 8 | 0 | 0 | 0 | 25 | 25 | 10 min. | nothing |

All plates were developed for the same length of time, and all conditions were retained as nearly constant as possible. With the first four numbers the positives were very much more dense than the corresponding negatives. We must then admit that the action of the light was to alter the plate in some manner, even at what is considered below the minimum exposure for a negative, but that the regular developer is unable to detect it. As the developer containing the thiocarbamide developed a positive we find that the only way to account for it is by assuming that it develops the undecomposed silver bromide more rapidly than the exposed, and, in fact, all the work upon this developer has pointed towards this conclusion. When an unexposed plate was treated with the thiocarbamide developer it was found to yield the same brownish-violet fog which was so characteristic in the production of positives. The action then becomes very evident, especially since it has been shown that substances which dissolve silver bromide coarsen the grain, and hence make a more sensitive plate.[11] As it has been previously pointed out that thiocarbamide does have a solvent action towards silver bromide, we have the unexposed silver bromide made more sensitive to the developer than the exposed, and hence the production of a positive on even very short exposures. As a check on this we have the following experiments:—

| No. | Preliminary immersion. | | Time of immersion. min. | Developer. | | | Exposure. | Type. |
|---|---|---|---|---|---|---|---|---|
| | Thio urea cc. | Water cc. | | Sol. A cc. | Sol. B cc. | Potass bromide cc. | | |
| 1 | 20 | 100 | 1 | 25 | 25 | 2 | 15 min. | partial positive |
| 2 | 20 | 100 | 3 | 25 | 25 | 2 | 15 min. | good positive |
| 3 | 20 | 100 | 5 | 25 | 25 | 2 | 15 min. | best positive |
| 4 | 20 | 100 | 8 | 25 | 25 | 2 | 15 min. | positive with thin fog |

After the immersion in the thiocarbamide solution the plates were washed for three to five minutes in running water and then developed in the regular developer. The results would then substantiate the theory that we have a sensitising effect, especially since the thing can be done so successfully in two stages. As a matter of fact, the whole process may be controlled much more satisfactorily by doing it in two stages rather than by simultaneous action. Additional work was carried out to see to what extent the plate could be sensitised. The following results were obtained:—

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[11] Lüppo-Cramer: Eder's Jahrbuch der Photographie, 21, 368 (1907).

| No. | Time of immersion. min. | Time of washing. min. | Type. |
|---|---|---|---|
| 1 | 5 | 1 | fair positive |
| 2 | 5 | 1 | good positive |
| 3 | 5 | 10 | partly clouded positive |
| 4 | 5 | 20 | badly clouded |
| 5 | 5 | 30 | badly clouded |
| 6 | 5 | 5 and dry | clouded plate |

The thiocarbamide solution was of the same concentration as in the previous case, as was the developer, and it will be seen that bad results follow if the immersion in the preliminary solution exceeds a certain time. This resultant cloudy effect over the whole plate may be explained by the fact that for too great a period between sensitising and developing the undecomposed silver bromide in the whole film becomes sensitised as well as perhaps some of the partly exposed, and we obtain a more uniform rate of development for both exposed and unexposed bromide. This would seem to be warranted from the behaviour of Nos. 2 and 6; for, without drying, a good positive resulted while under the same condition when dried a clouded plate was obtained. From the above data we feel warranted in assuming that the thiocarbamide causes an increase in sensitiveness of the undecomposed silver bromide, which is followed by chemical development with a suitable developer.

One disturbing factor to the above conclusions was the work of Kogelmann, who obtained negatives with over-exposed plates, using the thiocarbamide developer. This process was then taken up and studied with carefully checked plates. The exposures were made out of doors with the camera, and all were taken at as nearly the same time as possible. The following is a summary of the results obtained:—

| No. | Time of exposure min. | | Final developer. | | | Type. |
|---|---|---|---|---|---|---|
| | | | Sol. A cc. | Sol. B cc. | Water cc. | |
| 1 | 15 | None | 25 | 25 | 0 | good positive |
| 2 | 15 | Yes | 25 | 25 | 0 | " " |
| 3 | 15 | Yes | 25 | 25 | 100 | fogged negative |
| 4 | 30 | Yes | 25 | 25 | 0 | " " |
| 5 | 30 | None | 25 | 25 | 0 | negative |

It will be noticed that under proper conditions only a positive was obtained. Negatives resulted only when there was an over-exposure and an excess of metallic silver was present, or when there was a slight over-exposure and a dilute developer was used. By using an old developer with under-development, negatives were always the result. However, if the old developer was allowed to act for a sufficiently long time during development a positive finally resulted. The final conclusions from these experiments were that, with a moderately strong new developer, under conditions yielding a positive with regular development, a positive will result with a thiocarbamide developer. This resulted consistently under the conditions of No. 2. An under-development for an over-exposure would yield negatives each time with or without the thiocarbamide immersion. Some additional facts were obtained which still further substantiated the above conclusions. A plate was exposed to solarisation similarly to No. 1, and was developed with the ordinary developer. The resulting silver positive was dissolved by means of chromic acid, and the development was continued after a thorough washing in the double thiocarbamide developer, with the result that positive was obtained with a bad surface cloud. Upon the development of a solarised plate we first have the negative image due to the reduced metallic silver appearing, and then the positive as obtained under the conditions of regular development, and finally another positive superimposed on the original thin one, and due to the sensitising action of the thiocarbamide. Consequently the resultant image is not an exceptionally good one, but in any development these stages can be easily watched. When an over-exposure and under-development is given, the amount of reduced silver will mask the positive image, and will yield the negative, which is undoubtedly the one previously obtained. Another factor aiding much in the masking by the reduced negative is the heavy surface fog, but several plates which appeared as negatives were treated with chromic acid, and if the action of the acid was discontinued at the proper moment just after the fog on the surface was dissolved, a positive could be seen, provided there had not been too great an over-exposure. This positive was the one which would be obtained under the normal conditions of the exposure.

When using carefully checked plates to the best solarisation, in no case could we obtain a negative with the thiocarbamide solution if the developer was of the proper concentration and the exposure was correct.

This work was suggested by Professor Bancroft, and has been carried out under his supervision. G. A. PERLEY.

Cornell University.

# Photo-Mechanical Notes.

### Combination Photogravure and Lithography.

AMONG the colour prints shown at the exhibition at St. Bride Institute mentioned recently, were three prints produced under the Bendixson and Winddop patent reported in these notes on September 17, 1909. The method is one in which rotary photogravure forms the key-printing—and thus reproduces accurately the drawing of the subject—while the colours are supplied lithographically, and so can be chosen by a competent lithographic draughtsman to match the original very closely. Of course, the draughtsman is not confined to three or four colours as in purely photo-mechanical processes, but may use as many as necessary to satisfy the requirements of the particular work in hand. The prints shown were reproductions of Gainsborough's "Mrs. Robinson," a drawing by Byam Shaw, and a sketch by a Hungarian artist. All appear to be astonishingly faithful reproductions, possessing a richness and purity of colour not always present in the commoner reproductions in colour. The great advantage of these prints, as against three-colour blocks, should lie in the ability to use a durable and non-shiny paper, and, as against colour collotypes, in the greater evenness of an edition.

### PHOTO-MECHANICAL PATENTS.

The following patents have been applied for:—

REPRODUCTION PROCESSES.—No. 13,920. Photographic reproduction processes. James Hayhurst Graham.

COLOUR PHOTOGRAVURE.—No. 14,393. Printing photogravure prints in three or more colours. James Jacques and Thomas Jacques.

KINEMACOLOR.—On Wednesday, June 28, Mr. Charles Urban presented exclusively at the Scala Theatre a full and comprehensive record in life-motion and the actual tints of nature, of the magnificent Coronation procession of their Majesties the King and Queen, taken from every important point of the long progress to the City, and especially embracing the ceremonials at Temple Bar, the Guildhall, etc. No official privileges were left unsecured, no expense whatever spared, in order to make this an "imperially perfect" pictorial chronicle of the greatest event of the present century—one right worthy of inclusion in the national archives—and, it is almost superfluous to add, such a group of varying scenes of the great spectacle from so many different aspects that no single spectator could possibly witness them all. The subject has since been further extended to include memorable and exclusive pictures of the Naval Review at Spithead, scenes brilliant beyond precedent, as well as views of the camp life of our Indian and Colonial forces under canvas at Hampton Court and in the various Royal parks; a veritable feast of sight-seeing, and all to be had from a comfortable seat in London's stateliest and coolest theatre.

# Exhibitions.

## LONDON PICTURES BY A. H. BLAKE, M.A., AT THE CAMERA CLUB.

The camera of Mr. Blake is an omnivorous animal; it snaps up everything that comes within its range of vision if the morsel have but the merest trace of flavour. As a consequence, the exhibition at 17, John Street, Adelphi, includes a wide range of subject matter under the title of "London, Picturesque and Historical," from the architectural confectionery of "The White City," to the Chelsea "grave of an Esquimaux boy brought to London by Captain Cook." Between these extremes there is much of what the true enthusiast of London understands by the name of London. Not by its nooks and corners, however quaint; not by municipal features, however rich in historical association; still less by the temporary lures of catch-penny "exhibition" promoters, does London display its peculiar magic and fascination; for all these attributes are to be found in other cities. But, as somebody has already said, London is not a city—it is a world. It has an atmosphere, physiographical and artistic, peculiarly its own, and Mr. Blake is happiest when he sets himself to portray that. To our mind, therefore, his best achievement is the really fine "Road Up," which we have admired before, with its boiling cauldrons and the expansiveness of area belonging to a London wide space. Next to this comes the "Building of Vauxhall Bridge," with similar qualities and the Thames charm added. Some others will be found which bear out the London idea to advantage, "The Sphinx" among them. There is room for a specialist London photographer yet, and Mr. Blake might well take the field—if his archæology stand not in his way.

## FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Entries close September 1 (Britain), August 21 (foreign). Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between June 12 and 17:—

Mounting.—No. 14,019. Apparatus for mounting photographs and other prints with a solution of shellac. George Friedl.

Mounts.—No. 14,039. Photographic mounts and the like. William James French.

Printing Frames.—No. 14,189. Photographic printing-out frames. John Wilkinson and Alfred Wilkinson.

Apparatus.—No. 14,339. Operating device for use in connection with apparatus for classifying and distributing photographic views or the like. Louis Joseph Emanuel Colardeau and Jules Richard.

Cinematographs.—No. 14,419. Cinematograph apparatus. William Friese-Green.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Three-lens Anastigmats.—No. 4,849, 1911 (March 21, 1910). The invention consists in an improvement of the objectives described in Patent No. 29,447, 1906. The invention described in that specification starts from a single objective adapted to a front diaphragm and formed of three lenses cemented together, of which two kinds were known, one having a bi-convex and one a bi-concave middle lens. These two kinds represent a common type, because in either the cemented surface, which is convex towards the diaphragm, is collective, while, on the other hand, that which is concave towards the diaphragm is dispersive. According to the older invention this type of objective is improved in this way—that, of the two differences of refractive index at the cemented surfaces (made approximately equal up to that time), the one at the collective cemented surface was given a predominant value. According to this rule it was necessary to aim at using for the front lens a glass having as low a refractive index as possible, a special drawback attendant on its employment being the fact that those glasses which came nearest to fulfilling this condition proved to be not sufficiently durable.

By the present invention not only this drawback is removed, but the front lens even receives a refractive index which is smaller than it was in any of the front lenses used up to now. This is attained by making the front lens of fused quartz.

In the drawings two examples of the single objective improved as above are shown. They correspond to the two types mentioned above. Both objectives are achromatic. The relative aperture in both cases amounts to approximately 1: 12. In the following tables the numerical values of the radii, the thicknesses, and the distance from the diaphragm D correspond to a focal length 100. The kinds of glass are characterised by the refractive indices $n$ and (for the H γ—line of the hydrogen spectrum) $n_{G}{}^{1}$:

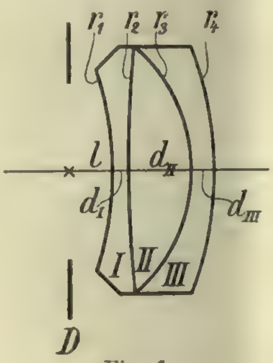


Fig. 1.

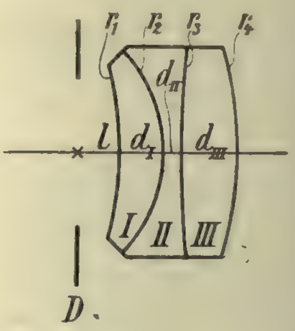


Fig. 2.

### Fig. 1.

Radii, Distance of Diaphragm and Thicknesses.

$r_1 = -13.00$ $l = 1.76$
$r_2 = +52.71$ $d_I = 0{\cdot}65$
$r_3 = -6.53$ $d_{II} = 2.61$
$r_4 = -13.71$ $d_{III} = 0.92$

Kinds of Glass.

| | $n_D$ | $n_G{}^1$ |
|---|---|---|
| I | : 1.45851 | 1.46694 |
| II | : 1.58166 | 1.59561 |
| III | : 1.62265 | 1.64337 |

### Fig. 2.

Radii, Distance of Diaphragm and Thicknesses.

$r_1 = -13.46$ $l = 1.70$
$r_2 = -5.79$ $d_I = 1.77$
$r_3 = +47.70$ $d_{II} = 0.68$
$r_4 = -14{\cdot}50$ $d_{III} = 2.28$

Kinds of Glass.

| | $n_D$ | $n_G{}^1$ |
|---|---|---|
| I | : 1.45851 | 1.46694 |
| II | : 1.49000 | 1.50116 |
| III | : 1.61282 | 1.62613 |

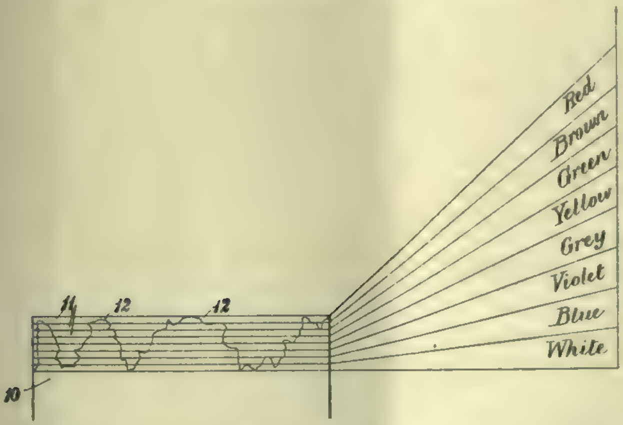
Carl Zeiss, Carl Zeiss Strasse, Jena, Germany.

Colour Prints and Transparencies.—No. 10,892, 1910 (May 3, 1910). Various proposals have been made for printing from a negative which usually necessitates what is known as the double transfer process, though a single transfer has been proposed. In such, the body or paper is coated with several layers of colour, the colour of greatest density (viz., red) being at the base, whilst colours of greatest transparency, such as white, are the top, with the other colours arranged in progressive order, the body being then exposed to the negative, when the negatived red portion will allow the light to penetrate through all the colours to the red layer, whilst the negatived white portions will only allow the light rays to penetrate into the top and white layer. Such a print is then developed in hot water, when all the layers which have not been acted on by the light are washed away, those layers which have been acted upon, or penetrated by the light, remaining after washing. It has also been proposed to reverse this order of colours to give optional or imaginary effects; but obviously in printing from a negative the positions of the colours would be reversed, white being in place of red in the print, and red in place of white.

According to the invention, this is obviated by printing from a positive which gives a correct picture without double transfer. To carry this into effect, the paper is first coated with a white emulsion, then with blue or violet, then yellow, then green or red, being an entire reversal of other colour processes.

The drawing illustrates a section of a coated body, as paper, film, or glass plate, showing the arrangement of the distinct layers in colours.

The paper or body 10 to be printed on from the positive is coated with a series of thin films or layers 11 of emulsions having the proper colours and arranged according to their relative colour value, and the paper is then printed from the positive and developed in the manner similar to that of making the ordinary photograph, the irregular line 12 indicating on a very large scale the surface line of the image when developed. The thickness of the coating of the paper, celluloid, or other coated body to produce the best results in printing, has a reasonable limit, and so long as you keep within that limit it makes no difference how many layers are placed on the body. For convenience, four colours will be mentioned, and in such case the paper is first coated with an emulsion of white, blue, or pink for the highlights, then with yellow, then green, and finally with red. A plate is exposed and developed in the usual manner to make a positive, after which the coated paper is exposed under the positive the proper length of time, the latter being preferably governed by the proper exposure of the white layer.



White being the most actinic colour, it will be obvious that the light from the corresponding part of the picture will penetrate clear through all of the colours into the white emulsion. Yellow being slightly less actinic, the corresponding light would penetrate into the yellow through the green, and the green being slightly less than the yellow, the light would not penetrate entirely through the same. Red being least actinic of all, the corresponding light will not pass entirely through it. The exposed paper may now be placed in warm water, when the white will all dissolve except in those places where the white was photographed, and where green was photographed, the yellow will wash away and expose the green, and so on throughout the series of colour layers used.

In preparing the paper, the emulsions may be made by dissolving the proper quantity of gelatine and sugar in water, as, for example, we may take 3¾ oz. of gelatine and dissolve the same in 40 oz. of water, and add to the water 1½ oz. of white sugar, and to this is added the proper quantity of colouring matter to suit. The amount of gelatine must be varied according to the class of work and the number of coloured emulsions used, and in practice there is quite a latitude in making the compositions as well as in the colouring matter employed.

Some of the colours may be made as follows:—

PHOTOGRAPHIC TINTS. RED.

| | |
|---|---|
| Indian red | 150 grs. |
| Carmine lake | 90 grs. |
| Chinese ink | 120 grs. |

TRANSPARENT RED.

| | |
|---|---|
| Carmine lake | 155 grs. |
| Indian red | 95 grs. |
| Chinese ink | 60 grs. |

BRIGHT RED.

| | |
|---|---|
| Carmine lake | 154 grs. |
| Indian red | 80 grs. |

For green, Prussian blue, and chrome or bright yellow may be employed, depending upon the green wanted; for violet, carmine lake, oxide of magnesia, Prussian blue or cobalt blue; and for yellow, a bright lemon yellow may be employed.

In practice, it has been found very effective to coat the paper by winding the same around a drum or wheel, and then giving the drum one turn, the lower edge of the drum entering the emulsion about one inch. The trough containing the emulsion may then be removed, and by continuing to revolve the drum the layer will become dry, after which the coloured layers may be successively added in a like manner. When the last layer is set the whole may be permitted to dry on the drum or may be removed or hung up to dry in a suitable place.

In developing, the brush method may be employed, and in this case a transfer is unnecessary, as the image is developed on its original support by using a brush and warm water.

Paper positives may also be made direct from the camera without the use of any plate, and in their natural colours. They may also be developed by the brush method, so that transfer is unnecessary, as they are developed and finished on their original support.

To make moving picture films or transparencies, a transparent celluloid film may be coated with a very fine coating in the same manner as the paper, first coating blue, then yellow, then green, and last red, and after coating and being dried and sensitised, the said film may be printed. In this case transfer is not necessary, and the developing is accomplished as for paper.

It will be understood that lantern slides in natural colours may be produced in the same manner, and that in carrying out the process the amount of gelatine must be varied according to the class of work which is to be done. This is also true with regard to the colouring matter, and the process or method is not confined to the use of gelatine alone. With respect to the composition of the emulsion, it will be understood that it may be materially varied without affecting the result by the addition or subtraction of other material similarly acted upon by light when combined with bichromate of potash or other salt having like action, such, for example, as gum-arabic, albumin, dextrine, either alone or in conjunction, may be employed to modify the emulsion or compound, but in practice gelatine and sugar combined answers very well.

In preparing the paper and making it sensitive at the time of coating for ordinary purposes, we may add to the compound before coating 1 part of a saturated solution of bichromate of ammonia to 20 parts of the compound, but this can be varied to suit different requirements, and to sensitise the paper after coating 1 oz. of bichromate of potash is dissolved in 12 oz. of distilled water, to which may be added 7 drops of strong ammonia, and on this the coated paper is permitted to float for about one minute.

From the foregoing it will be seen that a simple and efficient article and method is produced, whereby paper and other bodies may be coated with two or more coloured layers or films for the production of photographs and printed from positive transparencies; that a great variety of colours may be used which will reproduce objects in all their natural colours; that the means is simple and may be easily carried into effect; that the invention permits a number and a variety of colours to be employed;

that moving picture films or transparencies may be made in colours; that paper or other body prepared according to this invention may make photographs as easily as the ordinary black-and-white photographs are made; and that the invention overcomes the objections and unsatisfactory results incident to the methods as ordinarily employed for producing photographs in their natural colours. Edward Nelson White, Banes, Oriente, Cuba.

Non-Silver Printing Paper.—No. 11,610, 1910 (May 10, 1909). According to this invention the coating of the paper comprises ferric oxalate and a silver compound in conjunction with a soluble compound of mercury. Paper such as is employed in the preparation of platinotype may be coated.

Any soluble silver compound may be used, except the hyposulphite or the cyanide.

Satisfactory results can be obtained by using the ferric oxalate and the silver and mercury in the proportion of about 12 parts of ferric oxalate, 3.5 parts of silver in the form of a soluble salt, and .46 part of mercury also in the form of a soluble salt. Since the weights given of silver and mercury are those of the elements themselves, it will be understood that allowance must be made for the additional weight of the acid radical in using the salts of these elements. For instance, 3.5 parts of silver correspond to about 5 parts of silver nitrate, and .46 part of mercury corresponds to about 1.2 parts of mercuric citrate, and .49 part of mercuric oxide.

Lessening the amount of the mercury tends to give reddish or brownish black shades; increasing the mercury tends to give bluish black shades. Potassium oxalate may to some extent be substituted for the mercury. Other salts, such as stannic citrate, have the same effect as potassium oxalate.

A solution containing the following ingredients in the proportions stated has been found to afford a liquid coating which yields good results:—

| | | |
|---|---|---|
| Water (by weight) | 75 | parts. |
| Ferric oxalate | 12 | parts. |
| Silver | 3.5 | parts. |
| Mercury | 0.46 | part. |
| Oxalic acid | 1.0 | part. |

If 5 parts of potassium oxalate are added to the solution, the amount of mercury can be reduced to 0.2 part.

After all the solid ingredients have been thoroughly dissolved in water, the liquid is applied to a sized paper (or fabric), which is then thoroughly dried. The paper is then packed in a moist-proof and light-proof receptacle until required for use.

If the ferric oxalate in solution is relied upon to render the silver and mercury salts soluble, the ferric oxalate should be dissolved by itself in preparing the liquid coating, and the other ingredients added afterwards. For instance, 100 grains of ferric oxalate may be first dissolved thoroughly in one ounce of water, and from 20 to 25 grains of silver nitrate (or an equivalent amount of some other silver salt) and from 1 to 3 grains of yellow mercuric oxide then added to the ferric oxalate solution. The mercuric oxide readily dissolves in the ferric oxalate solution. Silver oxide is slightly soluble in ferric oxalate solution, and may to some extent replace a part of the silver nitrate or other silver salt.

As above stated, variation in the amount of mercury produces corresponding variation in the shade or tone of the print. In the example above stated, the mercuric oxide may be increased to 7 or 8 grains per ounce of solution. If 1 to 2 or 3 drops of a 10 per cent. solution of potassium bichromate are added to every ounce of the liquid coating prepared in the manner above described, the contrast in the finished print is increased. Omitting or reducing this quantity of potassium bichromate yields flatter prints, or prints with less contrast.

To print, the paper is exposed to light under a negative until the image faintly appears. It is then plunged into a developing solution consisting of, say, 1 part of potassium oxalate to 4 parts of water. After the image has developed to the right intensity it is cleared by being put into three baths composed of a solution of hydrochloric acid containing 1 part of acid to 64 parts of water. It is left in the first bath for five minutes, in the second for ten minutes, and in the third for fifteen minutes. It is then washed in running water for fifteen minutes.

Up to this point the printing, developing, and clearing are the same as in the case of platinotype paper, but paper now requires to be placed for ten minutes in a fixing bath of hyposulphite of soda, consisting of 1 part of hyposulphite to 20 parts of water, and immediately thereafter washed thoroughly.

To the potassium oxalate developer we may add sodium or potassium phosphate in amounts varying from 10 to 15 per cent. of the weight of the potassium oxalate employed. Also we add a soluble tartrate, preferably a tartrate of sodium. The purpose of both the addition of the phosphate and the tartrate is to increase the intensity of the black obtained in the finished print.

Instead of using hydrochloric acid for clearing the print, we may immerse it into three baths each, consisting of 1 part of hyposulphite of soda, 1 part of metabisulphite of soda, and 100 parts of water. The print is left in the first bath a short time, say, for five minutes, in the second bath for ten minutes, and and in the third bath for fifteen minutes. It is then washed in running water for fiteen minutes.

The print thus produced is, so far as can be found, entirely permanent, and, moreover so far as can be ascertained by analysis, contains no trace of mercury. Presumably the mercury acts upon the other substances in a catalytic way and is itself entirely removed in the course of development. George William Leighton, 101, Washington Street, and Charles Samuel Babcock, 815, Marquette Building, 204, Dearborn Street, both of Chicago, U.S.A.

Daylight Developing Apparatus.—No. 11,634, 1910 (May 11, 1910). The claim is for a box or receptacle provided with a light-tight cover having removable slide, light-proof inlet and outlet tubes for solutions. The developing dish is adapted to be retained in the receptacle against two adjacent sides, the opposite corner being formed as a recess to receive the spout of the dish and as a nozzle for the outlet tube. John Timms, 22, Thorncliffe Road, Barrow-in-Furness.

Cinematograph Effects.—No. 12,599, 1910 (May 24, 1910). The invention relates to novelties in the location and arrangement of a number of screens and to novel means for simultaneously projecting pictures comprised on a single band of film on to such screens whereby each picture is successively projected on to each screen, during the passage of the band through the apparatus.

Such screens may be transparent and may be employed for the simultaneous display of a number of images by several projectors, each using a separate film or by the methods hereinafter described.

Alternatively or in addition thereto. a number of opaque or transparent screens may be employed which may be of larger dimensions and radially at a greater distance from the projection apparatus.

Such screens may be employed for the simultaneous projection of several pictures from a single band of film:—An ordinary film fed vertically in the usual manner is caused to pass a series of illuminating and optical projecting devices, the axis of projection of each of which is in a different direction, the film being twisted to the necessary extent during its passage between each, by feeding it through a slit or over an inclined edge or around, between or over rollers, or by other suitable means. William Herbert Percy, 30, Broadway, Westminster, S.W.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

Cinematographs.—No. 13,564. Method of and apparatus for advancing cinematographic films in a continuous manner. Rossi.

## New Trade Names.

Kodoid.—No. 333,122. Sensitised photographic paper and other photographic materials included in Class 39. Kodak, Ltd., 57, 59, and 61, Clerkenwell Road, London, E.C., Manufacturers. April 27, 1911.

◆

The Royal Society of Miniature Painters.—The sixteenth annual exhibition of the Royal Society of Miniature Painters will open at the Gallery of the Royal Society of Painters in Water Colours, 5a, Pall Mall East, on Wednesday, July 5.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Unmounting Prints.

A writer in "Photography and Focus" for June 27 gives the following hints:—"The removal of an old print from the card upon which it is mounted is a task requiring a good deal of care, if all risk of injury to the print itself is to be avoided. Instead of trying to strip the print off the card, the card should be stripped from the print. If the print is a platinotype or is on albumenised paper, it may be allowed to soak in warm water for half an hour or so, at the end of which time it may come off the card without any trouble. If it is of unknown character, or if it is a gelatine, P.O.P., gaslight, or bromide print, then warm water must not be used, but an hour or two in cold water should be tried. The card can then, as a rule, be peeled off in layers, and as many of these layers as can be got off without any risk of tearing the print may be removed. It can then be put back for another soaking of the same kind, and this operation repeated until all, or almost all, the card is removed. Any little pieces that may be left can be got rid of by putting the print face downwards on a clean piece of glass and rubbing the back with the tip of one finger, so that the card comes off in little rolls. Patience is the chief requisite in removing the mount without any chance of hurting the print. The ease with which it can be done will depend on the nature of the mount. Prints that have been dry-mounted can usually be stripped off without any soaking or treatment at all, merely raising one corner of the print and then pulling gently. Making the print hot should facilitate the process, but it does not seem to be necessary. Unmounting a print should never be attempted, if the print is a valuable one, without first copying it; as, however much care may be used, it is not possible to avoid all risk of injury.

### A Universal Dark-room Developer.

Many things have been written concerning tanks and tank-developers relative to temperature, time, strength, etc., writes J. H. Burkholder, in "Wilson's Magazine" for June, page 254, but I cannot recall reading an account giving a pyro stock formula with instructions for the proper amount of dilution for the different methods of development. For that reason I believe many readers will be interested in a formula that will adapt itself to be used in either the tray or tank method without modification aside of the proper amount of dilution, etc. After numerous tests I have succeeded in formulating a system that I have put to practical use for nearly two years past with complete satisfaction.

If the following stock solutions are compounded and used in accordance with instructions, satisfactory results are sure to follow:—

| | | |
|---|---|---|
| A.— | Water | 24 ozs. |
| | Soda sulphite (anhydrous) | 4 ozs. |
| | Pyro | 1 oz. |
| B.— | Water | 30 ozs. |
| | Carbonate soda (anhydrous)<br>(or crystals, 8 ounces) | 4 ozs. |
| C.— | Water | 16 ozs. |
| | Iodide potassium | 30 grs. |

For tray development take A, 1 oz.; B, 1 oz.; water, 6 ozs., omitting the iodide solution entirely.

For tank development, use as follows:—A, 1½ ozs.; B, 1½ ozs.; C, 1 oz.; water, 30 ozs., or in these proportions according to the amount of solution required to fill the tank in use. Ascertain the temperature just before adding the stock solutions, that is, test the water, as the stock solutions will not affect the temperature perceptibly. Temperature should test 65 deg. and being careful that the duration of development is carried on exactly twenty minutes. This procedure will give satisfactory results on most of the standard makes of plates, having tested it on Cramer, Standard, Polychrome, Hammer red label, and Plastic plates, with uniformly fine results. Should it fail to give the exact density wanted on other makes of plates, a change in the time of development of, say, two minutes more or two minutes less will doubtless bring about the desired change in strength.

To some it may be a speculation as to what action the iodide of potassium would have upon the developer when used in the tank. In this connection I will state that a very weak developer often produces a slight stain or fog which would result detrimentally to the printing quality of the negative, and this solution is an absolute specific against this trouble.

The iodide solution can be added to any other pyro tank developer that may be used in about the same proportions as herein given, with the same assurance of being a complete stain eradicator.

Of course, it must be understood that all rules governing tank development not herein mentioned must be regarded, such as changing the position of the tank occasionally and other rules of this nature, if the best results are to be secured.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

SATURDAY, JULY 1.

The United Stereoscopic Society. Outing to Oxted.
South Suburban Photographic Society. Excursion to Rochester and Cobham.
Handsworth Photographic Society. Excursion to Olton for Elmdon.
Derby Photographic Society. Outing to Chartley.
Chelsea and District Photographic Society. Outing to Chalfont St. Giles.
Borough Polytechnic Photographic Society. Outing to Abrook.
Manchester Amateur Photographic Society. Ramble to Grindelford.
Halifax Camera Club. Ramble to Steeton.
Liverpool Amateur Photographic Association. Excursion to Bebington Hall and Storeton.
Darwen Photographic Association. Excursion to Heapy.

MONDAY, JULY 3.

Southampton Camera Club. "The Chemistry of Photography, Part II." Dr. W. P. Purvis.

TUESDAY, JULY 4.

Bradford Photographic Society. Excursion, Canal Bank from Saltaire to Cottingley.
Manchester Amateur Photographic Society. "A Visit to English Cathedrals." H. W. Bennett.

WEDNESDAY, JULY 5.

South Suburban Photographic Society. Discussion, "Backed Plates, Halation and Time Development." Salmon v. Thew.
Balham Camera Club. "The Oil Process." W. W. Aldridge.

# Commercial & Legal Intelligence.

Legal Notices.—A receiving order has been made in the case of John Hugh Jones (otherwise John Jones), photographer, etc., 1, Douglas Terrace, Bethesda, Carnarvon.

Photographic Canvasser Sent to Prison.—Before Sheriff Shennan recently, at Hamilton, a photographic canvasser pleaded guilty to a charge of fraudulent conduct. The complaint was to the effect that accused had, while employed by two photographers in Uddingston, pretended to his employers that he had received orders for photographs from certain persons, that on the strength of these orders he was entitled to a certain amount of commission, and that on inquiry the orders were found to be fictitious. The complaint also bore that he had collected sums from customers in payment of photographs and had not accounted therefor. Mr. John Cassells made a statement on behalf of the accused, who he said had a wife and five children, and that unfortunately the salary he was receiving could not maintain them. The total deficiency was only about £5, and if the accused was given an opportunity he would endeavour to procure the money and settle with both employers. The agent also expressed the opinion that if the accused was mercifully dealt with on this occasion, the leniency would not be misplaced. After a statement by the Fiscal, the Sheriff said two offences had been committed here immediately following upon each other. That showed not so much a sudden temptation as a criminal intent. He could not do less than send accused to prison for thirty days.

Canvassing Fraud at Lincoln.—An ingenious case of fraud occupied the attention of the Lincoln magistrates last week, when Harold Martyn, who, it was stated, has for a few weeks been carrying on the business of a dental surgeon at 136, Carver Street, Sheffield, was charged with obtaining 7s. 6d. by false pretences from Mrs. Nellie Hall, of 5, Chelmsford Street, Lincoln, on May 20. The prisoner called at the shop of the prosecutrix, and represented that he was employed by Shatz and Son, photographers, London, and was a son of the principal of the firm, who were opening a branch shop in Lincoln. He agreed to enlarge a photograph of her little girl free of charge, providing she exhibited the enlargement in her window for a short period. Subsequently he called again with a proof, and induced prosecutrix to order a frame. She paid him 8s. 6d., and he returned her 1s. for discount, and gave her a receipted bill. Prosecutrix never saw the prisoner, the enlargement, or the money again, and did not receive the frame.

The prisoner was before the Bench a few weeks ago, charged with a somewhat similar offence, and on that occasion it was stated that he had obtained a good appointment in Sheffield, and the magistrates were inclined to be merciful and imposed a fine.

Detective-Sergeant Brierley, giving evidence on Saturday, said he had received a great number of complaints concerning the prisoner from various people. He received Martyn into his custody from the Sheffield police on Friday. In reply to the charge, he said he was sorry he ever went to Lincoln. He seemed to have made nothing but trouble there. He had only been in the photographic business about five weeks, and he knew nothing about the trade. He was a dental surgeon. He added: "When you get out of a berth you have to get your living somehow. When I started other canvassers told me I should have to tell a good tale, otherwise I should get no orders."

Chief Constable Coleman proved previous convictions, and mentioned that prisoner was wanted in several places.

Sentence of three months' hard labour was passed.

The first meeting of creditors in the failure of Frederick George Clapham, a chemist and dealer in photographic apparatus, lately carrying on business at 110, West Street, Farnham, Surrey, was to have been held at the Westminster Court on June 26, but debtor and his brother, the latter a creditor for money borrowed some years ago, were the only parties present. No complete statement of accounts had been filed, but, in reply to the Official Receiver, debtor said he owed about £500 to some forty creditors, but the majority of the debts were for small amounts. Debtor had roughly estimated his assets to realise £299, but a forced sale of effects by the bailiff of the Farnham County Court had shown that the assets as to stock and fixtures had been much over-estimated. Questioned as to his book debts, Mr. Clapham said he was owed numerous small amounts, most of which he hoped to recover. Particulars of debtor's trading history showed that half of his indebtedness was due to his wife, from whom he borrowed £250 to commence business at the above address in December, 1903. This money is still owing, and debtor also owes his brother £30 on account of money borrowed. In 1906 debtor received some property under mortgage in redemption, and he valued his interest in this at £200. For the past three years he had been pressed by creditors, and about twenty had sued him for debts in the past twelve months. Six creditors had obtained judgment against him, and upon the bailiff going in, debtor filed his petition. He attributed failure to lack of sufficient capital to keep up an adequate stock of goods, and to insufficient profits, which rendered him unable to meet household and personal expenses. The Official Receiver said the matter was a summary one, and would remain in his hands.

## News and Notes.

R.P.S. Fellows.—At the meeting of the Council of the Royal Photographic Society held on May 15, the following were elected Fellows of the Society:—A. L. Adams, F. C. Boyes, G. H. F. Catherall, Alex. Keighley, Cyril F. Lan-Davis, and A. J. Newton.

Ensign Film Competition.—Rev. B. W. Stothert, Formosa House, Alexandra Road, South Farnboro', Hants, is the winner of the "Ensign" roll film competition for June. Houghtons, Ltd., offer a three-guinea camera every month for the best negative on "Ensign" film. The entries close on the 3rd of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

Society for Horncastle.—A meeting was held recently to consider the advisability of forming an Amateur Photographic Society at Horncastle. Mr. H. Carlton, J.P., presided, and, after explaining the objects of the meeting, he read correspondence from the secretary of the Lincoln Society, sketching the main lines that should be followed. Mr. G. J. Walley read the names of several ladies and gentlemen who had expressed their intention of joining if such a society was formed, and he also put before the meeting the syllabus of a society, which was considered very attractive, including as it did excursions, lectures by experts, exhibitions and demonstrations. The question of suitable rooms was considered, and eventually this matter was left in the hands of Mr. G. H. Jalland and Mr. G. J. Walley.

A Competition for Southampton Photographers.—In order to get into touch with photographers of the district, the Southampton Camera Club have organised a print competition open to all photographers who reside within fifteen miles of the Bargate, present members of the Club excepted. Any number of prints may be entered, and they may be of any size, of any subject, and in any process; they should be mounted, but not framed. Silver and bronze medals will be awarded to competitors whose pictures secure first and second places respectively. Judging will take place at a public meeting held at the Club's headquarters, the Philharmonic (small) Hall, on Monday evening, July 31, at 8 o'clock, and will be by a ballot of the Club members. All competitors should be present at this meeting, and receive their prints after the judging. The Club's dark-room and apparatus will be open for inspection on this occasion. There are no entry fees, but all prints should reach the hon. secretary, Mr. C. M. Cooper, 203, Shirley Road, Southampton, not later than first post on the day of judging. No writing other than the title should appear upon the print. The competitor must enclose a separate piece of paper with his name and address thereon. The hon. secretary will be pleased to answer any inquiries relative to the Club.

Telegraphic Transmission of Photographs.—The "Electrical Review," in its issue of June 16, publishes an account (from the "Zeitschrift für Schwachstromtechnik") of the system of electrical transmission of photographs, etc., invented by Prof. Rosing, of St. Petersburg. The reproduction of the picture transmitted—which, of course, constitutes the chief difficulty of the problem—is effected by an application of the properties of the cathode tube. At any given moment during the operation of the apparatus, the cathode stream in a Braun tube at the receiving station is focussed on, and causes fluorescence of, a point on the receiving screen exactly corresponding to the point on the picture then dealt with by the transmitting apparatus. Unlike most earlier experimenters, Rosing does not employ a selenium cell to record and control (in reproduction) the varying luminous intensity, or optical density, of the original picture. Instead, he uses a specially rapid photo-electric cell consisting essentially of a glass bulb containing rarefied hydrogen or helium and sodium, potassium, caesium or rubidium amalgam. The amalgam constitutes the optically sensitive electrode, while for the anode a platinum electrode is fused through the bulb. The amalgam being negatively charged and illuminated, there occurs, by the Hallwachs effect, a discharge from its surface, varying in strength directly in proportion to the intensity of the incident illumination (Righi and Stoleton). Moreover, this photo-electric current accurately follows the variations in the exciting illumination.

Photographic Survey of Surrey.—Travelling by the 9.53 a.m. from East Croydon on Saturday, June 17, the Croydon members of the Surrey Survey spent a most enjoyable day at Guildford, being engaged in photographic record work in and about the town. The previous showery weather had made everything pleasant for work, members from other and distant parts of Surrey meeting at Guildford station. After photographing some old houses in the Farnham Road which will shortly disappear, those who were not booked for sundry work made their way to the Trinity Hospital, in the High Street, where they were met by Mr. H. Harris, the genial Master, who was as enthusiastic as the members in showing the many interesting features in this fine old building. The members were soon at work making the most of the time at their disposal, photographing the exterior and interior. The quadrangle, dining hall, chapel, board-room, all received attention, as well as the numerous details of wood carving, iron work, etc., that exist at every turn, some of the interior work being of such a sombre nature that exposures from twenty minutes to an hour were requisite, and it is hoped many interesting records will result and enrich the collection from the painstaking way in which all the party worked. After lunch the Castle was visited, when several views of the outworks and old keep were photographed. Guildford, like other towns, was showing evidence of red cloth and bunting, and the Castle grounds are resplendent with interesting and patriotic flower designs. Triumphal arches were being erected on the hill and at the foot of the town, and no doubt many an interesting photographic record has since been made, copies of which should find a resting-place in the collection of the Survey, including also other Surrey towns, and villages as well. The whole party met at five o'clock for high tea, afterwards leaving by early trains for their various destinations, having spent a most enjoyable day.

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

## THE EXETER CONVENTION, JULY 10—15.

To the Editors.

Gentlemen,—I shall be glad if you will allow me to announce through your columns that a party of Conventioners have arranged to go to Exeter together by the express excursion train leaving Waterloo on Friday, July 7, at 10.40 a.m., and I shall be pleased to reserve accommodation for any others if they will let me know not later than Tuesday next, July 4.

The return fare is only 16s., and the tickets are available for three, seven, ten, fourteen, or seventeen days.—Yours truly,

F. A. Bridge, Hon. Sec. and Treas.

Downshire House, Barry Road, East Dulwich, S.E.

## SUNDAY CLOSING AND THE SHOPS BILL.

To the Editors.

Gentlemen,—In reply to "Scottie," I am not in favour of a seven-days week. Personally, I always take half a day off, and very often in summer make a day of it, as I find that this time spent in the country is very beneficial. I thank "Scottie" for his designation "philanthropist," which doesn't in the least alter the fact that many men *have* to sacrifice Sunday for other people's happiness. As to the unworthy insinuation contained in the words "even if he himself does really work as hard during the week as his assistants": well, I employ no assistants. I am only in favour of Sunday work for operators and receptionists where unavoidable. It is a fallacy to suppose that if people cannot be taken on Sunday they will come during the week. We are not considering a necessity, but a luxury, which people could and would do without if prevented from being photographed in the only time they have at their disposal. Would "Scottie" advocate photographing a Sunday procession or press incident on a Monday?

I think it would be more "significant" for "Lancastrian" to find himself going through the Bankruptcy Court through *failing* to open on Sundays. In reply to Mr. Frank Brown, it is not Sunday opening that degrades the profession, but price-cutting and inferior work.

Lancastrian.

To the Editors.

Gentlemen,—"The race is not to the swift, nor the battle to the strong," are very old words, but still very true and very wise. They are, moreover, the foundation of the Gospel. Truly the weak sheep of the earth shall confound the strong. Charles Dickens uses the same truth in his own admirable way, in telling the Story of Dombey and Son, and Robert Burns puts it still more forcible, briefly in these words:—

> "The best laid schemes o' mice and men gang aft agley."

Many years ago I tramped down from the Highlands, right into the heart of England; was fortunate in getting a situation to retouch and manage a branch, but had to work on Sunday. I didn't like it, so, after a few weeks, I left, and went to Ireland. After much hardship, I came out of it a perfect scarecrow.

But through it all I had good faith, and a fierce belief in religion and the wisdom and mercy of God. After many years I looked in again to see that studio, and found the principal and all concerned morally, physically, and financially a total wreck. Such is the result of cutting prices. The loss of everything—respect, virtue, honour, and manhood.

The remedy for postcard work is, "Don't do them," or anything that will debase your life or profession.

In conclusion, may I just point out to Mr. R. McMahon that the proverb from America he gave us on June 2 is absolutely appalling in its logical results when applied to mankind?

It is evident he has not considered the inhumanity in the words which the proverb contains. If we take the industrial life of the United States of America, and consider for a moment the argument how many get knocked out, it is, as I said, appalling.—I have the honour to be, yours faithfully,

Henry Holman.

13, Boyndu Street, Banff, N.B.

## "AM I TOO OLD?"

To the Editors.

Gentlemen,—In reply to "Am I Too Old?" in your issue of June the 16th inst., who asks someone to promulgate a reason why he "cannot get a crib," and also if he is "too old at 43 to succeed as an operator," certainly not. I know many men in the profession who can add three to eight years on to his 43 and are a success as operators. So "Am I Too Old?" can gain nothing but wrinkles by brooding on it. With regard to "not getting a crib": in these days, when women are so energetically invading the photographic profession, which has hitherto been held sacred to men, can it be wondered that at the present time there is a scarcity of work among the male portion of photographic workers? It seems now generally recognised that woman has every right to embark upon any work she fancies, and so be the cause of reducing wages, and reducing the chances of male workers to get employment. It would be interesting to know why so many firms employ a lady retoucher, etc. Is it because she is willing to undersell her brother worker? Another point that cannot but strike the observer of women's work is the vast field that they are gradually opening up for themselves, not only in the photographic profession. Women are entering largely in almost every trade; even abroad they have the woman policeman, while at home we have the very latest thing out in the ladies' fire brigade. Now, Sirs, this invasion of the woman worker in the photographic profession is a very serious matter indeed for their male competitors. One has only to watch the advertising columns of the "Journal" to see the large number of women seeking berths. Only the other day the writer came across a male retoucher—a first-class man, too—who had been out of a berth for nine months, and he informed the writer that he had applied to many firms for employment. But he was always met with "We want girls," and from what I can gather there are many more cases like his, and many of them, no doubt, married men. This state of affairs must somehow be rapidly remedied, otherwise the male worker will be wiped clean off the slate. In the old days only one lady was to be found in the studio, i.e., the lady receptionist. I have seen the rise and fall of a good many firms in my time, including the rise of the "Journal" and the fall of the "News," but surely I am not going to see the fall of the male photographic worker. But I am afraid in another ten years, when the business training of women is placed on a thoroughly sound basis, that their wage-earning capacity will be proportionately higher, and the question is, Will the male workers' wage-earning capacity be higher in that time? As matters stand at present, I should say they will not. But they will be left out to swell the ranks of the unemployed. Now, if you will allow me to go on, I should like to give one reason why some photographers prefer lady workers, which came under the notice of the writer while in the employ of a London studio. The principal of this studio employed two lady-retouchers; one lady had a seat in a large ware room at the top of the house, overlooking the main road, while the other one had a seat in a back room on the next floor. A male worker was also employed in another part of the house. Now the whole three could have been seated comfortably in the front room with a good light, but that did not suit "the boss." He had his own ideas how to handle the young ladies. He would allow no one in their rooms. He always took their work in, and would go from one to the other and pay each one some pretty compliment, and endeavour to get them to make an appointment to meet him after business hours. Should he not be successful, well, it ended in another "box number" in the "Journal." The principal of this studio was a married man with a family. If these lines reach the eyes of the many young ladies who have been employed by this photographer, they will, I am sure, corroborate my statement. I can only add that I sincerely hope that this treatment of lady workers is a very rare case indeed. I think I have now answered "Am I Too Old's?" question why he "cannot get a crib," and in conclusion I think the best thanks of all photographic workers are due to the Editors of the "good old Journal" for throwing open its columns to ventilating the just grievances of photographic assistants.—Faithfully yours, H. B. T.

London, S.W.

To the Editors.

Gentlemen,—In reply to your correspondent's letter as above, I am afraid he is too old in his ideas of present-day requirements. As a matter of fact, in these days of "too old at forty," a rut is never insurmountable, provided you have got the grit whereby you can get out of it. His ideas have become stagnant, and consequently he is left high and dry by the tide of progress, and unless he is prepared to come down from his pedestal and take part in the battle of life, he will still be waiting for something to turn up. There are firms that are wanting such men that will adapt their talents to present, up-to-date methods of photography, and are willing to pay an adequate sum for such services, but the poor old chap does not seem to grasp the situation, and allows posts to slip by without even giving them a trial. My advice is: Come down, old chap, and adapt yourself to present-day requirements, and look upon the profession as more of a trade, and don't allow the barber, butcher, and baker to show you how to make a success of it.—Yours,

WAKE UP FORTY-THREE.

To the Editors.

Gentlemen,—I read with considerable interest the letter from your correspondent in which he put the above query. The answer is obviously no, but the trouble is to get a suitable berth. We live in a very commercial age, and work in a business (or profession) where the proprietor is usually chief operator, and he, with his superabundant knowledge, assisted by an "improver," *plus* a few apprentices, can do the necessary work. Your correspondent is not alone in his experience, and although I am ten years his junior, my experience is almost identical. I was, unfortunately, persuaded to accept my present berth as manager (!) with most specious promises and glowing accounts of the business which was being done; only to find that there was a much neglected business and the manager's (?) duties included everything, from operating to printing, with occasional mounting. I need hardly say the promised increase of salary is still overdue. Like your correspondent, I have been trying in vain to get a suitable berth, with specified duties. This striving, too, has its tragic as well as its humorous side. One vacancy held out for salary 3 per cent. commission on takings, with 5 per cent. on takings over £50, and this from a firm belonging to the P.P.A. Others were of the seven-day variety, while a few were good enough to say the work was of too high a standard. I may say that I have had the honour of photographing his late Majesty, King Edward VII., Queen Alexandra, and other notabilities. I have two references from Royal Warrant holders, also a P.P.A. certificate, yet because I must live, I "hang on" at a place I have been trying for over twelve months to leave and forget.—I enclose my card, and remain,

INCOGNITA.

## SEEING BEFORE THE EVENT.

To the Editors.

Gentlemen,—When I read in your last issue that I was "evidently prone to jump at conclusions," I thought I was about to learn something, but your paragraph does not enlighten me very much. The assertion that the difference between the speeds of light and sound is only appreciated at a considerable distance, is a loose way of contradicting a scientific statement. Nobody knows how far a "considerable distance" is. What, may I ask, is the nearest distance at which the difference can be detected by an average individual? Light travels fifty yards in about 1-66,000,000th of a second, whereas sound will take approximately 1-7th of a second for that job, and I am sorry for the person who cannot appreciate such a difference. If you have observed the wedge sink before the hammer hits it, or any similar phenomenon, one would like to know whether you have repeated the experiment with the ears blocked; if so, your evidence would be of value if you gave it to us. So far you have given us nothing.—Yours very truly, J. OSBORNE.

June 17, 1911.

[We fear our correspondent is still jumping at conclusions, for in our former note we made no attempt to contradict any scientific statement. It is not at all likely that "M. R." observed the phenomenon to which he referred at anything like a distance of fifty yards. He does not state the exact distance, but in an ordinary road five yards would be more likely than fifty yards, in which case the sound will only take about 1-70th second to reach the ear. We do not know of any data relating to the exact distance at which the difference in the velocity of light and of sound becomes appreciable, but we doubt if the average person could notice it at any distance much under twenty yards. In any case, a great deal would depend on the person concerned, as his quickness of perception would affect the question very materially. The velocity of sound has, however, nothing whatever to do with the experiences recorded by Dr. Adolphe Abrahams, or with those noted by ourselves. These were purely photographic. If the exposure is made just when one phase of a movement is seen, it is not at all unusual to find the result records a previous phase; or, again, if the moving subject is centred on the finder when the bulb is pressed, it often happens that the negative shows the subject has not yet reached the centre. This visual anticipation of movement is such a common phenomenon that we are surprised our correspondent does not seem to be aware of it. We must also point out that in the above letter the velocity of light is overstated ten times. 1-6,500,000 of a second is nearer the time for a distance of 50 yards.—EDS. "B.J."]

## CHARGES *RE* COMMERCIAL PHOTOGRAPHY.

To the Editors.

Gentlemen,—The letters in your two last issues on this subject reveal a fine state of things, but I do not see at all because one does postcards at 1s. 6d. per dozen, or works on Sundays, that another is *compelled* to follow. There will always be people who will patronise such, and I look on it as degrading to the profession to attempt to meet it *on its own level*. I believe that, too slowly, perhaps, but surely, the public are being educated to value *good work*, and so I say it is better to raise the standard of the work than to lower the price. As to Sunday work, it must be left to a man's own conscience. If he believes in a rule laid down for the general good, he will submit to it, and abide by the result, whatever others do.—Yours, PROFESSIONAL.

P.S.—What would "Good Work at Fair Charge" think of doing twelve postcards and 12 x 10 enlargement for 5s. 6d.? I expect he would apply his parliamentary (?) language to it.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**Photographs Registered:**

C. Laroche, The Clarence Studio, Clarendon Street, Spring Bank, Hull. *Photograph of Miss Adelaide E. D'Vorak, Champion Lady Skater.*

The Northern Photographic Company's Successors, Waterloo Road, Blyth. *Photograph of Ruth Redford.*

A. O. and H. D. Allport, 313, Stratford Road, Sparkbrook, Birmingham. *Photograph of the Lord Mayor of Birmingham inspecting the Birmingham Tramway Staff.*

H. West, The Studio, Cobham, Surrey. *Photograph of Sir Frederick Young K.C.M.G., taken on June 21, 1911, his 94th Birthday.*

**R. W. S.**—Verascope cameras are made and sold by Messrs. Jules Richard and Co., 27, New Bond Street, London, W. Better write to them for a price list. There are various sizes.

**A. Maunton.**—Your query reached us too late for last week's issue, which (as announced) went to press on June 19. It is difficult to prescribe exposures for bonfire subjects, but if you wish to obtain figures standing near, it will be necessary to make the exposure while there is still a fair amount of daylight in the sky. Certainly the lens will serve for interior work. Try about five times the exposure compared with out of doors.

**Rembrandt Paper.**—Can you tell me, through your "Correspondence" columns, if "Rembrandt" P.O.P. is still on the market? Some five years ago I tried it (with good results) for bright prints from flat negatives, but did not keep the address of the makers, and my dealers do not know where to get it now.—Scott Brodie.

We believe you can still obtain it from large dealers. The firm manufacturing it is Ferd Hrdliczka, 9 to 11, Lerchenfelder Gürtel, Vienna, XVI.$_2$.

**Enlarging and Reducing.**—Do you know of any simple mechanical device on the market, or in use by the profession, for readily ascertaining the exact size to which a given print will reduce or enlarge so as to keep the same relative proportions between the length and width of the original? It can, of course, be done geometrically, but I want to ascertain the proportions rapidly with large numbers of prints.—Arthur T. Faircloth.

We think you will find what you want in the Carl Norman apparatus, sold by Penrose and Co.

**Fuse-Wire.**—Can you tell me of a wholesale house which supplies wire as sample enclosed? It is for use (in one instance) with our flash-lamps. If you note, this is a very fine wire. Is it this gauge I require? It fuses so quickly.—Carrick and Co.

For wire suited for making fuses you might apply to Messrs. Griffin, Kingsway, London, W.C. The wire is rather fine, and you might use either less current or a thicker wire. If, however, the wire is too thick, it will not get hot enough to fire the charge, so it is best to err on the side of thinness.

**Odour of Turpentine.**—In the making of retouching varnish with turpentine, could you inform me if there is any other chemical that can be put into same to kill the smell of the turps, that would not affect the quality of the varnish? Resin is used with the turps.—Varnish.

We fear we cannot help you in the way you require, and we should not have thought the smell would be so objectionable. You might try adding a drop or so of oil of lavender or bergamot, to render the smell less obnoxious, but too much will spoil the varnish.

**Everset Shutters.** Je désirerais savoir par l'entremise du "B.J." quels sont les obturators "everset," au delà de l'automat. Je connais, de nous, beaucoup d'obturateurs tels que Koilos, Celverex, Volute, Unicum, Sector (Goerz), Compound, Lopas (Ross), Max Goergen, Linhof, Panoptic (Th. Pickard), Multispeed, etc.; mais je désirerais savoir parmis ceux-ci, lesquels sont everset. Toujours à votre service, je vous présente, Monsieurs, mes salutations empressées, B. dos Santos Leitar.

Of the shutters you name, the Goergen is everset, but the Koilos, Celverex, Volute, Unicum, Sector, Compound, and Multispeed are not. The others we are not sure about.

**Lamps.**—If you have electric current available, we advise you to use it; you will find it more satisfactory than gas. The arrangement you propose is fairly efficient, is about right as regards height, but we should prefer to space out the burners more. Your comments on existing lamps appear to be made in ignorance of the Howellite studio portrait gas lamp reviewed in our issue of March 31. Its design is somewhat similar to yours, but the better arrangement of the lamps, and the use of the inverted pattern of burner, make it more efficient. With your apparatus, we should expect exposures under the conditions you name to run into five seconds. The cost of the arc, with stand, reflector, etc., would be about £10.

**Amateur.**—It is difficult nowadays to discriminate between amateur and professional workers in many occupations. At the present time I practise photography as a hobby, but at the same time I endeavour to make my hobby pay for itself, and, if possible, more. I sell picture-postcards of localities I visit while on holiday, and do portraiture and other work for payment. In view of the above am I to consider myself an amateur or professional? I should be glad to have your opinion on the matter, for which please accept my best thanks in advance.—W. J. Howe.

It is customary to define a professional photographer as one whose livelihood is obtained by photography, but it is very difficult to make hard-and-fast distinctions. If you cannot be called a professional photographer you do, in a measure, fall within this category.

**Hypo.**—Supposing a jar of concentrated hypo solution is kept for convenience, how much water is to be added to every ounce of this, to make (1) 1 : 3 sol., (2) 1 : 4 sol., (3) 1 : 10 sol.?—Bromide.

Roughly, hypo will dissolve at ordinary temperature in its own weight of water, but the strength of this "concentrated" solution will vary greatly with the temperature, and to make such a solution and dilute it for use is a very bad method of preparing the stock solutions you name. Your best course would be to dissolve, say, 50 oz. hypo in water, and make up to a total bulk of 100 oz. Each ounce then is equivalent to ½ oz. hypo, and to prepare the other baths it is diluted as follows:—For 1 : 3 sol., stock, 2 parts; water, 1 part. For 1 : 4 sol., stock, 1 part; water, 1 part. For 1 : 10 sol., stock, 1 part; water, 4 parts.

**Copying Camera.**—I wish to photograph large oil paintings and pictures of all kinds, and am thinking of getting a 10 x 8 camera, but am not certain what type is most suitable. 1. To what length ought the bellows to extend? 2. Would a square bellows be absolutely necessary? 3. Would the camera require to have any special movements for this kind of work? 4. What kind of lens would you recommend?—P. L.

1. The bellows should extend to, say, 50 per cent. more than the longest focal length of lens you will use with the camera, at least 20 in. to 24 in. 2. No; but see that the bellows (if conical) do not cut off the cone of rays from the lens when the lens front is raised considerably, and when a short-focus lens is in use. 3. Best for it to have rack-and-pinion focussing from the back, ample rise of front, and, preferably, swing front and back. 4. Choose an anastigmat lens of aperture about *f*/6, and focal length for average work of 10 in. or 12 in. As the bulk of your work will require to be done on panchromatic plates and with a fairly deep light-filter, the lens should be of good

chromatic correction. See the lists of lenses by makers named on page 1543 of the "Almanac."

**Photographers' Rights.**—We have had a difficulty in connection with copyright, on which we should be glad to have the assistance of your advice. It concerns a snapshot which we took of a troop of Pierrots during a performance on the sands here in the recent holidays. We got a very good negative, showing all the performers, and as the troupe is popular among the visitors here we issued postcards, which were readily taken up by the stationers and street vendors. We have now been approached by a solicitor, saying that the sole rights in the photographs of the Pierrots have been obtained by another photographer, and that as these photographs are copyright and have been registered, our issue of postcards is an infringement, and unless we withdraw them from sale they will take proceedings against us. We have studied the Copyright Act, and also the article on copyright which you published in the "Almanac" a year or two ago, but we cannot find anything in either to lead us to think we have done anything which renders us liable to action.—South Coast.

Neither can we. You had a perfect right, with any other member of the public, to take a snapshot of the performance, and, having taken it and made prints, the copyright in them is quite distinct from that in any other photographs which may have been taken of the Pierrots. If anybody has any ground for complaint it is the photographer who purchased the sole rights to photograph and sell prints of the Pierrots. Obviously, it was impossible for the Pierrots to prevent photographs of themselves being obtained.

**Vive Camera.**—I have just come into possession of a hand-camera made by the Vive Camera Co., of Chicago, and described as a tourist magazine daylight-loading, patented December, 1891. As the sheaths are missing and I cannot see how it is operated, I shall be pleased for you to advise me through your valuable paper, of which I am a constant subscriber. Description of camera:—Box form, opening at one side only, and which reveals an indiarubber sleeve for the purpose of changing plates. This sleeve is attached to a metal framework, which can be removed bodily, and inside is seen a tin receptacle to hold plates or films; at back is fixed a flat spring; a block of wood (used as a fill-up) is placed behind sheaths, and in front of spring, to keep plates in register. It seems to me that what is intended is that the exposed plate is removed by the fingers and placed behind the last unexposed plate, thus maintaining an equal pressure and causing the other plates to move automatically forward for the next exposure. Also, there is a shallow space at top of camera, the purpose of which is not apparent.—Leo.

The Vive cameras were upon the English market for a short time only; our recollection of them is not very distinct. But obviously the camera is of the bag-changing type, the back plate being lifted into position in the front, or *vice versa.* Unless such an arrangement includes a lever for lifting the plate, it is generally rather awkward in practice. We should not advise you to spend money on having the camera repaired or specially fitted; for very little more you could purchase a new hand-camera, which would be much more satisfactory in the end.

**Sale of Business.**—I am selling a business by valuation of business portion only. Would you answer me the following (it is as a going concern):—1. There are about 4,000 negatives taken during the past two and a half years. What value should these be put at? 2. The portrait ledger of numbered negatives and customers' names and addresses, with their orders. Does this count as an asset, and what value? The business is doing about £580 a year. 3. As to fixtures and apparatus, etc., which are the right figures to arrive at for the value? As to fixtures, would it be right to value at actual cost of material and leave labour out, as the reduction; and as to apparatus, etc., how should I arrive at their value? 4. Could you give me name of a valuer, should we not agree? Your kind favour in your issue would greatly assist.—Seller.

1. It is imposible to give any idea of the value of the negatives without knowing the class of sitter, and whether there are any celebrities among them. In any case, negatives of private sitters are now regarded as of little value, most people preferring to have a fresh sitting when they require more portraits. 2. The ledger should certainly go with the negatives, as they are practically valueless without it. You mention turnover, but do not say what the profit is; this is the most important point. 3. It seems fair to sell the fixtures for cost of materials. The value of the apparatus depends upon its condition and usefulness. Taking things all round, modern goods should be worth about half their actual cost to you. The purchaser may not care for many of the articles, so that you must not expect to get more selling *en bloc.* 4. For valuation of apparatus, etc., we should suggest Mr. Arthur Spencer, 4, Harrow Road, W., or Messrs. Sands and Hunter, Bedford Street, London, W.C.; for the business as a going concern, Messrs. Booty and Co., whose address you will find in our advertising columns, would be able to act as arbitrators.

**Daylight Enlarging.**—Please oblige me with instructions for fitting up daylight enlarging apparatus. Given (1) a north window 3 ft. 7in. wide, 4 ft. 11-16 in. deep; (2) the pane through which I propose to enlarge, 1 ft. 1 in. wide, 1 ft. 2⅜ in. deep; the camera, (*a*) an old-fashioned half-plate Kodak, through which to enlarge half-plates, quarter-plates, 5 x 4's, and smaller plates, and films of various sizes; (*b*) a Goerz vest-pocket camera, to enlarge its own plates; size of back end of Kodak, 10 in. wide, 8½ in. deep; size of back end of Goerz, 3 in. wide, 3½ in. deep; how shall I manage about dark slides and carriers for various sizes? What will be the most efficient way to rig up the easel for the bromide paper?—Enthu.

The general principles on which you must arrange the apparatus are these: The window must be entirely blocked up, excepting for a space the size of the negative. Outside the window you must have a large white reflector fixed at an angle of 45 degrees, to throw light from the sky on to the negative. The negative must be fixed in the space left in the window shutter, and then the camera must be set up in front of this, so that the lens may project an enlarged image on an easel put at a suitable distance. You want a shelf or table to carry the easel, which may be a simple drawing-board with blocks fixed at lower edge so that it may be stood upright. Focussing must be done with the camera focussing adjustment, and if the extension is not enough you must draw the camera away from the negative and fill up space left, so as to exclude all light. A cloth will generally serve for this. A support for the camera is, of course, wanted, and this may be a shelf fitted inside the window shutter, or a box standing on the table carrying the easel. You will not want dark-slides, only carriers to take the negatives, and these any dealer will supply, if you cannot make them yourself. With regard to enlargements from the small camera, we suppose you know that the makers supply a daylight enlarger for use with this at a price of £2. As to the details of fitting up your arrangements, we can hardly advise you, seeing that we do not know what conveniences you have at hand. We would, however, suggest that it would probably pay you better to get an artificial light enlarging lantern, which is easier to manage than a daylight apparatus, and more satisfactory altogether. If you do not care to do this, you can fit up the daylight apparatus at very small expense.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2670. Vol. LVIII. FRIDAY, JULY 7, 1911. Price Twopence.

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## SUMMARY.

Next week—the Photographic Convention at Exeter.

The Grand Committee of the House of Commons at present considering the Shops Bill has agreed upon an amendment according to which, in Scotland, photographic studios are to be included among retail trades or businesses, and, under the Act, are to be closed on Sundays. (P. 520.)

Some advice to those thinking of commencing business in photography is given on page 510.

In a letter dealing with cheap photography a correspondent expresses the view that an increase in the prices of materials would be a step in the right direction. (P. 521.)

Several further letters deal with Sunday closing from the point of view of the assistant, the cheap photographer, and the conscientious Sabbatarian. (P. 521.)

Methods of lighting, development, etc., in relation to producing the attractive photographs, in which a figure is shown posed at a window, and in some cases a view obtained of the outside landscape, have been published by our contemporary "American Photography," and are quoted on pages 511 to 515.

The defects of the new postage stamps have been laid upon the shoulders of photography by some critics in the daily press. Some notes on the subject will be found on page 510.

The continuation of the paper by Dr. C. E. K. Mees and Mr. C. Welborne Piper deals with the effects of sulphite, in conjunction with bromide, in the hydroquinone developer. (P. 515.)

A number of practical matters will be found among the subjects dealt with under "Answers to Correspondents," including copyright infringement, intensification, plate-speed numbers, etc. (P. 522.)

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### "Colour Photography" Supplement.

Mr. Colin N. Bennett, F.C.S., deals with the making of screens for two-colour photography on the successful lines followed in the "Kinemacolor" process of animated photography in natural colours. (P. 45.)

Details have been published of the carbon method of three-colour printing as worked by Mr. S. Manners. (P. 46.)

M. J. Thovert, in a recent paper, has given precise directions for the extra-sensitising of Autochrome plates. (P. 47.)

## EX CATHEDRA.

**The Convention.** We hear that, with all the final arrangements made for the meetings and excursions at Exeter next week, a large gathering of photographers is expected at the Photographic Convention, under the Presidency of Mr. J. B. B. Wellington. A London party journeys down to Exeter to-day (Friday), and, doubtless, by Monday afternoon the Convention will be in full swing. The smoothness of the local arrangements which have been made are in great measure the result of the collaboration with Mr. F. A. Bridge of Mr. A. J. Tucker, of Exeter, but many official and private persons in Exeter have been liberal in contributing to the arrangements which will make for the pleasure and interest of those assembled next week in the West of England.

* * *

**Sharpness of Images in Small Cameras.** A feature of the modern camera of extra small size is the extreme sharpness of the results that it produces. This is the case even when the lens is not one of the very finest quality, and there is no doubt that the main reason of this fine definition is the short focal length of the lens used. Quite apart from the question of depth, this condition must contribute to sharpness by lessening the amount of vibration to which the camera is subjected during exposure, for it is evident that if a camera with a six-inch lens and one with a three-inch lens are subjected to the same amount of shake during exposure, then the amount of the blur must be doubled in the camera with the longer focus lens. The leverage is doubled, and therefore the blur also. As a rule, the camera is steadied by pressing it against the body, and here, again, the small camera has the advantage, for by reason of its smallness it requires a smaller bearing surface. We can steady the small camera against the forehead, whereas a large and heavy hand camera must be held against the chest to obtain sufficient support. There are thus two conditions that favour steadiness, and therefore sharp focus in the small camera, and we believe these form the main cause of the extraordinary sharpness obtained.

* * *

**A Portable Source of Heat.** Demonstrators or lecturers who have occasion to make use of some source of heat, as in the development of carbon or platinotype prints, frequently find themselves in difficulties, due to the distance from a gas-connection, or to many lecture-rooms being now fitted only with the electric supply. The all-convenient spirit lamp is frequently too feeble in power for its purpose, whilst lamps of greater weight and bulk add unduly to the demonstrator's equipment. A most convenient source of heat, which has recently come under our notice, is a new type of the "Primus" stove, in which paraffin is used by aid of a pump. The stove is made with one or two parts detachable, so that the whole packs into a tin case considerably less than half the bulk of the usual pattern of stove. Whilst burning paraffin, a little methylated spirit is used around the nipple of the lamp in order to start the vaporisation of the paraffin.

* * *

**Daylight Development of Plates.** We continue to see in the records of the Patent Office applications for protection of pieces of apparatus intended to supplant the dark-room. Probably statistics would show that among photographic inventions this has figured more frequently in patent specifications than any other, yet remains to-day a quite inconsiderable factor in photographic trade. The inventors, we fear, ignore the fact that everyone who can make shift to use some sort of dark-room will prefer to do so rather than trust his exposures to any apparatus in which he is supposed to be able to follow the progress of development to a greater or less degree. If development outside of the dark-room is resorted to at all, it is in one or other of the well-known patterns of tank, and this for a fixed time without inspection of the negatives. The success which has followed this modern method of development may be said to have struck a death-blow to devices for viewing the negative during development, and the best advice which may be given to inventors is to turn their ingenuity into a more profitable direction.

## THE NEW POSTAGE STAMPS.

The new postage stamps having aroused universal disappointment, largely, no doubt, on the principle that any stick is good enough to beat a dog with, photography and photo-mechanical processes are being blamed by some newspapers as the cause. Thus we have the "Evening Standard" telling us that the portrait of the King has been reproduced from a photograph, and proceeding to state: "That is exactly what it looks like—a blurry, blobby reproduction from a photograph. We profess no intimate acquaintance with stamp printing, but the new stamps suggest that photography is a muddling method, and that we might do worse than think about returning to line engraving." Of course, this shows a complete ignorance of stamp manufacture. Our stamps are produced by line-engraving. The only use the photograph has been to the engraver is to give him a guide by which to engrave accurately. Probably this photograph was selected by the King himself, and the further the engraver departed from it the worse his work would have been. It would perhaps have been actually easier to make an ideal portrait, but those who expected this are not complimentary to the King. Then we have the "Daily News" telling us that "the explanation may perhaps be found in the general displacement of the old methods of engraving by photo-mechanical processes. The difficult art of engraving en épargne—with the lines of the design standing up, instead of being cut into the steel—must perhaps be accounted lost. For most purposes of general commerce and illustration photo-mechanical processes are as nearly perfect as could be desired; but the photo-mechanical methods are not fine enough for the printers of our stamps, who have to produce with absolute identity 5,000,000,000 stamps a year, possibly for many years in succession, all originating from one original master-die cut en épargne upon steel."

This certainly shows some knowledge of stamp production, and it may well be that ultimately no line-engravers will survive, but it is doubtful if there should be any more difficulty in getting a stamp engraved of King George than there was of King Edward. Further, if it were determined to produce the stamps by photo-mechanical means, it is possible that thoroughly satisfactory results could be obtained. In fact, all the stationer's shops are now selling souvenir stamps, which are attractively designed and very well printed. The portraits on these stamps are apparently reproduced directly from photographs; the stamps are simple half-tones, thus confounding the criticisms of both the "Evening Standard" and the "Daily News." If it be objected that the large editions necessary cannot be printed from half-tone blocks, it may be replied that "nickel-steel" electros could be made which would be much more durable than the copper electros which are used at present. The explanation of the disappointment of the new stamps is probably due, as the Postmaster-General suggested, to the want of experience of this class of work by the new contractors, and as soon as they have had a little more practice the stamps will be as satisfactory as hitherto, that is, of course, as far as their mechanical production is concerned. Curiously enough, there has been little objection to the design, apart from the portrait, though the former appears to us to be more suited to a memorial statue or fountain than a postage stamp.

## STARTING IN BUSINESS.

We are constantly receiving enquiries from amateur photographers desirous of blossoming out into professionals, as well as from guardians in search of a career for their charges. Both ask as to the prospects of success in starting a photographic business, the general tone of the writers being so optimistic that we hardly like to damp their enthusiasm by advising them to try some other walk in life unless their artistic abilities or opportunities for securing business are quite exceptional.

There are many amateurs who have attained a certain degree of proficiency in photographic manipulations of the ordinary sort, who feel that if they can take successful photographs of their friends and their friends' houses they have only to put a brass plate on their doors or show-cases in their forecourts to ensure a succession of remunerative sitters. This, we need hardly say, is a delusion of a particularly disappointing kind, for the embryo photographer waits for the sitters who do not come, the friends who have promised him their support, and even the "invitation" sitters through whom he hoped to obtain introductions, until, "a sadder and wiser man," he either gives up in disgust, or, having learnt that business methods are more useful than artistic ability, does as any other tradesman would, and goes in search of customers. A photographer who afterwards conducted a very successful business told us that at the age of twenty he started in business for himself with the promises of half Liverpool as sitters. He had been popular in another profession, and thought that he had a ready-made connection. In twelve months he had to close down; but, like a wise man, he would not acknowledge defeat. Entering a good studio as an assistant, in a few years he had learned the ropes, and a second venture proved entirely successful. He said with much feeling that the promises of friends had induced him to take a false step, loading himself with debts which he should never have incurred otherwise.

Away from the largest centres of population, the photographer must be able to undertake every class of work, often under difficult and disagreeable circumstances, if any amount of business is to be done, and it is for this reason that some sort of apprenticeship or practical training is absolutely necessary. For this reason, too, the competition prize-winner finds himself hopelessly outclassed. Such an experience is also invaluable should he desire to purchase an existing business, as he is then able to go behind the specious representations of the owner or his agent, and form a true estimate of the value of what is offered to him. As showing the necessity for such knowledge, we may instance a business for which several hundreds were asked, which was making large returns, but only yielded a clear profit of about thirty shillings weekly, without allowing anything for the continuous labour of the proprietor and his wife! Very often, too, a large sum is asked for an accumulation of obsolete and inconvenient apparatus, furniture, and accessories, which will never be anything but lumber to the purchaser, but which make a brave show in an inventory. The oft-quoted advice of Polonius to Laertes is especially applicable to the fitting out of a photographic establishment:—

> "Costly thy habit as thy purse can buy,
> But not expressed in fancy; rich not gaudy,
> For the apparel oft proclaims the man."

Applying this counsel impersonally, we shall follow the practice of the most successful in our profession, and endeavour to make our premises in every way worthy of as good a class of customer as our location warrants us in expecting, and it is for this reason that we recommend the beginner to fit out his own premises in his own style, rather than to take over the worn and faded accumulations of an established business even at a bargain price. We have examples of this policy in the establishments of Messrs. Speaight and Mr. Turner on the one hand and in many of the "American" type of studios on the other: both the classes and the masses are attracted to a studio which has the appearance of being alive and up-to-date.

When only a limited sum can be devoted to starting or taking over a business, it is unwise to spend nearly all on studio appliances or fittings. The reception room and show window have equal, or even prior, claims, for they are seen by the prospective sitter before the studio is entered. The stationery used should also be of good quality, a point which, we regret to say, is overlooked by many of our correspondents, and judicious use should be made of business-drawing booklets. Nowadays the grocer, the dairyman, and the draper periodically circulate artistic little brochures, but photographers may do so with more chances of profit. The question of the personal element has been dealt with by many writers and speakers, so that we need not say more than that in photography it is a very important factor, the sitter to a great extent reflecting the mood of the photographer. "As iron sharpeneth iron, so is a man's countenance brightened by the face of his friend." It should be the aim of every photographer to make each sitter, no matter how exasperating, feel that for the time being he is in friendly surroundings.

# A SYMPOSIUM OF METHODS IN WINDOW PORTRAITURE.

[In the July issue of "American Photography" appears a collection of short papers, each dealing practically with conditions in indoor portraiture which present special difficulties. The author in every instance appends reproductions of photographs which excellently show the technical success achieved. We cannot do justice to these in reproduction, but would refer those desirous of studying them to the always interesting pages of our contemporary.—Eds. "B.J."]

## WINDOW PORTRAITURE.

The writer has prepared the following description of the method he employs to include an interior and an exterior—say a figure and a window—on the same plate.

Many schemes have been developed to produce this effect, such as (1) soaking the plate in a solution of bichromate of potash between exposure and development, (2) holding back the highlights with potassium bromide applied with a brush after development has begun, (3) giving a brief exposure for the window, then curtailing it and exposing for the interior, and so on; but the method employed by the writer is by far the easiest of them all, and possesses the further advantage of giving perfectly satisfactory results, which is not always the case with other schemes.

Briefly, it is this: to avoid halation and to compress the range of tones in the subject within the compass of the printing medium to be employed. To accomplish this it is necessary to employ a non-halation plate, give plenty of exposure, and use a dilute developer.

We will take up first the apparatus used, and then the method of working.

Camera.—An ordinary 6½ x 8½ view.

Lens.—A single achromatic of 10½-inch focus, working at f/8, maker unknown. In general, a single lens is preferable to an anastigmat or a portrait lens for this kind of work, since the more highly corrected lenses are more liable to show flare than the ones of fewer elements.

Light-Filter.—A Burke and James Ideal (x3) was used. It is advised to use a light-filter whenever feasible, as it gives better rendering of colour values and hence helps to reduce the proportionate intensity of the lights. The use of a filter of course presupposes the use of an orthochromatic (or, more properly, colour-sensitive) plate.

Plate.—Standard Orthonon. This is a double-coated, orthochromatic plate, the emulsion next the glass being less sensitive than the superimposed one. This is a good plate, in fact, the writer knows of only one on the market that is any better; namely, the Cramer Portrait Isonon, the latter possessing four advantages: (1) its sensitiveness extends lower in the spectrum, (2) accurately adjusted light filters may be obtained for it, (3) the emulsion is the same speed throughout, and (4) it is slightly faster than the Orthonon. As against these must be placed the fact (to some workers a disadvantage) that, on account of its greater red-sensitiveness it must be more carefully handled to avoid fog. The writer uses an orange and a ruby glass, 16 x 20 inches, the illuminant being daylight, and finds that if an Isonon plate be exposed to this light during the entire time of development it will fog, but if kept in the shadow of a piece of cardboard until the half-tones show fairly well, there will be no difficulty.

Developer.—Metol was used in this specific instance, the formula being as follows:—

| | |
|---|---|
| Water | 40 ozs. |
| Metol | 75 grs. |
| Sodium sulphite (anhydrous) | 300 grs. |
| Sodium carbonate (anhydrous) | 420 grs. |
| Potassium bromide | 8 grs. |

Bromide should never be used for this class of subject except that a slight amount may be employed in case of a plate or developer that is inclined to fog.

In general, a soft-working developer should be employed, such as rodinal, azol, paramidophenol, edinol, or pyro-acetone, avoiding hydroquinone and pyro-soda. A good developer for this case would be,

| | |
|---|---|
| Rodinal | 1 oz. |
| Water | 40 ozs. |

Whatever developer is used, it should be used at from one-half to one-fourth the customary concentration. Care should be taken not to over-develop, it being preferable to under-develop and subsequently intensify, if necessary, rather than to carry the original development too far. The advantage of the developers recommended is that they tend to bring out detail first and build up density afterward instead of bringing up all the gradations in regular steps, thus giving full detail in the event of its being necessary to arrest development before satisfactory density has been attained. Since the development is to be rather prolonged, the developer being very dilute, it is well to avoid a reducing agent that has an inherent tendency to cause fog. Metol and eikonogen belong to this class, the former having been used in the present instance simply because no other was available. Should the slightest sign of fog appear, the plate should be placed in the hypo as rapidly as possible, and, if necessary, intensified after it is dry. The class of negative to aim for is one that shall have full detail in the shadows, thin high-lights, and almost clear glass in the lowest tones. Of course, such a negative should be printed in diffused light, either in shadow or with ground glass or tissue paper over the printing-frame.

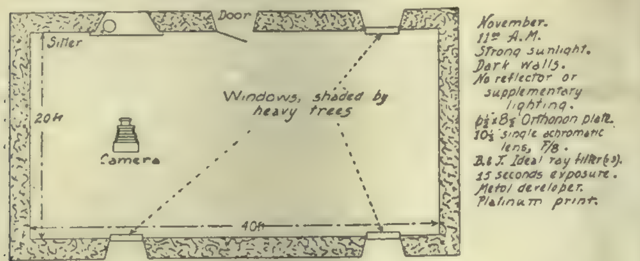

Fig. 1.

Fig. 1. shows the arrangement of light, camera, and sitter, no reflectors or supplementary illumination being employed. The date was November 12, the time of day eleven o'clock in the morning, the light being intense sun. An exposure of fifteen seconds was given, and development was as indicated above, the prints being on platinum paper.

Had a reflector been used, the exposure might have been briefer, or a supplementary illumination might have been employed. We could have got the same result by giving a brief exposure for the lights, say three or four seconds, and a flash, consisting of a gram of Agfa powder or a No. 2 Eastman flash sheet, care being taken that the flash is far enough away from the subject to give a diffused lighting, and not enough flash-powder being employed to overpower the natural light and cast shadows in the opposite direction. To make the entire exposure by natural light is, however, preferable, if at all possible.

PAUL L. ANDERSON.

## THE SIMPLICITY OF WINDOW EXPOSURES.

MAKING exposures against windows and securing full detail, without having halation to spoil the resultant print, is one of the easiest things in photography if the operator is one who does not send plates or films to the finisher.

In my work I use two methods. One will do for those who use developing powders in papers or tubes, but the other will not. Method No. 2 is suitable for those who use stock solutions, but it would not be very successful should the developer be of the two-solution variety. The A B C formula is the one where this excels. As more amateurs use package developer, perhaps it will be better to give that method precedence.

In making the exposure, pay no attention to the gross over-exposure of the window. Expose solely for the purpose of securing full detail in the shadows inside the room. Before making this exposure notice the direction of the light and arrange your reflector at such an angle that it will throw the light upon the deepest shadow part of the figure (Fig. 2). It is assumed there is a person at the window, else why the exposure? With a lens used at small aperture the exposure will run into seconds. The shadows demand it, and based upon the known exposure for ordinary outdoor work it would mean everything outside the room would be over-exposed at least one hundred times. But that will not count in the final result.

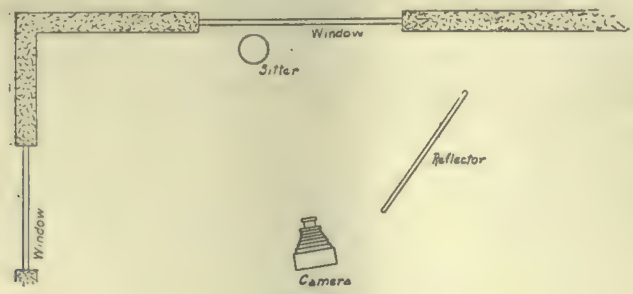

Fig. 2.

The dark-room procedure is to prepare a solution of bromide of potassium. There is some variance of opinion among workers about the strength, but my experience is that it does not make much difference. The first time I used bromide it was in ten per cent. solution, but it was going it blindly, and later I was told 1 dram of ten per cent. in 8 ounces of water was the right proportion. Since then I have used bromide in varying strengths, but have found the ten per cent. not one particle too strong. The bromide of potassium solution ready, pour it in a tray. Immerse the plate or film, seeing that it is completely covered, and leave it several minutes. I cannot give any exact time. I never count it. I do other things while waiting, but the average time the plate is in the bromide solution is about three minutes. Next simply drain the plate and then place it in the developer. If using package developer intended to be dissolved in 4 ounces of water, do not use it according to the directions on the wrapper, but dissolve the contents in 12 ounces of water. Development is the same then as with any plate or film. It will come slower of course. The bromide delays the appearance of the image, and even after it does appear it will come slower. The diluted solution helps make it slower, but it also prevents that contrast one would get with a more concentrated developer. There is no difference in the amount of density to be secured before removal to the fixing bath. The only thing that is changed in any way is the preliminary bath in the bromide solution, and, as far as I can learn, it does not make any difference whether the strength is ten, twenty, or fifty per cent. Personally, I find the ten per cent. satisfactory.

Method No. 2 is easy for those who use stock solutions in which the carbonate of soda is kept in a separate bottle. My pet formula calls for 22½ ounces of water, 12 grains of oxalic acid, 60 grains of metol, and 1 ounce of pyro. This is the combination for the reducer. The sulphite solution is made of 16 ounces of water and 2 ounces of the soda. The carbonate solution is water, 16 ounces, and soda, 1 ounce. I use this developer for both tray and tank. If tray, I never use less than 12 ounces of water, and it more often is 16 or 20 ounces of water to the ounce of each of the stock solutions for ordinary work.

Coming to the window exposure, I mix the developer like this: Pyro-metol, 1 ounce, sulphite, 1 ounce, carbonate, 12 drops, water 12 ounces. Notice the amount of carbonate. That is the secret of this developer. There is just sufficient accelerator in the 14 ounces of solution to open the pores of the film and permit the reducer to act on the silver. It will be some time before the image will appear. It will come very slowly at first; it will build up slowly. But as with Method No. 1 (the bromide way), the operator will see plenty of detail in the curtain, every mesh showing, and will retain much of what may be seen outside, even though the latter is one hundred times over-exposed. Development is continued the same as though a normal developer were used.

In presenting the print, use soft paper. Even if you think the negative demands hard paper because the window light will not be as brilliant as you are accustomed to, don't yield. Use soft paper. You might make one print on hard paper and then you will throw it away. The two methods of development of window exposures are excellent for another purpose. I suppose every amateur has been perplexed over an attempt to make a satisfactory negative of a young woman wearing a white waist and a dark skirt. Perhaps she had dark hair as well. To secure sufficient detail in the shadows on the dark hair or the dark skirt means over-exposure of the waist, and as such prints are usually shown, it means either under-exposed shadows or a white blotch where the waist is supposed to be. If either of these methods of development is used there need be no worry about over-exposure of the white waist. In Method No. 1 the bromide prior to development will take care of the detail in the high light, saving all of it, and if No. 2 is preferred, the carbonate will do all that is expected of it. As mentioned in the opening paragraph, it is easy to make window pictures and save detail. It may sound formidable as detailed here, but a trial will reveal its simplicity.

H. M. Long.

## WINDOW PHOTOGRAPHY.

While it may be perfectly possible to obtain photographs of figures near a window, which will at the same time show the outside landscape, by a daylight exposure, it is, in my opinion, much more certain to use a properly balanced combination of daylight and flash-light, so that the flash will bring out the figure and details in the room and the daylight will be enough to show up the outside view without over-exposure.

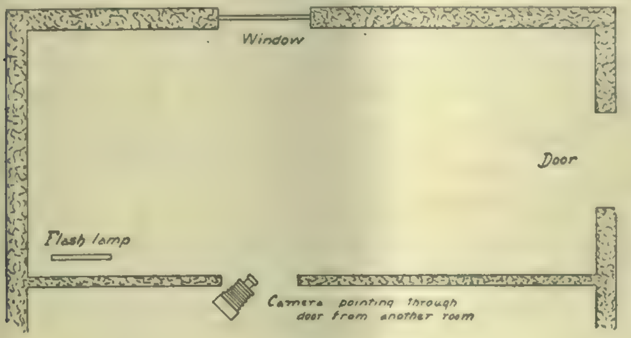

Fig. 3.

In a subject showing the Orange Fresh Air School for children threatened with lung trouble, it was wanted to bring out clearly the fact that the school was held in a barn with door and windows wide open. The position of camera and flash-lamp is shown in Fig. 3. It was necessary to stop down considerably because the objects in focus were near to the camera, and unless a small stop was used the outside view would be too blurred, and also because the use of a small stop gave me time to set off the flash-lamp without over-exposing for the outside view.

The walls of the room being whitewashed helped to diffuse the flash-light and prevent hard shadows. The stop used was $f/32$, the lens exposed for about one second, during which time the flash was set off. The plate was a Hammer "extra fast." The flash consisted of about ⅜ of an ounce of flash powder made by mixing together equal weights of pure powdered magnesium and potassium perchlorate, which makes a very safe, clean working, and highly actinic flash.

Arthur H. Glaister.

## AN INTERIOR AND EXTERIOR VIEW ON THE SAME PLATE.

I recently took a photograph showing a view out of a window, also a chair and a desk in one corner of a printing office installed in one room of a private house. Fig. 5 shows arrangement of furniture, windows, size of room, etc. The exposure was made at eleven o'clock in the morning of a bright day. Lens, rapid rectilinear, 13-inch focus. Plate, Seed 26 X, 8 x 10. Diaphragm, F/150. Interior exposure, 25 minutes; exterior, 10 seconds. The lens was stopped down in order to secure perfect definition, as I wished to use the photograph in making a half-tone cut.

After the camera was in place, properly focussed, and everything all ready for making the interior exposure, the window was "blocked out" by carefully hanging inside of it a plain black shawl; fastening the shawl up with pins in such a manner that a slight jerk on the shawl would loosen it, and cause it to come tumbling down, thus leaving the window clear.

After the shawl was fastened in place, the shutter was opened, and an exposure was given that occupied twenty-five minutes. The shutter was then closed, the shawl jerked down, and a further exposure of ten seconds given, the exposure including, of course, the view out of the window.

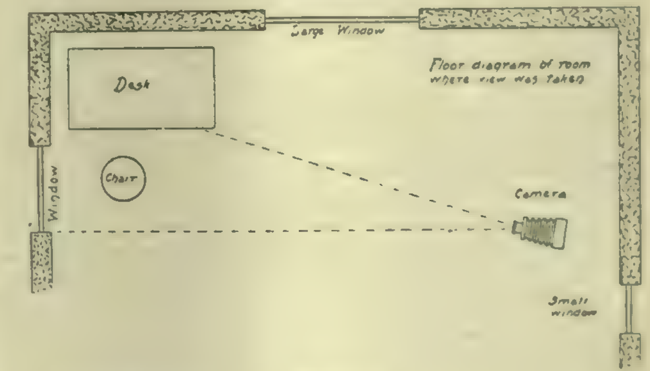

Fig. 5.

Size of room—16 by 20 ft.
Time of day—11 a.m.
Bright, clear day.
Lens—Rapid rectilinear.
Focal length 13 in. Diaphragm $f/50$
Plate—Seed 26 X, 8 by 10. Interior exposure 25 min.
Exterior exposure 10 seconds. No reflectors used.
Windows all open except one by desk.

W. Z. Hutchinson.

## LANDSCAPE PORTRAYAL IN INDOOR VIEWS.

The photographing of the interior of a room—with or without the human figure as chief feature—wherein is depicted a view of the landscape through a window is not at all difficult. Where a figure is posed beside a window, and instead of some indication of territory or buildings to be found outside, there is displayed a wide expanse of white, due to spreading of the light, something far short of successful rendition is indicated. A sharp image in such regard is not essential, a mere indication being all that is necessary, but how seldom we see it.

It is surprising so many exalted workers have been satisfied with halation, and that the critics have been so lenient. The painter artist would not be satisfied with such portrayal, hence surprise at his overlooking it in the judgment of the photograph. At the smallest the artist would indicate in some degree the view as presented to human eyes.

Toleration of such a phase of photography is of a piece with the white paper sky which advanced workers for long thought the correct thing. They now know better, but it took a good many years to bring it about. For years did the leaders consent to accept the record of a faulty plate as final. Not so to-day. At present where there are no indications of cloud form, gradation is the resort.

In photographing an interior against the light of an unscreened window we have generally come to accept more or less halation as inevitable. As a consequence all illusion of out-of-doors rendition is absent, nor does the average person see anything incongruous in such portrayal. For such a state of affairs there is small need, if care be taken to back the plate and develop in a weak solution, locally holding back the landscape by judicious application of bromide. One may as a last resort take refuge in double printing, an excellent method. Mask all but the window space and not over-obtrusively print in a suitable landscape. Personally, however, I have not resorted to this method, though I esteem it a good one, especially as once the print is suitably and acceptably made and toned a new negative may be had from it by the usual camera copying procedure.

With a non-halation or backed plate I have been accustomed to photographing interiors towards the light of a window, and wherein all interior objects are adequately registered, while the landscape within range of vision has been at least suggested.

How is a good result to be obtained when there is summer glare outside? My instructions refer to an actual instance, a figure in white bodice against a window with brilliant sun out of doors. In the following manner. With a wide-open lens a full exposure was given, and the plate then developed in a dilute solution, not over a grain of pyro to the ounce. By reasonably slow developing the detail of the shadows was brought out, while contrast was kept within bounds.

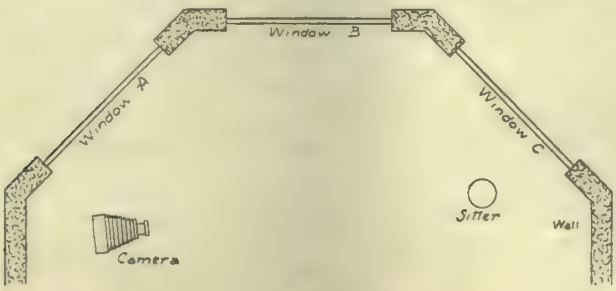

Fig. 4.

Notwithstanding this care, however, on making a proof the outside landscape failed to show. To remedy matters the density of the window and white bodice was reduced by careful rubbing with a wad of absorbent cotton wet with *pure* alcohol. This effected, the walls and parts around the chair in foreground had printing capacity slowed down by staining the film yellow.

Thus is it possible to get some indication of outdoors detail, but I propose to further demonstrate how the landscape may be as adequately rendered as are the details of the interior upon one and the same plate in a single operation, albeit there is required a double exposure.

In this we have a most interesting example of so-called trick photography, though there is not the remotest reason why the principle involved cannot be employed to good purpose in legitimate pictorial rendition. Once the method is understood many curious effects are possible.

To this particular problem I gave considerable study and reflection some ten years ago, and proved it workable. The manner of working is as follows, Fig. 4, helping to an understanding:—

The upper part of the window being curtained with a semi-opaque olive green fabric, it was essential only that the light be excluded from that portion coming below. A lustreless soft black cloth was therefore neatly fastened there with thumb-tacks. The sitter was then appropriately posed in a high back porch rocking chair, strips of wood being placed under the rockers to prevent displacement. *Rigidity here is essential.* On no account must there be movement between the exposures. With stop 16 an exposure of twenty seconds was given for the figure and interior. The model then left the chair, the latter being carefully covered with a black cloth, while that blocking the window was removed.

The exposure for the landscape was now in order, and for that was given one second, which was ample because of there being snow on the ground and trees. In the presence of darker outside conditions of necessity a longer exposure would be in order, in some cases perhaps three seconds. Dark walls in the interior would no doubt much simplify matters, in the absence of which a high backed chair is required for the very good reason that the entire space occupied by the model must be effectually masked by the black cloth during the second exposure. Otherwise objects on the wall back of the model would be registered more or less strongly upon the resultant negatives.

In this way so-called spirit photographs are easily possible. After an exposure the model walks off, a short second exposure serving to impress background detail before obscured. Result, detail is observable through the body of the model, giving the latter an appearance of unsubstantiality. This cannot happen, however, where the model is garbed from head to foot in white. Nothing but objects that reflect light can have effect on sensitive film. We may attempt to photograph a dead black textile cloth absolutely devoid of lustre, and the response upon the sensitive emulsion will be negligible, a slight veil or fog due to atmospheric condition and such light as finds reflection from the high points of the textile fabric's weave or surface texture.

Presuming we have to deal with conditions where there is quite a view visible from the window, and that the background (the wall) is covered with some undecorated, non-glossy red, orange, or black material, we next draw down the shades at windows A and B, thus in part at least excluding the light. The camera having been placed, and focussing as to position attended to, a short exposure is given for the outdoor view. Thus far on the plate we have but the outdoor view and a faint record of the window frame, while the wall space has made so small an impression on the film, we may consider it still virgin territory for further exploitation such as photographing a figure involves.

The shade at either A or B is now raised, while a cloth is neatly attached to the sash at C, totally excluding the light at that place, *though the window shade must be still in evidence.* (must not be covered up) nor should its position be altered in any respect.

All is now ready for the main exposure, and for this a white, or at all events a light, garbed figure (or figures, for there may be more than one) will ensure success. The model may be seated at some occupation of a domestic nature, may be standing gazing out of the window, and where there is more than one person, they may be portrayed as talking to each other.

An understanding of the principles involved may be put to excellent purpose in pictorial work of high order. Where a maiden robed in white from head to foot is the subject, success is most certain, though any raiment of colour other than dark will serve. That so little along this line has been done is a matter of surprise, considering it is not new. In the year 1901 my experiments in infrequently travelled paths of photographic endeavour led me into the one in question.

In conclusion, I beg to submit the following propositions:—

The ordinary unexposed photographic plate represents absolute darkness, blackness, vacuum.

Light alone can have effect upon it, luminous objects alone make impress upon it, not objects that are luminous in our eyes, but those that are luminous to the lens.

When *correctly* exposed in the camera absolutely black objects are represented in the resultant negative by clear glass.

Furthermore, such a plate as the one in question is over-sensitive to violet, indigo, and blue, while but feebly affected by green, yellow and red. Though most luminous to human vision the latter colours are least so to the lens.

Therefore, in actual practice it is found that violet, indigo and blue have made full impression before the green, yellow and red have at all affected the sensitive surface of the emulsion. The violet-blue end of the scale has done its work, and is resting while the green-red contingent is as yet not even started.

Availment of this knowledge renders possible many unusual effects.

JAMES THOMSON.

# THE FOGGING POWER OF DEVELOPERS.

## II.

### Effect of Sulphite.

THE next ingredient to test was sulphite of soda, and we tried the effect of its addition in varying quantities to a developer containing N/10 hydroquinone and N/10 soda hydrate.

We first tried quantities varying between 4N/5 and N/40 or from 10 per cent. to .32 per cent., but ultimately had to extend the tests to much lower concentrations, down to N/640 or about .02 per cent. In most published formulæ the amount of sulphite recommended is .5 from N/20 to 2N/5, therefore our tests more than covered this range.

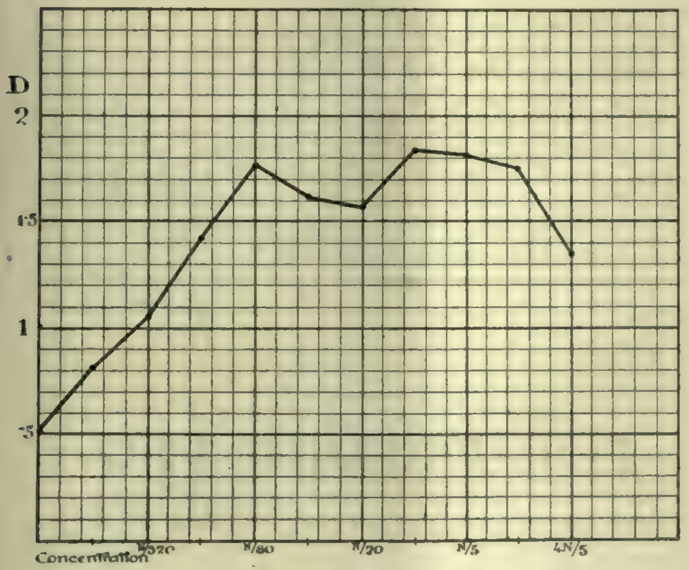

Fig. 4.

The curve (Fig. 4) shows the results of ten minutes' development on unexposed plates with the various concentrations of sulphite. Ordinates show fog densities and abscissæ concentrations, and it is evident that from 0 to N/80 the rate of fogging rises rapidly. With higher concentrations the curve is irregular, from which we may assume the fog to have reached an average maximum at a concentration of about N/80.

Fog of any kind is very erratic in its nature and gives very variable measurements. Later tests have suggested that the rise in fogging rate is probably continued to N/20 and that the maximum density in ten minutes for the foggy plates we have been using may reach 2.14, which is about double the density that we have been able to reach in ten minutes with any developer containing no sulphite.

On the other hand, the development velocity of an exposed plate, or the K value, is not affected by sulphite, and, as shown in the following table, the fogging power, or $\phi$ value, of the developer increases with considerable rapidity as sulphite is added to the developer, reaching a fairly constant maximum at a concentration of about N/20.

Above the concentration of N/20 the fogging velocity appears to reach a constant value ranging about 2, while K shows no variation up to a concentration of 4N/5.

| Concentration of Sulphite. | Fogging Velocity = F. | Velocity of Development = K. | Fogging power = $\phi = \frac{F}{K}$ (K = 213). |
|---|---|---|---|
| Nil. | ·49 | Average K = ·213 | 2·30 |
| N/640 = ·02 per cent. | ·57 | | 2·67 |
| N/320 = ·04 ,, | 1·00 | | 4·70 |
| N/160 = ·08 ,, | 1·12 | | 5·27 |
| N/80 = ·16 ,, | 1·40 | | 6·58 |
| N/40 = ·32 ,, | 1·62 | | 7·56 |
| N/20 = ·63 ,, | 1·94 | | 9·12 |

The high values of $\phi$ show that sulphite is a very powerful fogging agent, but it is impossible to grasp quite what the figures imply until we study the effect of sulphite and bromide together.

It should be noted that though sulphite prevents stain and helps to produce a grey image, it is not fully efficient in this respect until it has reached a concentration of about N/20, at which its fogging power is at a maximum.

### Sulphite and Bromide.

In these tests varying quantities of bromide were added to a developer which contained N/10 hydroquinone, N/10 soda hydrate, and N/20 soda sulphite. The amounts of bromide used were N/400, N/200, N/100 and N/50, which correspond

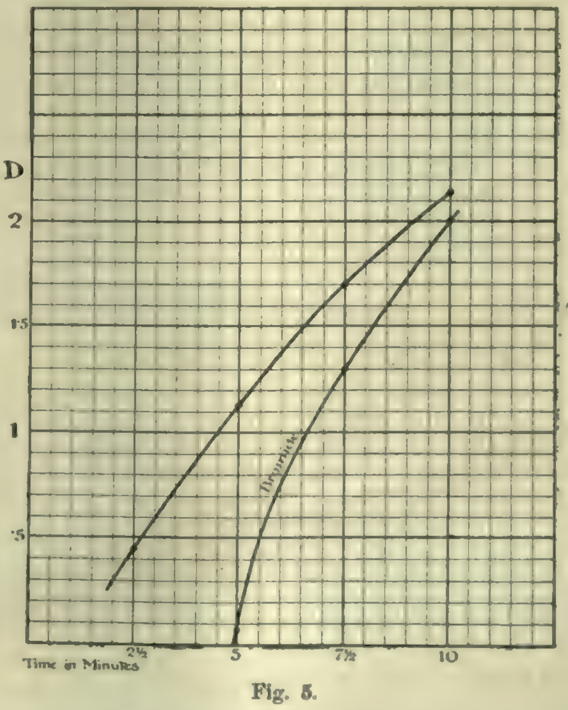

Fig. 5.

roughly with .030, .060, .120, and .240 per cent., or with .15, .3, .6 and 1.2 grains per ounce of developer.

On finding the density of the fog produced on unexposed plates in ten minutes, it was found that this was the same for all concentrations from 0 up to N/50 bromide. As K is unaffected by bromide (Hurter and Driffield, "Phot. Journ.," July, 1898, and Sheppard and Mees, "Investigations," Chap. 3) it is evident that if we assume the fog produced in ten minutes to be a measure of the fogging rate, or to give the value of F, then the fogging power of the developer must be constant for all concentrations of bromide, which is contrary to accepted opinions.

The method of ascertaining F which we adopted when testing the effect of alkali variations is therefore not suitable when bromide is present, and for our future work we shall have to devise a new method which will be adaptable in all cases.

Fig. 5 shows the effect of varying the time of fogging of unexposed plates when bromide is used. The upper curve shows the fog produced in 2½, 5, 7½ and 10 minutes without bromide. The lower curve shows a similar series obtained with bromide present. It is apparent from this that bromide has a very marked effect on fog in the early stages of development. Up to about five minutes it prevents fog altogether, but when fog starts the curve rapidly rises with the time until eventually the bromide loses all power of restraining fog, and the two curves practically become one after about ten minutes.

This result shows therefore the induction period found by measuring the density of exposed plates developed with bromided developers (Sheppard and Mees).

In the absence of the sulphite used in the formula just given the addition of bromide has the same general effect, but the fog is only about half the amount produced when sulphite is present. Our experiments on the effect of bromide in the absence of sulphite are not yet completed, and further work on them will be postponed until a more satisfactory way of measuring the value of F has been devised.

### Sulphite Fog.

Sulphite of soda has a marked effect on the fogging power, which increases rapidly with the concentration of sulphite until a maximum is reached at or about a concentration of N/80. This maximum is about the same with different plates, and is independent of the emulsion, as the following experiment shows:—

Two plates, one coated with a clean standard emulsion and one with a special one which was slightly fogged in the making, were tested with three developers, one of which contained no sulphite, one N/640 sulphite and one N/80 sulphite. The amount of fog produced in ten minutes being F, then the ratio between F on the foggy plate to F on the clean plate is as shown in the table:—

| Sulphite. | Ratio of $\frac{\text{Fog on Special Plate.}}{\text{Fog on Ordinary Plate.}}$ |
|---|---|
| Nil. | 3·44 |
| N/640 | 2·64 |
| N/80 | 1·04 |

The fog ratio for these two very different plates thus approaches unity as the sulphite is increased, which fact shows that sulphite fog must be more or less independent of the plate.

The action of sulphite in producing the fog seems to be exactly similar to that of thiocarbamide, already referred to, and in one case we were able to produce reversal by sulphite, the strip being similar in appearance to those obtained with thiocarbamide, though the original image is developed to a much greater extent before reversal commences. Fig. 6 shows examples of reversal produced by sulphite and by thiocarbamide.

### Oxidation Fog.

We have referred already to the trouble caused in our earlier experiments by fog due to the aerial oxidation of the developer. This fog is stained and extremely irregular. Even when most uniformly distributed over the plate, it is not an even veil, but presents a mottled appearance. As a rule it does not appear at all on exposed densities, excepting the lowest ones, and in the case of those it stops abruptly at one particular density.

If air is excluded a similar variety of fog will appear if the developer is not kept well in motion. It may with some reason be assumed that this is caused by the oxidation product which results from the reduction of silver, and that the effect of air is simply the formation of a similar product in larger quantities and more rapidly.

Fig. 6.

No oxidation fog is produced when sulphite is used, or when the hydroquinone is in large excess, and the greatest trouble is met with when the alkali is in excess.

The final oxidation product of hydroquinone is quinone, but quinone cannot exist separately in a solution of hydroquinone, only in combination with the latter in the form of quinhydrone.

Quinhydrone consists of an equimolecular compound of quinone and hydroquinone, and is easily prepared by mixing solutions of these two chemicals. Assuming this to be the cause of oxidation fog, we tested its effects upon development.

C. E. Kenneth Mees.
C. Welborne Piper.

*(To be continued.)*

# Photo-Mechanical Notes.

### A Woodbury Method for Cinematograph Pictures.

A patent for "Improvements in and relating to Processes for Photo-mechanical Reproduction," No. 27,482—1900, has been granted to Edouard and Charles Dupuis, of Charenton, France. Gelatine reliefs are made as in Woodburytype, and from these pictures are produced in accordance with the following claims:—

1. In an improved process of photo-mechanical reproduction specially suitable for the manufacture of cinematograph bands, in which a plate is first obtained having reliefs proportional to the intensity of the blacks in the picture, moulding the reliefs of this plate into a material adapted to form the support for the pictures, coloured ink being then poured over the impression thus obtained and the excess removed.
2. A process as claimed in Claim 1 applied to the production of cinematograph bands having a margin on each side of the picture, in which process the excess ink is removed by a scraper guided on the margin.
3. A process as claimed in Claim 1 as applied to the manufacture of cinematograph bands of metallised paper, consisting in forming on a band of paper, or its equivalent, a metallic coating having hollows whose depths are proportional to the intensity of the blacks in the picture, the surface of the hollows being matt, whilst the normal surface of the metallic coating is polished; covering this metallic coating with a gelatine ink, and removing the excess of ink.
4. A process as claimed in Claims 1 and 3 in which the metallic coating is obtained by preparing a metallic cathode or plate whose

reliefs are proportional to the intensity of the blacks in the picture and are of matt surface on a polished ground, a layer of a metal such as silver being subsequently deposited by electrolysis on this plate, and then removed therefrom at the same time that it is attached by an adhesive to prepared paper.

### A New System of "Make-Ready."

M. A. Droitcour has further improved his method of "make-ready" that we referred to in these notes for June 9 last, and has been granted another patent, No. 24,253, of 1900. The new patent is for a different way of carrying out the same idea, namely, to so treat an electrotype in the course of its manufacture that its surface when complete is of slightly differing heights according to the lights and shades of the picture.

### PHOTO-MECHANICAL PATENTS.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Acts, 1901.

**Intaglio Printing.**—No. 13,825. Printing of engravings in intaglio. Valentin, Zerreiss, and Georges.

## Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between June 19 and 21.

**Printing Frames.**—No. 14,565. Photographic printing frames. George William Ray.

**Automatic Photographs.**—No. 14,623. Automatic photographing machines. George Beloe Ellis for Henry Doyle, United States.

**Development.**—No. 14,744. Development of photographic images. William Hay Caldwell.

**Photographic Transmission.**—No. 14,503. Transmission of pictures of moving objects. Alf. Sinding-Larsen.

**Cinematographs.**—No. 14,550. Cinematograph cameras and projectors. Frederic Arthur Pereira.

**Cinematographs.**—No. 14,573. Cinematographs of the Maltese cross type. Leo Kamm.

**Reproduction Apparatus.**—No. 14,563. Synchronous reproduction of sound and light wave effects and apparatus therefor. Edmund Paul Millington Gerrard.

### *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

**Dark-Slide and Frame for Camera Test Exposures.**—No. 12,074 1910 (May 17, 1910). The invention consists of means for ascertaining the correct exposure for plates or films by first testing by exposure one or more small pieces upon the object to be photographed which films can afterwards be developed.

A frame is made which can be fitted to most cameras in the place of the usual focussing screen. This frame contains an aperture which can be covered by a movable piece of ground glass or other suitable material for focussing. There is provided a dark-slide of box form having accommodation at one end for two shutters separated by a diaphragm of transparent material. At the rear of the shutters a space is left in the dark slide for holding test pieces of film, which test pieces are separated from each other by covering pieces which may be of opaque material so that the test pieces and covering pieces are alternately arranged and tightly clamped together in the space. The shutters are capable of being lifted from the box slide, the rear one being furnished at the bottom with a shoulder which normally projects under the covering piece located next it. The covering pieces are dovetailed at the top so as to fit a corresponding form of the box slide and prevent them being pushed downwards but allowing them to be lifted. A slot is inserted in the bottom of the box slide for the test pieces to pass through when depressed by the rear shutter.

Assuming the two shutters and the test pieces are in position, after focussing, the box slide is placed on the frame over the aperture and in place of the ground glass. The front shutter is then raised and afterwards the back shutter which by its bottom shoulder engages under the adjacent covering piece and lifts the latter with it. The exposure is then made in the usual way. After the exposure the first shutter is replaced and the dark-slide is withdrawn from the frame and placed over a suitable developing tank. The rear shutter is now replaced and by means of the shoulder pushes the test piece through the bottom of the box slide into a developing tank. When the test piece has been fixed, the test piece is taken out to ascertain if it has had the correct exposure, when, if so, the photographic plate or film can be similarly exposed, or, if not properly exposed, a second test can be taken. As one test piece or covering piece is ejected, it is automatically replaced by the next covering piece or test piece, pressed forward from the rear by a suitable spring. John George Higgs Brookes, North Petherton, near Bridgwater, Somersetshire.

## New Trade Names.

**Snowflake.**—No. 333,125. Photographic paper. Sinclair and Co., 9, Bramshill Road, Willesden Junction, London, N.W., merchants. April 28, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Spotty Negatives.

Gelatine is like a sponge. If you do not believe it (writes Mr. Chas E. Rau in "Camera Craft"), put a piece in some water and see how it will swell. When you develop your plate or film, you swell up this sponge-like surface, and when you let water run on it to wash it, you are using this emulsion surface much as you would use a sponge for a filter. Just run water from your tap through a sponge for a while, and see how soon it becomes foul with slime and grit, even when the water appears quite clear and clean. Your gelatine emulsion is even more inclined to catch and hold dirt than is the sponge, when we consider the surface alone, because the emulsion is too dense to allow the dirt to penetrate as it does in the sponge. The consequence is, when the average plate or film is done washing, its emulsion surface has collected a good surface coating of dirt and grit, the amount depending upon the clearness of the water and the duration of the washing. The thing to do, then, is to take a tuft of wet cotton and give the emulsion a good cleaning before placing the plates or film to dry. Give it a good rubbing so as to dislodge heavy particles that have become imbedded in the surface. You will, in some cases, be able to remove such an amount of surface dirt that an unscrubbed part shows plainly as of a dirty grey colour. But you will be surprised at the improved character of your negatives after they are dried, if you will make a practice of doing as advised, after washing and before drying.

### Blisters on Bromide Prints.

For some years (writes Mr. S. Dyer in "Photography and Focus" for July 4) I have been troubled, on and off, but more often on than off I am sorry to say, with blisters on my bromide enlargements. I tried changing the brand of paper, but found that this was without effect, while formaline and alum did not prevent them; so that I had begun to regard them as inevitable. Quite by accident I found a complete remedy. The cure was to draw off the water required for washing them into cans and allow it to stand for an hour or two before use. Our water is supplied under high pressure, and contains a great deal of air. In fact, at times a freshly-drawn glass of it is quite milky with little bubbles, although getting clear very quickly as they rise to the surface. The blisters on the prints must have been caused by air given off by the water in which they were washed, though it is not easy to see why they only came in patches, and not all over the surface of the paper. Anyhow, by giving time for the water to give off the air it contains, I have had no further trouble.

**Telephoto Lenses for the Holidays.**

Two new forms of simplified telephoto lenses (writes Mr. W. Thomas in the "Photographic Monthly" for July) are now available, so constructed that they provide all the benefits of long-focus lenses without requiring unduly lengthened camera bellows. The "Bis-Telar," which the Emil Busch Optical Company placed on the market some time ago, has won golden opinions from those who have had the good fortune to use it. This "Bis-Telar" lens is made in two series, which work at *f*/7 and *f*/9, respectively; apertures sufficiently large to allow of shutter exposures being given. In price reasonable, its bulk barely larger than an ordinary R.R., while results produced by its means may well startle anyone using it for the first time. More recently Dallmeyers introduced a modified form of their "Adon" lens, which works in the same simple manner as the "Bis-Telar," but may be had with a working aperture of *f*/4, which for the present represents quite the last word in large and effective apertures in lenses of simple telephoto type, and brings shutter exposures within their range under almost any conditions of light and season.

## New Books.

The Yorkshire Union.—The handbook and list of lectures, etc., issued by the Yorkshire Union for the year 1911-12 shows once again the keenness of workers between the Trent and Tyne in the many departments of photography.

"A German Handbook of the Carbon Process."—The fact of its appearance in a fourteenth edition is sufficient testimony to the value of the treatise on carbon work issued by M. Eger, Leipsic, under the title "Der Pigmentdruck." Herr Hans Spörl is now responsible for the text of the volume originally written by Dr. P. Liesegang. In addition to dealing with the varieties of carbon printing, both of prints and transparencies, the author includes chapters on Ozotype, Ozobrome, Oil, and Bromoil. The volume is a complete yet concise treatment of its subject, which readers of German should appreciate. It is issued in paper covers at 3 marks, or bound in cloth 3 marks 50.

"Cassell's Cyclopædia of Photography."—Part 7 of this publication, issued at 7d. net, contains entries from "Hand-Camera Work" to "Light." Mr. Wastell is the author of some useful notes on the use of the hand-camera. Under "Hydroquinone," a number of formulæ are given for this popular developer. Intensification by the various standard methods is concisely treated, and under the several headings dealing with isochromatic work, a useful resumé of methods of colour sensitising, making and testing screens is given. Kallitype is perhaps accorded a greater amount of space than this process deserves. An outline of the construction of cinematograph cameras and projectors is offered under the heading "Kinematograph." Lantern-slides are somewhat briefly treated. We think the practical worker would have liked a more detailed treatment of this popular branch of photography, and would have readily have sacrificed the space given to the theoretical article on the latent image. The chapter on the lens is chiefly historical. One useful article may be named in conclusion, namely, that on lettering negatives and prints.

"The Scottish Federation Blue Book, 1911."—Whilst still preserving its waistcoat-pocket size, the Scottish Blue Book continues to compress a large amount of useful information within its eighty-four pages. It contains a list of the societies comprising the Scottish Federation, the names and addresses of those workers who are ready to advise associates of the Federation on various special branches of work, whilst the bulk of its text is made up of a gazetteer of the chief places in Scotland (and a few "beyond the Borders"), worthy of the attention of the tourist photographer. In each case particulars are given of dark-rooms in the neighbourhood, and of members of the Federation, from whom further local information may be obtained. The little volume certainly continues to fulfil the many useful duties which it has discharged in the past.

## New Materials, &c.

**Ilford "Cream Drill" Bromona Paper. Made by Ilford, Limited, Ilford, E.**

Printers and enlargers on bromide paper will learn with interest of the issue of a new variety of the well-known "Bromona" series of Ilford bromide papers. More than ever is there at the present time a demand for printing papers of truly distinctive nature, but unfortunately the distinctive product of one season is usually the commonplace of the next, with the result that leading manufacturers must constantly improve on their past records and provide the professional photographer with a product which he can use for a while before its too general adoption compels him to seek still other and later printing media. The "Bromona" papers, designed as they are for producing results of distinctive character, both in the matter of tint and surface, have stood both the professional and amateur, and particularly makers of enlargements, in good stead, and in our judgment the new variety known as "Cream Drill" is assured of an equal degree of popularity. It is frequently our unenviable task to describe in cold print the elusive characteristics of paper-surfaces which, despite the obstacles which they offer to the descriptive writer, are, nevertheless, distinctive in themselves. We can only say, in the present instance, that the name of the new Ilford paper well suggests, if it does not actually describe, the character of the print made upon it. Photographers may be advised to appeal to their women-folk for a description of what "drill" looks like, and the answer to their questions should enable them to judge of the delicately ribbed surface which is offered them in the new Ilford "Bromona." Yet, after all, the best thing they can do is to obtain a supply of the new paper, on their examination of which, we venture to think, they will agree with us in admiring the surface texture. The paper will doubtless find its most advisable application in enlargements, and particularly in the case of subjects containing masses of shadow to which a certain "quality" is imparted by the characteristic surface of the paper. Our own trials of the new material were made upon a negative of a portrait against a dark background, the rendering of tones in which was immensely improved by printing on "Cream Drill." The tint of the paper is a very delicate cream: the substance, of the stoutness which a paper for enlargements requires to be. As regards the properties of the emulsion the new paper yields prints of fine black colour and extreme purity in the high-lights, while, at the same time, withstanding fogging or veiling, even during protracted development. The paper may thus be named as worthy to be classed among the many other notable printing papers of the Ilford factory, and perhaps no better description of its quality than this can be given.

Coronation Albums.—Messrs. Butcher and Sons, Camera House, Farringdon Avenue, London, E.C., send us examples of a neat style in slip-in albums, specially introduced for the preservation of prints commemorating the recent Coronation festivities. The albums, which are issued as the "Royalty," are made in two styles, one with red linen-canvas paper covers and dark brownish-green cut-out mounts for the prints, the other with dark blue covers and a brighter green colour of the cut-out. In each case the front cover

of the album is blocked in gold with the sign of a crown, and the "Royalty" in either style is a most tasteful production. The prices are as follows:—For 8 C.D.V. prints, 6d.; for 8 ¼ plate prints, 6d.; for 8 postcard prints, 6d.; for 6 half-plate prints, 9d.

## New Apparatus, &c.

**The "Dandycam" Automatic Camera. Sold by W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London, E.C.**

Under this name a most simple and ingenious camera has been placed upon the market for the making of ferrotype medallion portraits. This method of rapid photography has, of course, been known and practised for very many years, but the amateur has rarely included it among his activities, doubtless for the reasons that the process in its original form is a somewhat inconvenient one and that hitherto most of the cameras sold for the purpose (and suitable for this species of photography alone) have included a seemingly complex amount of mechanism and have cost a sum which the amateur as a rule does not care to spend upon a quite extra addition to his apparatus. In both of these respects the camera now supplied by Messrs. Butcher marks what we may, without exaggeration, describe as a reduction of the process to the elements of simplicity. In the first place, it is operated from the stage of inserting the plates to that of withdrawing the finished portrait entirely by daylight. Secondly, the operation includes little more than the pushing of a lever to and fro, and thirdly, the camera is sold at the small price of 7s. 6d. As shown in the drawing, the "Dandycam" consists of a box camera of fixed focus provided with a sunk finder, seen below the handle. It includes a reservoir for the circular plates, and, as shown in the second line drawing, a light-tight chamber containing the tank, in which is poured the solution for the simultaneous development and fixation of the plates. The operation of taking the portrait consists, in the first place, of removing the outer wrappings from a packet of the circular rimmed plates and inserting it in the chamber D. This is then closed by the hinged door, and a plate brought into position by pulling out the handle E to the full and pushing it back. The sitter is then placed at a distance of about 4ft. from the camera, and arranged on the plate by means of the finder C. Exposure is made by turning the screw B, which raises a shutter in front of the plate. The developing tank having been partially filled with developer and placed in the chamber F, on pulling out the handle E again for the distance of about a quarter of an inch the exposed plate drops into the developing tank, and at the end of two minutes may be removed. The developed plate is washed for a minute or two in water, adhering drops removed with the tongue, and the circle portrait dried in the air naturally or by aid of gentle heat. It may then be mounted in a brooch or pendant presenting the appearance shown in Fig. 3. The apparatus is strongly made, and is free from mechanism which can get out of order, whilst, as we have said, the process is of such a degree of simplicity that any person, however ignorant of photography, can make portraits as the result of reading the brief instructions. The combined developing and fixing solution is obtainable at 6d. per bottle; daylight magazines, each containing twelve plates, are sold also at 6d., whilst the gilt rims for mounting the finished plates cost 2s. per dozen. The apparatus should provide the means of much entertainment and likewise serve the useful purpose of interesting in photography people who are not induced to take up even the highly simplified present-day methods of negative making and printing.

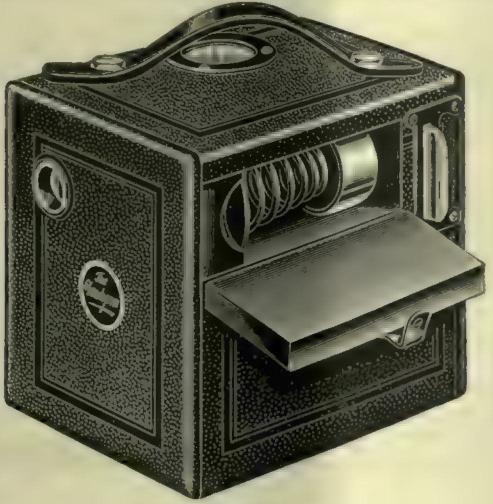
Fig. 1.

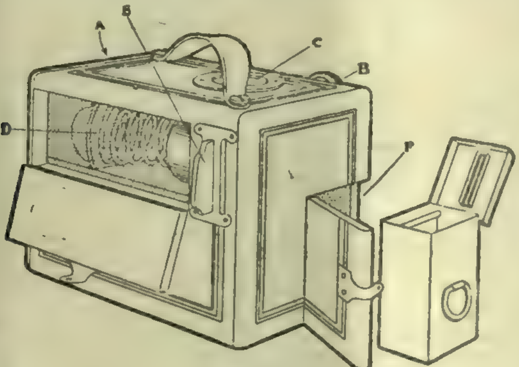

Fig. 2.

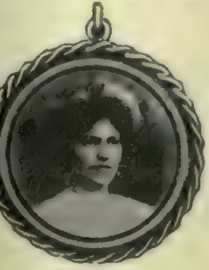
Fig. 3.

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### CATALOGUES AND TRADE NOTICES.

Studio Arc Lamps.—A descriptive circular of the various and most recent types of studio arc lamps supplied by the Globe Electric Company, Ltd., 11, Farringdon Avenue, London, E.C., reaches our table. The list includes lamps both for studio and printing and process work, and contains a full specification of the technical features of the various types. A list, sent free, should be obtained by those contemplating the installation of artificial light.

Steinheil Lenses.—An excellently printed (German) list of these celebrated lenses reaches us from the makers in Munich, from whom it may be obtained, as doubtless also from the British agents, Messrs. A. E. Staley and Co., 19, Thavies Inn, London, E.C. The list includes particulars of the anastigmats of various types manufactured by Messrs. Steinheil, including a new series of large-aperture casket lenses. The catalogue is illustrated by some fine reproductions of photographic portraiture and landscape work from negatives made with the Steinheil objectives.

Paragon Plates.—A handbook, containing much highly practical information on negative-making, has just been issued by Mr. W. Ziegler, 14, Oliver Grove, South Norwood, London, S.E., in reference to the use of the "Paragon" plates manufactured for sale in this country by the old-established dry-plate factory of Dr. Schleussner, Frankfort. The booklet contains some most useful chapters on the storage of dry-plates, development by the stand and tank methods, intensification, etc. It contains also a number of pages arranged in catechism form, and pointing out the chief failures which are possible in negative-making, with the cause, remedy, or preventive in each case. The handbook likewise includes directions for the use of the "Paragon" anti-halation plates, lantern plates, flat films, and stripping and process plates, as well as of the emulsion-coated ferrotype plates for use in the various automatic portrait machines. This most useful handbook may be obtained free on application from Mr. W. Ziegler.

"The Illingworth Guide to Printing."—A seventh edition (140th thousand) of the useful "Guide" to modern photographic printing processes has just been issued by Messrs. Thomas Illingworth and Co., Willesden Junction, London, N.W. Enlarged to sixty-four pages, it now includes chapters on the ozobrome, oil, and bromoil processes, in addition to those on P.O.P., gaslight, bromide and self-toning papers, contained in the earlier editions. Messrs. Illingworth have recently perfected bromide papers specially for use in ozobrome and bromoil work, the properties of which we hope to notice in a later issue. Meanwhile, we can recommend every practical photographer, whether professional or amateur, to apply for a copy of the "Guide," which is sent post free on application.

A Professional Competition for P.P.A. Members.—Messrs. Marion and Co. send us the prospectus of a competition which they have organised in conjunction with the Professional Photographers' Association. It is open only to members of the P.P.A., who also must not have taken a first or second award in any previous competition. Each competitor may send only one picture, which must not be larger than 15 x 12 inches (before framing), and may be by any process. Prints up to and including 10 x 8 inches should be framed passe-partout fashion: larger sizes in ordinary wood frames. A gold, silver, and bronze medal will be awarded in the competition, the board of judges being appointed by the Council of the Professional Photographers' Association. It will be observed that the rules of the competition are so framed that professionals who in the past have made a business of securing awards are discouraged from competing. On this account we believe that the majority of the members of the P.P.A. will welcome Messrs. Marion's proposition with marked approval, and we look forward to seeing a collection of prints brought together of considerable interest to the professional worker. The circular of the competition may be obtained by readers of the "B.J." on sending a postcard to Messrs. Marion at Soho Square, London, W.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Saturday, July 8.

Manchester Amateur Photographic Society. Ramble to Lincoln.
Sutton Photographic Club. Excursion to Ranmore Common.
South Suburban Photographic Society. Excursion to Westerham.
Southport Photographic Society. Excursion to Smithills Hall.
North Middlesex Photographic Society. Outing to River Darenth.

### Monday, July 10.

Bradford Photographic Society. "Prints from Negatives taken on Excursions."

### Tuesday, July 11.

Manchester Amateur Photographic Society. Discussion on Home Portraiture. Opened by J. D. Berwick.

### Wednesday, July 12.

Balham Camera Club. Members' Night. Questions and Answers.
Manchester Amateur Photographic Society. Ramble to Dovedale.
South Essex Camera Club. Jumble Sale.
North Middlesex Photographic Society. "Photo-Micrography." Alfred Guy.
West Surrey Photographic Society. "Marine Photography."

### Thursday, July 13.

Handsworth Photographic Society. Evening Excursion for Canal Photography.

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The Shops Bill to Apply to Scottish Studios.—At a sitting of the Grand Committee of the House of Commons on the Shops Bill, on Thursday, June 29, in considering the application of the Bill to Scotland, a Government amendment by the Lord Advocate was agreed to as follows:—"The expression 'retail trade or business' includes, in addition to any business specified in the definition thereof contained in any other section of this Act, the business of a photographer, and the expression 'bank holiday' means a public or statutory holiday."

As milk shops and chemists' are the only shops to be allowed to open on Sunday under this Act it will follow as a matter of course, in the almost certain event of the Bill passing into law this session, that after January 1, 1912, all photographic studios in Scotland will be closed on Sundays.

# Commercial & Legal Intelligence.

Legal Notices.—A receiving order has been made in the case of Charles Frederick Siedle (trading under the style of Siedle Bros.), photographer, 60, Walter Road, Swansea, and 13, Heathfield Street, Swansea.

How the Public are Deceived.—At the Staffs. Quarter Sessions, on June 28, John Jones, *alias* John Hinton, photographer, was charged with obtaining the sum of 2s. by false pretences from Robert Dunn, at Culmington, on March 18. It was alleged that accused, who took lodgings at Hereford, and gave the place where he had stayed, after he had left it, as his address, went into the Culmington district and obtained orders for photographs which he did not deliver. When arrested he told a police constable that he was amused at the ease with which the public were deceived, and instanced one case in which he had "taken in" a lady who complained to him that she had been similarly deceived only a short time before. Accused was sentenced to three months' imprisonment. Two other similar charges against accused were not proceeded with.

## NEW COMPANIES.

Claude Harris, Ltd.—Capital, £500 (£1). Photographers, dealers in photographic materials and apparatus, art dealers, etc. Private.

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# News and Notes.

The London County Council has accepted the following tenders for annual supplies:—Optical lanterns and accessories, compressed gases, etc., Barrett and Elers, Ltd., estimated value of contract £27; the British Oxygen Co., Ltd., £127 (quantities not given for certain items); W. Butcher and Sons, Ltd., £32 (ditto); Coxeter and Son, £9 (ditto); John J. Griffin and Sons, Ltd., cannot be stated; Newton and Co., £12 (ditto); Robert Rigby, £65.

The Gevaert Competition.—In consequence of a defect in the printing of the advertisement of Messrs. Gevaert, Ltd., in last week's issue of the "B. J.," a certain amount of confusion was inadvertently caused as regards the cash prizes which are being offered for professional photographs. The correct list of the prizes is as follows:—Three cash prizes, each of £40; 6, each of £20; 10, each of £12; 12, each of £8; 41, each of £4; 100, each of £2; 150 each of 24s.; and 40 gold medals.

The "Autographer."—The daylight rapid bromide printer which we reviewed some time ago as the "Thebugraph," has now been given the more euphonious appellation of the "Autographer." The British agents, Messrs. C. Janzer and Co., Gough Square, Fleet Street, E.C., are, we think, well advised in making the change, as the new name better suggests the facilities for the rapid printing and development of postcard bromides in outdoor situations, such as cricket grounds, etc., which the apparatus affords.

Royal Visit to Plas Machynlleth.—Mr. B. M. Pearce, Tawelfan, Corwen, has been honoured with a permit from the Honourable Lord Herbert Vane Tempest, Plâs Machynlleth, to take photographs at Plâs, including their Majesties, the King and Queen, the Prince of Wales, and Princess Mary, together with the other guests included in the house party. Mr. Pearce took a similar group when his late Majesty, King Edward, and Queen Alexandra visited Plâs as Prince and Princess of Wales, together with Princess Victoria and Princess Maud (Queen of Norway), in 1896.

Photographs of the Coronation.—The "Illustrated London News" send us their issue of July 1, dealing with the events of the Coronation week in a comprehensive series of photographs and drawings. Among the special features are reproductions in colours from, presumably, Autochrome photographs of the state coach used by the King and Queen on the day of their Coronation, and of some of the panel-paintings by Cipriani. Another pair of colour plates represent their Majesties in the Coronation robes. The photographic reproductions, needless to say, represent the pick of the camera records made of the various Royal progresses. They are here shown as well rendered as good paper and printing can make them, and are a pleasurable relief in comparison with the vast majority of photographic reproductions in the daily press. This Coronation double number of the "Illustrated London News" should assuredly be prized as a record of the recent national event, and will doubtless be purchased by many thousands for themselves and friends abroad.

The Photographic Society of New South Wales send us the catalogue of the tenth annual exhibition, held in the Royal Art Society's galleries, Pitt Street, Sydney. The exhibition included 100 frames, representative of the majority of English workers, and collected by Mr. F. J. Mortimer. Australian workers, nevertheless, appear to have contributed a strong pictorial section, many of the exhibits, if we may judge from the reproductions in the catalogue, being of a high degree of merit. The society is evidently to be congratulated on a successful exhibition, and photographers in New South Wales will be well advised to associate themselves with the society, the secretary of which is Mr. N. C. Deck, Box 829, G.P.O., Sydney.

Rajar Monthly Competition.—The prizes offered by Messrs. Rajar, Ltd., Mobberley, Cheshire, for the best print on paper or postcards of their manufacture submitted for competition for the month of May, have been awarded as follows :—

Class 1, Open Competition, to Mrs. G. Bletcher, 4, Worthington Street, Old Trafford, Manchester, for print on paper purchased from Messrs. J. F. Chapman, Ltd., 7, Albert Square, Manchester.

Class 2, for those who have never previously won a prize in any class of competition, to Mr. Robert C. Kerr, Peveril, Stanley Road, Lower Edmonton, London, N., for print on P.O.P. paper, purchased from Messrs. Horne's Photo-Stores, 4B, New Bond Street, London, S.E.

A Coronation Souvenir.—Doubtless many professional photographers have taken advantage of the Coronation celebrations to bring their portrait work before the notice of their customers, although it may well be thought that pictures relating to Royal personages are just now being scattered too liberally in the daily and weekly press for even the most tasteful production to possess a superlative degree of interest. Nevertheless, a most tastefully produced sheet of portraits, just issued by Mr. John Mills, of the Cosway Studio, Northampton, can hardly fail in its object of fixing attention upon the fine photographic portraiture, a selection of which it presents. Mr. Mills reminds his customers that a portrait of a child taken in the Coronation year of King George V. will be of special interest in after years. The photographs reproduced include one of King George V. and a group, taken by Mr. Mills some years ago, including the late King Edward VII.

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# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SEEING BEFORE THE EVENT.

To the Editors.

Gentlemen,—I think it very naughty of you to suggest that I am "still jumping at conclusions," and that I "do not seem to be aware of the phenomenon of visual anticipation." I thought I was. I am an illusionist of many years' experience (see enclosed circular), and I have an idea that I might surprise even you at that game. I have not said anything yet about these photographic experiences; they appear to be quite simple in comparison with the wedge business. So far I have only attacked "M. R." The proposition is simple. He sees the wedge fall before the hammer hits it, and it would be impossible to see it happen when it does happen, and yet he knows when it happens. How? Leaving second-sight out of consideration, there are but two channels through which he can gain that information—the eye and the ear. If it does not creep in through the ear there is only one other way in which he can judge the time, and that is by observing when the hammer comes to rest; but you know the wedge will have finished sinking by that time. There is a period between the hammer striking and halting, so one may see the wedge fall and the hammer afterwards come to rest, and may misjudge that to be the moment of contact. Supposing the hammer misses the wedge, what do you see? According to the anticipatory theory the wedge should fall, as the anticipation is still present. Some people are very clever in the matter of auto-suggestion; they can make themselves believe anything, and their only trouble is that they are unable to influence other people's judgment in the same way. As to distance at which the ear can be ruled out, you must not overlook the fact of "sound clouds," i.e., atmospheric conditions which retard the passage of sound-waves just as light clouds intercept the vibrations of light. I thank you for correcting a clerical error which, however, does not affect the argument.—Yours very truly,

J. Osborne.

## PRICES FOR COMMERCIAL PHOTOGRAPHY.

To the Editors.

Gentlemen,—With reference to "Good Work at a Fair Charge's" letter the usual price here for outdoor half-plate work seems to be 2s. 6d. for one mounted proof of houses, furniture, etc., and technically good work, too.

In the studios, sticky-backs at 6d. a dozen; postcards, 6 for 1s. 6d.

A good whole-plate enlargement from sticky-back or other photograph, mounted P.S. mount, and 12 postcards (glazed), including copying, for 2s., obtainable at almost any stationer's shop.

Glazed P.O.P. postcards of local views at 40s. per thousand are being offered the retail stationery trade.

In the face of such prices as these, I am wondering whether it will be possible to make a living out of photography much longer in a town where the scope is limited.—Yours, etc., Printer.

## STUDIO CAMERAS.

To the Editors.

Gentlemen,—Articles such as that on "The Studio Camera," appearing in your issue of June 30, are of interest and value to the trade. Considering the exemplary meekness of manufacturers under these friendly castigations, perhaps you will afford us the hospitality of your columns to call attention to the fact that we, at any rate, do make provision for fixing the focussing cloth to the camera permanently in such a way that it can be used as a lens shade as well. The price of our "Soho" Combination Studio Camera and Stand includes a special fitting consisting of a brass rod on either side of the camera, running from back to front, permitting of the focussing cloth being placed permanently in position, the front portion acting as a lens shade. With thanks in anticipation of your courtesy, Yours faithfully, Marion and Co., Ltd.

Soho Square, London, W.

## CHEAP WORK AND SUNDAY CLOSING.

To the Editors.

Gentlemen,—The real sinners as regards cheap work are the dealers and manufacturers. As long as low-priced materials can be purchased, cheap photographs will be produced. If the dealers, etc., can be induced to raise prices there will soon be an end to cheap work, and whichever way you look at it, it will be a step in the right direction for established photographers.

There is a man not very far from me giving twelve postcards and a 10 by 8 enlargement for half-a-crown.

Referring to Sunday closing, ask a mill worker who has been working in an atmosphere of 80 to 90 degrees from 6 a.m. till 5.30 p.m. to dress in cold clothes and have his photograph taken after tea; he will say something stronger than "no thank you." One clear day off in seven is what I believe in, but the photographer should be left to choose which is the most suitable day to close for his particular business. I have yet to hear of a Sunday opener trying to coerce, interfere, or persuade a Sunday closer to open his studio on Sundays.—Yours truly,

Thirty Years a Photographer.

## SUNDAY CLOSING AND THE SHOPS BILL.

To the Editors.

Gentlemen,—I have tried to withhold from entering into the discussion of Sunday labour appearing in your columns, but J. Holman's letter is of such a gratifying tone compared with the previous sordid letters that I feel compelled to give way. As a

Christian country, such a matter should never be discussed apart from the Fourth Commandment, for what is opposed to those ten unique laws cannot ultimately be a success in the truest meaning of the word. Like "J. H.," I have had a struggle. In the Transvaal they told me I should never get a situation without Sunday duty, but the Law-maker made it possible for me to avoid being a law-breaker, and I got and kept the desired situation for several years, though my employer was not of my own persuasion. In taking over a studio here which had been opened on Sundays, that law was again honoured, and I have absolutely declined to accept any appointment on a Sunday. There may be extreme cases where, for the benefit of the client my services would seem to be demanded on Sunday, which cases might come under the ruling that "It is lawful to do good on the Sabbath." I should then have no misgivings in acting as desired.

Thus I am trying to make the road better for those who follow, and to sacrifice in business for the sake of the community, as Ruskin in his "Roots of Honour" contends is just.

I may not win wealth, but a living is assured me. So in the highest sense I shall succeed—according to my faith or faithfulness.

Yours respectfully, W. G. PLUCKNETT.

Kingswood.

To the Editors.

Gentlemen,—I should like to put forward to the profession generally a few words in support of the so-called "cheap-jack," or Sunday opener. I have been throughout Great Britain as an assistant for the past twelve years, have had a thorough training in all branches of the profession, and have had experience in some of the best class studios in England. I think a vast number of the photographic assistants would have to seek occupation at some other calling should any such steps be taken to prevent them from opening their studios on Sunday.

In support of "Lancastrian," and "Roe MacMahon," I know of many studios throughout the country, particularly in the working-class population and seaside resorts in England, where they depend solely on what is well known as a "week-end" trade. Sunday closing to such studios would only mean more cases for the bankruptcy court and dismissal of 50 per cent. of the assistants.

I think the manufacturers of photographic materials, etc., will support me in saying it is the cheap, quick turnover man that circulates the money, employs most labour, and, in my own experience, is more conscientious in the paying of his assistants.

In conclusion, I should like to offer a few words of criticism on the letter of Mr. H. Holman in the issue of June 30. My remedy for the postcard business is certainly do them if you find it pays you to do so. Of course, if there are men that fancy they are busy using a couple of dozen plates per week, they certainly can't afford to do postcards, or even to be conscientious in the charge for their so-called better work. With apologies for encroaching so much on your truly valuable space, allow me to remain, Most respectfully,

ONLY AN ASSISTANT.

To the Editors.

Gentlemen,—The advocates of Sunday opening of studios seem few and far between, and they have quite failed to make their case good. Only those whose clients are of the very poorest class want it, for it is only the poorest who would not consider it *infra dig.* to go shopping then. It does not seem to have occurred to the Sunday studio man that the same excuse, viz., that if they do not come on Sunday they won't come at all—applies with equal logic to most other businesses. Why photography alone?

These movements have to be considered in a broad manner, and not on the merits of individual cases. Looked at broadly, Sunday work means an undermining of the physical constitution sooner or later; it means for all employees an utterly dull and dreary existence, no pleasure or zest in life, no social recreations..

It's a little bit irksome even with the best of employers to be always at his beck and call, but Sunday opening would simply make it downright serfdom. In these days of competition, for us of the middle classes the strain of life is hard and anxious as it is, one has to be incessantly on the alert, and an observer in a more leisured class of society would think us downright mad deliberately to enchain ourselves for life. The right use of leisure is one of the most elevating forces in life. In it we continue that process of self-education without which man becomes simply a drudge. I don't mean by self-education reading books full of "facts and figures," but I do mean getting out of oneself and one's circumstances, realising what a great world we live in, and trying to get a wider point of view. This is the chief difference between the educated man and the uneducated.

Sunday! What a relief it is! One may walk along the white country roads or on the springy turf in the wide spaces of nature. How grateful to those who live in a town is that sense of space and immensity.

"The last red leaf is whirled away,
The rooks are blown about the sky."

The sense of independence comes into a man, and he feels I'm a *man*. Or, perhaps, one may spend some of its precious hours in some great cathedral, dim, mystic, immense. There is a sense of sympathy with the past, and even with the future, as one gazes at the age-long walls which have stood through slow centuries. In the stillness and silence peace falls upon the fretful spirit, and things are seen in their true proportion.

And literature, has it no charm? What man is there so deadly dull as not to feel some spark of animation at the following lines:—

Fierce as the dragon, scaled in gold,
Through the deep files he darts his glowing eye;
And pleased their order to behold
His gorgeous standard blazing to the sky.
Rolls onward his Assyrian car,
Directs the thunders of the war,
Bids the winged arrows' iron storm advance
Against the slow and cumbrous lance.

Yours truly, FREE SUNDAY.

## Answers to Correspondents.

PHOTOGRAPHS REGISTERED:

A. C. and H. D. Allport, 313, Stratford Road, Birmingham. *Photograph of the Birmingham Illuminated Tramcar.*

T. E. Capstick, Main Street, Ingleton, Yorks. *Photograph of Beacon Fire on Ingleborough Mountain, Coronation, June 22nd,* 1911.

CINEMATOGRAPH MANUAL.—Will you kindly inform me whether there is a book published on cinematograph photography? I have a complete outfit and am turning out some excellent films, but I have to experiment at every turn, and probably go over the ground which would be unnecessary if I had a book of reference.—R. C. E. N., Johannesburg.

The most up-to-date manual is that published by the "Bioscope" Games, Ltd., 85, Shaftesbury Avenue, London, W. Price 4s.

INFRINGEMENT OF COPYRIGHT.—We have recently registered a photograph which has been copied by another firm and put on the market for sale. Would you be good enough to let us know what course to adopt?—A. AND. H. A.

Presuming that registration was done prior to the offence, you can, if you wish, enter an action against the firm, but we think it will be sufficient if your solicitor address them, pointing out the infringement, and in the first instance, asking them how they propose to settle the matter.

STRESS MARKS.—I am greatly troubled with stress marks when printing in bromide in a very bad way. Is it due to them being old stock? I had them from a certain big house. What should you recommend to clean them up after fixing? Is there not a bath of some kind that will clear them up? I rub most of them with methylated spirits on cotton wool.—JENNY.

Rubbing with cotton wool and spirit should remove them, but if you use cheap methylated spirit the effect may be worse than the original trouble. Try using pure spirit (spirits of wine). It will cost more, but very little is required.

STUDIO SHUTTER.—Would you kindly advise me as to the best shutter to get for use with a half-plate studio camera fitted with a 11½-in.

portrait lens $f/4$. Owing to its large diameter and small camera, it is impossible to use a spherical bellows shutter working inside camera. —Veteran.

Write to Messrs. Marion or Dallmeyer for particulars of the Packard-Ideal Shutter. If this is too large to go inside the camera, you must use a Thornton-Pickard Silent Studio Shutter fixed on the lens hood; or you could fit the Packard-Ideal into a double front behind the lens if the latter does not project much behind the flange.

**Raw Papers.**—Can you inform us of any work to which we can refer where we can gather some information as to the chemical and mechanical impurities met with in raw papers, such as might be employed for preparing photo printing papers. We should like to know of any tests which may be applied with a view to ascertaining the suitability or otherwise of such papers for our purpose.—L. and C.

We think you would find what you want in the translation of a lengthy article from one of the German paper journals which we published in our issues of March 29 and April 5, 1907.

**Dry-Mounting.**—Kindly mention the method of dry-mounting with an ordinary flat-iron (domestic). I have tried, but cannot get the portrait to adhere to either the tissue or the mount, although I have scorched the prints when protected with zinc and blotting-paper.—Puzzled.

You may easily make the iron too hot and so prevent adherence of the print. With such a make-shift method as you are using, it is not easy to hit the right temperature except after some little practice. We would suggest that you get one of the special irons fitted with a thermometer, as supplied by Messrs. Houghtons, or use a dry-mounting press.

**Speed Numbers.**—I shall feel much obliged if you will let me know comparative ratio between Scheiner and Warnerke numbers for speeds of plates compared with H. and D.—T. M.

We can best answer your question by quoting a few comparative numbers, but the figures, especially those relating to the Warnerke method, are very approximate :—

| H. and D. | Warnerke. | Scheiner. |
|---|---|---|
| 38 | 14 | 6 |
| 70 | 17 | 9 |
| 140 | 20 | 12 |
| 230 | 22 | 14 |
| 350 | 24 | 16 |

**Studio.**—I am contemplating building a new studio (sketch enclosed). 1. How do you think the measurement will suit? 2. Is there enough glass, plain for top, ground for side? Would this suit an $f/6.5$, Series III, Cooke lens, for small groups and cabinets? Your valuable experience will greatly oblige. If blinds are necessary for side and top, what colour would you use?—F. E.

We think that your light is not long enough for groups, and it is also rather too near the end. You would hardly be able to get even lighting with three figures with your arrangement; 12ft. of light would be better. You can always shut it out. Blinds are absolutely necessary. We recommend the festoon pattern; dark blue or green sateen and white nainsook are suitable materials.

**Writing on Glass Vessels.**—I am just at present engaged on a number of experiments, in which I am constantly making up small quantities of fresh solutions, and should be glad if you could tell me some rapid and convenient way of writing the names of the solutions on the bottles. I find constantly affixing labels and removing them to take up too much time. Surely there is some method that is quicker.—Labbite.

The best suggestion we can make is that you should get a bottle of what is sold as "Sabatier's Ink." You can purchase it from dealers in chemical apparatus, such as Messrs. Griffin, Kingsway, W.C. Applying the ink with a strip of paper, you can etch a small patch on the glass, on which you can write the name of the solution you are using in pencil. The inscription can be immediately rubbed out with a piece of india-rubber.

**Chromium Intensifier.**—I shall be very much obliged if you will kindly inform me, through the medium of your paper, if :—1. When using the chromium intensifier the image should bleach out completely as in the mercury bath? Also about the length of time bleaching should take? I left a negative in bath A, as given in "B.J. Almanac" for twenty minutes, but I could notice no visible change. 2. Also, will a stock solution of bichromate work as well as one freshly made?—D. V. Davies.

1. The image should bleach out in just the same fashion as it does in mercury intensification, though, of course, the colour of the bleached image is not the same. 2. The mixed acid and bichromate solution will not keep, and this was no doubt the cause of your failure. Make a 4 per cent. solution of bichromate and 2 per cent. solution of acid, and mix equal parts for use. The separate solutions will keep indefinitely, but the mixture only works at its best when fresh.

**Fogged Negatives.**—I have bought a half-plate camera of a good quality, fitted with —— lens. But after taking several views and groups, I had failure nearly in every case. I have thoroughly examined my camera to see if there may be any leakage, as all of my plates were more or less fogged, a most unusual thing. I have tried different developers and get same result. On further examination I have come to the conclusion that the mischief lies in the lens being an anastigmat, and, capable of covering a larger plate, illuminates the edge of every fold of the inside body of camera, which I believe causes fog. On the focussing-screen I never can get a clear, sharp view; they are foggy grey. The bellows is a conical shape, and appears sufficiently large for the camera. What can you advise me to do? There is a roller-blind shutter behind lens. Can this be of any mischief?—One in Trouble.

It is very likely that the bellows-folds are the cause. To test this, get a friend to let you fit your lens to a whole plate or square-bellows pattern half-plate camera, and note the kind of negative you get then. If it is still foggy, you may suspect the lens itself, and return it to the makers. We presume that development, dark-room, light, etc., are in good order.

**Faded Bromide.**—The enclosed bromide print has been brought back to us, after eighteen months, in the present faded condition. Can you suggest a cause for it going so bad in short space of time? Also if a bromide print which is too dark (or a glossy bromide covered with stress marks), can be reduced or cleared in a weak solution of ferricyanide of potash Does it affect the permanency of the print if well washed after?—Bromide.

The print sent has evidently been submitted to sulphurous vapours, together with a moist atmosphere. We have seen a similar effect produced upon a print which has hung near a gas stove on which a kettle was frequently heated. The clearness of the white margin indicates proper fixing and washing. As a rule, the ferricyanide reducer spoils the tone of a bromide print, but should not affect its permanency. It is, however, advisable to put the reduced print into a plain hypo bath, so that all the silver acted upon by the ferricyanide is removed. A weak solution of iodine in iodide of potassium, followed by hypo, is generally preferred for "cleaning up" and reducing bromides. Stress marks can usually be removed by rubbing the wet print with cotton wool.

**Reproduction Rights.**—An editor wished me to take some views of the recent celebrations. I met his wishes, and he also selected other views to publish at the same time. No terms nor quantities were arranged. He had a good run and had to reprint. I had permission to print copies after publication. My questions are : 1. What ought my charges to be for prints whole plate and half-plate, reproduced 5½ x 4½—3½ x 2½, taken for him and views of my own? 2. Can he claim copyright in the views taken for him, as I had to chance getting anything at all? I think he can, but not in the views supplied taken for my own interest. 3. Can I claim any or all the blocks, or restrain him making further copies from my own views separate, and what course should I take, as the registration for copyright would be expensive, as there is a quantity of views?—C. Sayer.

You appear to have acted in a very unbusinesslike way, and, according to the facts as you state them, it is doubtful if you have any rights in the views; the editor may argue that they were taken to his order. Therefore, in sending in account, you should invoice it "license to reproduce in the —— —— journal for one issue only." 1. It is a pity you do not give us an idea of the status of the paper. If, as would appear the case, it is a local journal, you probably will not get the customary 10s. 6d., but half or quarter this sum. 2. It depends on the instructions you received, and on the terms of the invoice you render. 3. You have no claim on the actual blocks, but if you establish your claim to the copyright you can prevent further use of them. For this you should register each one.

Opening a Studio.—I am considering the advisability of opening a portrait studio in ——, doing good, but not the highest, class of work. I should be very glad to have the benefit of your opinion as to the scope for this work in that town. For many months I have been searching for a place where prices were not cut to such an extent as to make the business unprofitable, or nearly so, but I do not seem to be able to discover such a town. I should be glad to hear of one if you think I can do better than ——; in England preferred. I am a thoroughly competent man in all departments of studio work, and have had considerable experience in commercial photography, interiors, etc. For your information I quote my usual studio prices, viz.: Cabinets, carbon 25s., toned bromide 15s. to 18s., black and white 12s 6d. per dozen; postcards, 3s. 6d. per dozen. Smaller work at proportionate prices, though I prefer to avoid this if possible.—Flintshire.

We do not know what prospects there are in the town you mention, but as it is a thriving centre you should do as well there as in most places. Everything depends upon the work being worth the price charged, and the studio carried on in a businesslike way. We know of more than one man who can hold his own against cutting because he knows his business, and never disappoints. Your prices are reasonable, and your commercial experience should enable you to secure orders from the many engineering firms in the district.

Photogravure, etc.—Many thanks for your answers in "B.J.," June 9. With regard to question 2, I am afraid my question was not quite clear. When I said etching as in photogravure I only meant using ferric chloride. As far as I understand the process a carbon transparency is made—i.e., a positive—so that where there are shadows the bichromated gelatine is protected, and etching can take place as far as possible. In my question I said "printing under a *negative* so that the light portions would be eaten away by etching fluid." Perhaps I should have asked Has anyone tried printing an ordinary process block in a mezzotint printing press to see if a good quality print can be obtained? The idea suggested itself to me from the quality of some of the prints in the "Manchester Guardian," and if with such rapid printing good velvet blacks are obtained, it seems likely that careful printing would give excellent results. 2. I have found that using an R.R. lens and Thames plate screen it was impossible to get a positive to register in colour. I find no trouble when using an Aldis lens. In your notes on the Thames plate in "Colour Supplement" I do not think this point has been noticed. 3. What paper or papers use rotary photogravure for their illustrations?—Chas. G. Franck.

1. To print an ordinary half-tone block on a copper-plate printing press, either with or without the preliminary graining that you previously suggested, would only result in producing a negative; that is, the high-lights would be black and the shadows light. 2. We can only suggest that it was an inferior R.R. lens that you were using. 3. At present only three German newspapers are using rotary photogravure, though we are told that a machine is being built for a French paper. They are the "Freiburger Zeitung," the "Hamburger Fremdenblatt," and a Frankfort paper—we believe the "Frankfürter Zeitung."

Return of Original.—About twelve months ago a customer of mine brought in a photograph to be enlarged at 24 x 20, complete, with a 5in. oak frame. This man has been in the habit of bringing to me several other photographs, as I am doing nothing else but for the trade. He has had an account with me, and one day he brought in 10s. on account, and told me to try and finish the above photograph as quickly as possible, but I was not anxious to finish same, as I wanted to get more money on the account. A week after that he called in with another man, whom I did not know, and he asked me to show him the proof of the photograph, as he wanted to show it to his customer, who happened to be the man with him. This man said he thought it would look a larger picture, the same size as he was shown when my customer took the order, so of course I said it had nothing to do with me; my instructions were to make a 24 x 20. Since then I have not seen my customer, but the other man called and said that he must have the small photograph back. I told him I was only responsible for the photograph to my customer—that is, the party who gave me the order; if he must have the photograph he must go and ask the man to whom he gave the order. He told me the order was for 35s., and he has given him 10s. deposit, for which he has had no receipt. Afterwards he sent me a solicitor's letter, threatening me—"that I should return the 10s. and the photograph which he gave to my agent." I answered the letter to the solicitor, and told him that the man who gave me the photograph has got nothing to do with me whatever, and if he must have the 10s. and the photograph he should claim it from the man he gave the order to. Since then I heard nothing until to-day, when the owner of the photograph called again, and asked me would I be good enough to go with him to the solicitor to settle the matter. I went with him, and the solicitor said to me I must give the photograph up, as I am aware who is the owner of it. I told him I was prepared to give it, providing they give me a note, in case my customer gives me trouble about the photograph, that I should not be liable for anything. At the same time I may state that on a certain occasion the owner of the photograph at one time called on me and suggested giving me the remaining 25s. to complete the enlargement. I was quite agreeable to that, providing he would give me a note as stated above. Now, in the presence of the solicitor, he admits that he gave me that offer, but he does not wish me to complete the enlargement. As I have already gone on with the work I do not see my way for giving up the photograph to the owner without having any compensation for it. What I want your advice about is whether I must give up the photograph to the owner without him taking the enlargement, as he gave me the offer, and without any conditions whatever?—M. I. C.

We think you should return the original to the owner and obtain a receipt for it, but we cannot see that you can make him pay for the enlargement. We think a Judge would hold that you must obtain payment from the person from whom you first took the order.

◆

Coronation Cinematography.—Our enterprising contemporary, the "Kinematograph and Lantern Weekly," in celebration of the King's Coronation, has published a special number in which all aspects of the cinematograph are dealt with by leading members of the trade and others. It is satisfactory to find that the part of cinematography in education and in scientific work finds a prominent place among these contributions. Other writers deal tersely with present-day problems and possible future developments of the cinematograph trade, and the issue, which is published by Messrs. E. T. Heron and Co., Tottenham Street, Tottenham Court Road, London, W., should be of interest to all those having any connection with animated photography.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2671. Vol. LVIII. FRIDAY, JULY 14, 1911. Price Twopence.

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## SUMMARY.

The Photographic Convention. In weather which is tropical for these islands the proceedings of the twenty-sixth annual Convention began at Exeter on Monday last, July 10. Mr. J. B. B. Wellington, in his presidential address, dealt with the recent achievements of photography in astronomy, reproduction processes, and cinematography, as well as with recent developments in commercial photographic work, photography in natural colours and photographic manufacture. (P. 527.)

In a paper read on Monday evening, Mr. Alfred Watkins criticized the issue by dry plate manufacturers of a large number of different brands of plates. He also urged the adoption of names which should be reasonably descriptive of the relative sensitiveness of plates issued by a given maker. (P. 530.)

In an article on page 531 a contributor discusses certain items in the policy of a portrait photographer, and condemns the issue of a price-list and the charging of reduced prices for re-orders. He suggests a scheme for preventing sitters from obtaining cheap copies of photographs of themselves taken at a high-class studio.

The advantageous use which can be made of casement-curtain materials in studio decoration is a point which professional photographers may usefully bear in mind, since such fabrics allow of schemes of decoration being not infrequently changed at little cost. (P. 525.)

The lesser thickness of glass in a lens of quite short focus is a factor in exposure which is frequently overlooked in comparing such lenses with others of much greater focus but equal aperture. (P. 526.)

The allowance which must be made for the use of a light-filter when photographing distant objects is the subject of some notes in a leading article on page 526.

In a continuation of his review of dark-room safe-lights, Dr. A. P. H. Trivelli deals with the use of a green illumination for the dark-room. (P. 533.)

Though dry plates are now practically unaffected by summer conditions of temperature, intensification and other processes are apt to give troubles of which previous hardening of the film is a preventive. (P. 525.)

A reflex camera without focal-plane shutter figures under "Patent News." (P. 536.)

Professional topics, such as carriage charges for photographs, Sunday closing, and business methods, are dealt with by correspondents. (P. 541.)

## EX CATHEDRA.

**Hot Weather Troubles.** At the time of writing the thermometer stands at 73 deg. Fahrenheit in the coolest room in the building, and in other parts is a good deal higher. Modern dry-plates are so manufactured that frilling and blistering of the film are troubles almost unheard of even in such hot weather as we are now having. The use of water-glass as a substratum, together with the addition of hardening agents to the gelatine, or the use of the gelatines comparatively recently obtainable, and of a quite different character to the older kinds, are responsible for this important improvement. There are, however, operations under which the film shows a distinct tendency to give way, the most common of which in ordinary practice are mercurial intensification and reduction with ammonium persulphate. In the case of intensification with mercuric chloride, the use of the half-dozen changes of dilute hydrochloric acid for the purpose of removing from the film the mercuric chloride solution tends to considerable softening and frequently reticulation. We have recently made a series of experiments, and find that with some brands of plates reticulation is almost certain to occur unless the negative has been previously hardened. It is worth while, therefore, to give negatives five minutes' soaking in a 3 to 5 per cent. alum solution, followed by half an hour's washing, and this may be done after the hypo has been washed out, and before drying the negatives. The alum should be a good sample. The use of an alum-acid-hypo bath will, of course, obviate the necessity of a separate operation. With the persulphate reducer the effect is a marked softening of the gelatine, but we have never experienced any reticulation. Here, again, the preliminary hardening bath will prove a safeguard.

* * *

**Studio Furnishing.** Among present-day furnishing fabrics there are so many inexpensive materials that there is little excuse for the dingy appearance of many studios. It would seem that photographers are apt to forget the effect of light on the colour and material of their blinds and curtains, and, seeing them day by day, they do not realise how faded they really are. In view of the conditions, it is perhaps a mistake to purchase expensive materials, and silk and plush are certainly not necessary. The quiet, simply decorative effects which may be obtained by the use of many of the cheaper casement curtain materials are admirable for either the studio itself or the reception- and dressing-rooms, and the use of such fabrics has the advantage that they may in many cases be washed, and, when faded or shabby, they may be replaced without incurring great expense. These curtain fabrics are obtainable at a few pence per yard, and are woven in such a way that they fall into satisfactory folds. Of course, quiet shades will be chosen, but we would give one word of caution. Do not select colours by reflected light only, for in some cases a material which looks well by reflected light is too strong and often too crude in colour when the light is coming through it. In addition to hangings for rooms such materials are very useful for the windows or show-case, either as hangings or for tacking to the floor as a background for any specimens laid thereon. The expense of frequent changes in the window may be much lessened by the use of such materials, and this expense is always a consideration in the smaller businesses.

* * *

**The Rapidity of Short Focus Lenses.** In a recent note we referred to the extreme sharpness noticeable in the negatives produced in modern extra small cameras. Another fact that is even more evident, though tradition leads many to look upon it as an error rather than a fact, is the great rapidity of the short focus lenses with which these cameras are fitted. The popular idea that lenses of the same aperture are necessarily of the same rapidity is, of course, erroneous, for it leaves out of account all factors other than aperture which affect rapidity. Two of these factors are loss of light by reflection from the glass surfaces and loss by absorption within the glass, both being of very considerable importance. If we have two lenses of identically the same pattern and aperture, but of different focal length, then while the loss by reflection should be the same in each case, the loss due to absorption must be different owing to the varying thicknesses of the glasses used. Thus a three-inch lens must be faster than a six-inch lens of same aperture and type owing to the fact that the light passes through only half the thickness of glass. The variation cannot well be estimated, as much must depend on the kind of glass used and the rays it absorbs, therefore it is to be regretted that so few attempts seem to be made to measure the actual efficiency of lenses. It is misleading to rely as we do upon focal length and aperture alone for the estimation of rapidity and the introduction of the small camera with its short focus lens has done much to emphasise this fact.

## A NEGLECTED POINT CONCERNING EXPOSURES.

There is an important point with regard to exposure that has apparently been quite neglected by writers on photographic matters, and yet has been the subject of questions put to us by several workers within the last few weeks. Being a matter of rather material interest, we propose to deal with it somewhat fully, and trust that our explanations will clear up the difficulties that our querists have met with.

There is a general understanding among photographers that distant objects require less exposure than near objects, but the purely optical conditions governing exposure show that the light intensity on the plate is identically the same for any distance of the object, provided the camera is not racked out beyond the focal length of the lens. This second fact suggests that the exposure should be the same for any distance, and therefore appears to be at variance with the first fact mentioned, but the discrepancy is accounted for when we remember that the optical considerations make no allowance for the effect of atmosphere intervening between camera and object. The atmosphere being itself a luminous body adds to the theoretical luminosity of the distant object and so shortens the exposure actually necessary. This added luminosity is practically of the same nature as skylight, that is to say it is polarised light, of short wave-length, and very actinic. Therefore, if we expose through a filter screen that is calculated to cut down skylight, it will also cut out this atmospheric light that intervenes between camera and distant objects, and then the correct exposure required for these distant objects becomes very nearly, if not quite, equal to that wanted for near objects. The theoretical conditions governing exposure, therefore, become practically true when filter screens and colour-sensitive plates are in use, and consequently correct exposure for both near and distant object is a practical possibility with a screen, though impossible without it. Here, of course, we have an advantage of orthochromatic methods, the existence of which is seldom realised.

Suppose now we consider in the case of an ordinary subject the practical application of some of the points referred to above. Assume that the view includes moderately near objects which require an exposure of 1-25 second with an unscreened plate to render their detail, and also some distant trees and still more distant hills, which, considered alone and quite apart from the foreground objects, can be adequately rendered with an exposure of 1-100 second on the same plate. These assumptions represent a quite average landscape view. If, in a case like this, we expose for the foreground, the distance is about four times over-exposed, a fact which probably may not be of any very great consequence owing to the comparative unimportance of the distance. If, on the other hand, we expose for the distance so as to render it as clearly as possible, then the foreground will be badly under-exposed and the result spoilt. Suppose, however, we want the distant view only with the object of subsequently enlarging a portion of it, then 1-100 second will give the result we want, for the under-exposed foreground will be omitted from the final enlargement.

Now, again, consider the same subject when colour-sensitive plates and an orthochromatic screen are in use. As before explained the screen will cut out the atmospheric effect which otherwise adds to the luminosity of distant objects, and so an exposure adjusted for the foreground will be equally correct for the distance. If, therefore, a five-times screen is in use the correct exposure for both foreground and distance will be about 1-5 second. Here we reach the point that has been such a source of trouble to our querists. If 1-5 second with the screen is correct for distance, that without the screen would require only 1-100 second, it is obvious that for this part of the subject the screen is acting not as a five times but as a twenty times filter. In each of the cases brought to our notice the worker had aimed at photographing the distance only, and in estimating exposure had calculated that necessary without a filter and then multiplied by the filter factor number, and so had given only about one quarter the exposure really necessary. The fundamental fact that filters more or less completely eliminate the effects of distance was either forgotten or not known, and so the mistake was very readily made.

As most exposure tables and meters agree in estimating that distant views require only quarter the exposure necessary with near objects, that is to say with subjects classed as heavy foreground, we may take this factor of four as being fairly well correct. Therefore, when estimating exposures for distance with a screen we shall not be far out if we take four times the amount given in the tables and then multiply by the nominal screen factor. This will be the same thing as considering distance objects to be near ones. As an alternative we may estimate exposure in the ordinary way and multiply by four times the filter factor, but this procedure has the disadvantage of suggesting that the filter factor varies with the distance, which is hardly a correct way of looking at the matter. It need hardly be pointed out that multiplying by four is only a rough-and-ready rule. Atmospheric conditions vary greatly, and in some cases the allowance may be too much, while in others it is conceivable that it may even be too little.

# THE PHOTOGRAPHIC CONVENTION OF THE UNITED KINGDOM.

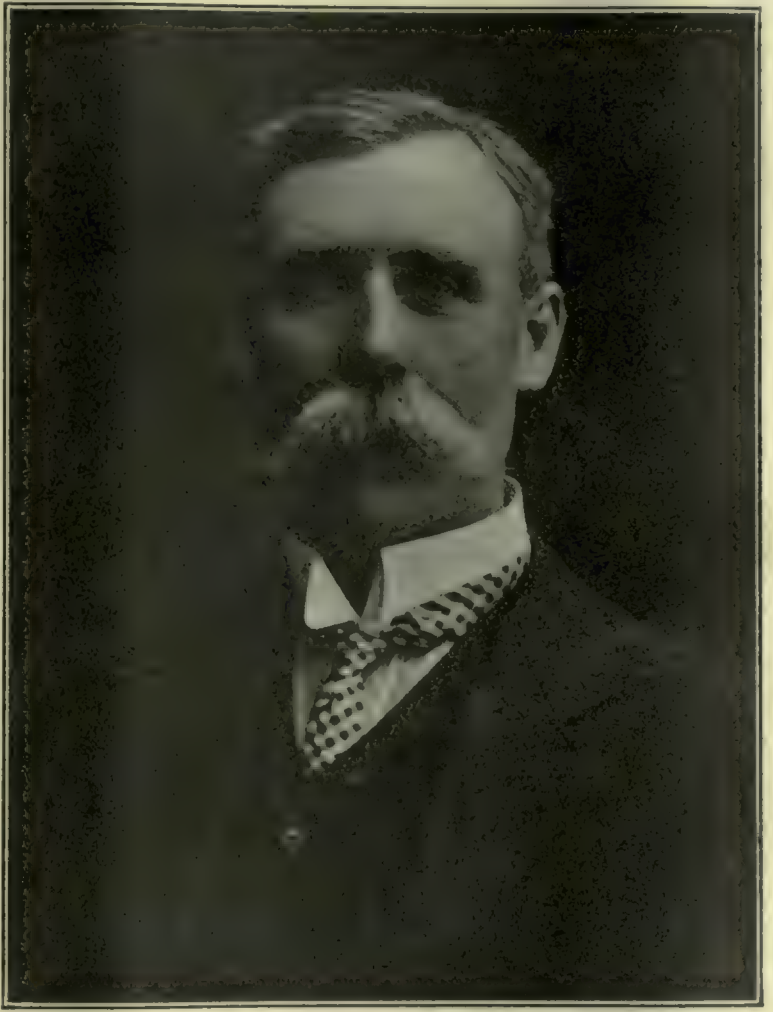
## THE TWENTY-SIXTH ANNUAL MEETING, AT EXETER, JULY 10-15.

THE meeting of the Photographic Convention at Exeter was inaugurated on Monday afternoon last by the reception at the Guildhall, where a welcome was extended to the members by the Mayor, Mr. A. T. Loram, who is also the president of the Exeter Camera Club. At this official welcome the Mayor was supported by the Sheriff of Exeter, Mr. J. G. Owen, and the Town Clerk, Mr. H. Lloyd Parry. Mr. Loram, in his address, dwelt upon the many historical eras through which the city of Exeter had passed, and in conclusion mentioned that the city had lately resolved to make a record of its historical beauties, some of which, unfortunately, were disappearing. The City Record Society would, therefore, greatly appreciate the gift of suitable photographic records which might be made by members of the Convention during their visit.

Mr. Godfrey Bingley, retiring president, then handed the badge of office to his successor, Mr. J. B. B. Wellington, who, in accepting it, thanked the Convention for the honour done him in electing him to the presidency.

Mr. Bingley was then made the recipient, by Mr. F. A. Bridge, of a replica in silver of his badge of office.

Mr. Wellington then delivered his presidential address, at the conclusion of which a vote of thanks to him was moved by Mr. E. J. Humphery, seconded by Mr. Bingley, and carried with acclamation.



MR. J. B. B. WELLINGTON.

President of the Photographic Convention of the United Kingdom, 1911-12.

The Mayor having then vacated the chair in favour of the president, Mr. Alfred Watkins read a paper on "The Undue Multiplicity of Brands of Plates." In a brief discussion which followed the president said that he was afraid nobody was in a position to dictate to any business man what plates he should manufacture. While he sympathised with the contentions put forward by Mr. Watkins, he was afraid there was little chance of manufacturers reducing the variety of the brands which they issued.

Mr. F. A. Bridge alluded to the practical gain to everybody which would result if manufacturers could be induced to reduce the number of their brands to three.

### THE PRESIDENT'S ADDRESS.

Perhaps the best form for a Presidential address at this time is a brief survey and record of a few of the things photography has done and is doing. First, perhaps, it may be well to remind ourselves of the youth of our art-craft, for a realisation of its great advances in less than a century will give us confidence and encouragement in looking to the future.

#### An Historical Note.

As the beginning of photography must be dated at the time when the knowledge of how to *fix* the sun-image was announced to the world, we cannot put it earlier than Fox Talbot's paper of January 25, 1839, or Daguerre's of February 6 in the same year, though the oldest photographic print now in existence bears date in the autumn of 1835, in the writing of Henry Fox Talbot, who made it. It is important to note that this early print is a negative, on paper.

The energy with which the discoveries announced in 1839 were taken up and developed, is evidenced by the fact that Robert Hunt, Secretary of the Royal Cornwall Polytechnic Society, was able to produce in 1841 "A Popular Treatise on the Art of Photography," with a positive and a negative photograph as frontispiece. From this book the general interest in photography may be said to have begun, so that our process is exactly seventy years old, and in that time it has, indeed, worked a marvellous revolution in the methods of investigating, recording, and distributing information.

#### Some Recent Achievements.

The advances made in photography are so numerous that one is apt to overlook them, and to accept as commonplaces what ought to be received as marvels. Even within the past twelve months, we have had the intensely interesting and important work by Prof. R. W. Wood, of Johns Hopkins University, described in the thirteenth Traill-Taylor memorial lecture on September 27, on photographing with the invisible rays at both ends of the spectrum. Prof. Wood showed, in most striking lantern-slides, how different the world would look if man's eyes were sensitive to the infra-red, or to the ultra-violet, instead of to those portions of the spectrum by which they actually are affected.

A work that is in some respects even more striking, though it depended only upon the application of well-known methods, was done early last year at Finmarken, Arctic Norway, by Prof. Carl Stoermer and Prof. Birkeland, of the University of Christiania. They made a long series of studies of the Aurora Borealis, photographing it simultaneously from two stations nearly three miles apart. Knowing the length of base between the two cameras, and including the same stars (as well as the aurora) in the pair of plates, it became possible to calculate the exact distance of the phenomenon from the observers, the actual area it covered, and its height above the earth, thus helping to solve one of the most controversial questions of science.

Perhaps the most astounding advance of the last year is to be found in the Pollak-Virag system of telegraphy, in which the record is made by throwing a point of light upon a moving strip of sensitised paper. The electric current controls the motion of this pen of flame so that it writes the message, letter by letter, upon the sensitive paper surface. An incidental advantage of this improvement is the immensely increased capacity of the telegraphic system, for it is claimed that with a staff of only two expert operators, forty thousand words—the contents of four ordinary newspaper pages—can be sent over one wire in an hour.

### Society Matters.

In photographic society life the past few years have seen substantial advance. The principle of affiliation and federation has been developed very successfully, and there is reason to believe that the growth will continue. The establishment and successful working of bodies so specialised as the Society of Night Photographers and the Nature Photographic Society, with a magazine of its own, shows a healthy tendency toward specialisation in applied photography; and exceedingly satisfactory progress has been made by the Professional Photographers' Association (whose President, Mr. F. P. Moffat, is with us at this Convention). The P.P.A. has not been content with its good work on old lines, but last year it established, and this year has repeated, a trade conference which seems to have been an unbounded success from the practical and commercial point of view.

If there is anything to regret in the society life of the immediate past, it is that division of forces in the pictorial world which has led to our having three annual exhibitions in London, all aiming to present the best in pictorial photography.

### Photography in Illustration.

Photography for the Press, considered in the widest sense, has become an important industry. There are about 300 separate plants for half-tone block making in the United Kingdom alone, as well as many firms using photo-lithography, collotype, and photogravure. The photographers who devote themselves entirely, or mainly, to picture-making for the newspapers have become a strongly specialised branch of the profession, and some of their recent work in the way of views of sports, and interiors with figures, in the dim lights of courts and other halls, is truly marvellous. These men have increased in numbers, so that it has become a question with some of the societies of journalists whether they shall be admitted to membership or not. At first, they came in naturally as descriptive reporters, but whether this shall be continued is a matter of question.

The prejudices of the Press have been broken down, so that almost every newspaper now uses topical illustrations occasionally, and the enormous popularity of journals consisting largely of this class of illustration has recently been evidenced by the opening of a London office for the "Daily Sketch." This paper, founded only a little while ago in Manchester, is now printed and issued simultaneously in Manchester and London.

In book-illustration recent advance has been great, both in reproduction by photo-mechanical means and in the use of photographic originals. Not only is every well-equipped exploring party accompanied by a photographer, but every mountaineer, traveller, or sportsman who thinks of writing a book realises that the ready camera is as essential as the fluent pen. The next great step in this direction should be taken almost immediately, when the Ives Tripak system promises to enable the tourist to expose a set of three-colour records as easily as he now makes his monochrome snap-shot.

The application of photographic illustration to tradesmen's catalogues, price lists, and advertisements of all kinds has seen much recent development, but our own country is far behind the United States, and perhaps also in the rear of Germany, in the extent to which photography is used in commerce, though the quality of this work in Britain is as high as anywhere in the world.

### Lantern and Cinematograph.

Photography in teaching has progressed unevenly. If we compare the few rude illustrations in the school-books from which geography and natural history were taught in our own young days with the elaborately and truthfully illustrated books of history, nature, and travel that we see to-day, there is much cause for satisfaction. But if we look to the use of the camera itself in the schools, and of the optical lantern as a means of demonstration, it seems as if the school-master has been far less progressive than the Press-man or the commercial advertiser. It must be some twenty years since one of our past Presidents, Mr. C. H. Bothamley, wrote a little book upon the lantern in teaching, and it seemed as if all schools would soon take up this invaluable aid. Unless the schools move in this matter very soon, they may lose their opportunity and find a portion of their work of instruction going into the hands of the motion-picture shows.

Photography as a spectacle is suggested by this reference to motion-pictures, and it seems a curious "reversion to type" when we remember that eighty years ago Daguerre was a painter and exhibitor of dioramas, and realise that to-day the most important single interest in photography is the popular exhibition. Its turn-over is far larger than that of the portrait-making profession, though it is a growth of only a few years. Quite recently the increasing use of non-inflammable film has given promise of still further development of kinetographic possibilities; and good progress has been made with motion-pictures in colour—the first public display of which was at our Convention in Southampton in 1906 by Mr. Friese Greene. The method now in use is different, the work of Smith and Urban, and has been a public entertainment for nearly three years in London

The Kinetograph is not only being used as a spectacle, but in many lines of scientific research and demonstration it has proved most useful. Our member, Mr. F. Martin Duncan, has done, and has shown us from time to time, much pioneer work in this field. Now, kinetography is being largely used in the teaching of medicine and surgery, recording and displaying the details of operations, and the study of epilepsy, rhythmic insanity, and other abnormal movements.

### Photography as a Scientific Recorder.

I can only very briefly remind you of the many ways in which a spot of light, playing upon a clock-driven strip of bromide paper, takes notes that would need the services of thousands of trained observers. It does work that would be impossible without its aid, if only because of the cost. The changes of sunshine and cloud, from minute to minute, in almost all parts of the world, temperature, barometric pressure, changes of earth-magnetism, earth-tremors, varying from those which man cannot discern to great historic cataclysms, and many other classes of fact, are recorded by the pen of light on the sensitive paper.

In microscopic work the camera for recording and the optical lantern for displaying are doing more and more important work every day, especially since the single-plate colour processes have become available.

Photography in astronomy has made wonderful strides in recent years, especially in the work of the Harvard Observatory, which uses photography much more fully than any other observatory in the world. By tacit agreement with the other observatories it has been given the monopoly of certain methods which it first devised, because duplication of the work would be wasteful.

A striking proof of the value of photography in astronomy is given by the experience of the Harvard College Observatory in discovering new stars and distinguishing variables. In 1863, when Harvard identified its first variable, 113 were known to the world, and in the next five years, while Harvard discovered three, the rest of the observatories found over a hundred amongst them. In the single year 1901, however, with a systematic photographic survey, Harvard discovered 593, a considerably greater number than had been found by all the other observatories combined in their whole history. In 1905 Harvard discovered no less than 1,632 variables, and the total for this observatory up to April, 1910, is 3,281, as against a total of 946 for all the other observatories of the world combined.

Three different methods are used, perhaps the most interesting being the superposition, in a sort of retouching-desk, of a positive and a negative of the same portion of the heavens and both on exactly the same scale. If a positive made to-day is superposed on a negative made a year ago, any star that has changed materially in the interval is almost instantly detected by the trained eye of Miss Fleming, who has developed this side of the work under Prof. Pickering, and who can examine a few hundreds of records in a day, covering millions of stars. If the stars were just the same at both times of photographing, the dark spot on the negative would exactly cover the transparent spots on the positive, and when they are carefully superposed, any failure to do this becomes easily visible.

When an unknown heavenly body is discovered by any other observatory, its exact position is reported to Harvard, which photographs the whole of the visible heavens every clear night. The file of negatives of the proper region is then examined, with the result that it is possible to fix the exact night on which that particular object first impressed itself upon the plate.

New stars, or Novæ, are not merely stars that have not previously been noticed, but are stars which have appeared in parts of the heavens that were blank. Before 1890 six such stars had been discovered; since then nineteen more have been added, of which Harvard contributed fifteen, while the rest of the world scored four. The detecting of the variables and novæ on the negatives is the work of women specially trained, and was first established by the late Mrs. Williamina Fleming, who personally discovered ten of the Harvard novæ, while her assistants, Miss Cannon and Miss Leavitt, found three and two respectively.

The recent researches into colour-sensitising and light-filtering, though first intended for photo-mechanical three-colour work, have been followed by Prof. King, who is the head of the photographic department at Harvard, and who finds them useful in many photo-astronomical studies.

Perhaps I need hardly remind you that the cumulative action of light upon the photographic plate has enabled astronomers to photograph myriads of stars too faint to be seen by the human eye, even with the most powerful telescopes.

The study of Mars, one of the most fascinating of astronomical subjects, has recently been aided by photography, and Prof. Lowell, of Flagstaff Observatory, in Arizona, has made large numbers of photographs with a view to deciding whether the so-called canalæ have objective existence. The difficulties are enormous, because the canalæ are so nearly the same luminosity as the surrounding parts, and because the motions of the air interfere with definition. The results are inconclusive at present, for while those who are familiar with the canalæ as seen by visual observation, can trace them and even find much new detail in the photographs, those who doubt the objective existence of the markings are satisfied that the photographs confirm their attitude of scepticism.

### Professional Photography.

has made great progress in the past quarter of a century, and especially in the last ten or fifteen years. The average status and the financial stability of the professional have increased very satisfactorily. And the average profit returns have increased also with improved business methods; though this may be doubted by some who remember a few of the great firms in the "good old days," and forget the many men who struggled and failed.

While some of the modern photographers specialise much more than did those of old time, others have become even more general, or have specialised on new lines. Photography for the block-maker and for the manufacturer's catalogue provides much new work; night photography, both in the studio and at banquets, has grown; stage photography, the copying and enlargement of miniatures, daguerreotypes, and old faded originals and many other branches are made the subject of successful specialisation.

### Colour Photography.

Photography in natural colours has passed its "boom" of a couple of years ago, but so far from being dead, is in a state of life and growth. Simplification of the Autochrome formulæ and instructions, devising of satisfactory means for copying Autochromes by the light of magnesium wire, and the development of Autochrome portraiture by flash-light, have all taken place within the past twelve months. In the same time the "Thames," the "Dioptichrome," and the "Omnicolore" plates have become commercially available, each offering special qualities and advantages. Several professional photographers have adopted the single-plate colour transparencies in their portraiture, and one (The Dover Street Studios) has recently begun to offer colour-portraits on paper, at commercial prices in small quantities, using the Autochrome as a basis. The use of the single-plate colour process for illustrating lantern lectures has not grown so rapidly as might have been expected, because of the density of the transparencies produced; but great improvements in this direction have been made and others are promised almost immediately, so that developments may be expected even in this direction. Meanwhile, the Autochrome has found increasing use in portraiture in making originals for half-tone reproductions, and as a means of advertisement and sale for paintings, objects of art, stained-glass windows, rare flowering plants, carpets, tapestry, and other objects in which colour is important.

I have already referred to the Ives Tripak and to Kinetography in natural colours.

### The Progress of the Photographic Industry.

The trade in the manufacture and handling of photographic materials has grown almost beyond conception, so that it is very difficult to form even an estimate of the amount of capital invested, and for the most part earning profits that compare very well with those of any other industrial investments. Of late everything has tended to simplification, to giving the photographer apparatus and materials with which it is almost impossible to go wrong. This has shifted the interest in photography from the technical side to the applications, so that the amateur no longer studies photography for itself, but uses it as a means to various ends, while the professional, who was essentially a technician, is becoming essentially an artist, or a commercialist, or in some cases a combination of both.

It is a long stride, in effect, from the daguerreotype, or even the wet collodion plate, and home-sensitised paper to the varied dry-plates and the many classes of papers of to-day, yet so recently as thirty years ago, dry-plates were as novel as the natural-colour plates are to-day, and preserved sensitised paper was quite a new article of commerce.

The common print-out-papers of to-day are not twenty, and the development or gas-light papers are only about ten years old.

Lenses have reached great perfection and specialisation along different lines, when we can have liquid lenses using an effective aperture of twice their focal length, the modern anastigmat with its marvellous definition, the telephoto lens available even for snapshots under favourable conditions, and photo-mechanical lenses made of glass specially manufactured to pass the ultra-violet rays which are stopped by the glass of our ordinary lenses.

The next important development in apparatus seems likely to be in the direction of very small plate-cameras, using lenses of two-inch or even shorter focal lengths, with a view to making large numbers of exposures and enlarging from the negatives that are most successful. The great advantage in depth of definition that is given by very short-focus lenses at relatively large aperture has been demonstrated by the kinetograph, and the outfit of the future seems likely to be waistcoat-pocket size, with a fixed enlarging apparatus for artificial light. Probably the developing and enlarging will tend to be more and more done by the dealer and professional, and the standard-size enlargement from the standard-size negative will cost no more than the same sized contact print does at present.

### A Patriotic Thought.

One of the recent signs of the times has been the growing appreciation of British manufactures, both in apparatus and materials. British plates and papers have always held the foremost place in the open markets of the world, and so has British apparatus in the higher qualities. During recent years some of the Continental lens manufacturers have made great commercial advances in the expensive goods as well as in the cheap bread-and-butter lines, and both American and Continental cameras have captured a large part of the world's market by their ingenuity, attractiveness and cheapness. Latterly, however, there have been signs of change. There is a growing demand for British plates and papers in the open markets, and even in the tariff-guarded markets of the Continent and the United States. The British-made camera, too, is taking a preferred position in many fields, while in Britain and throughout the British Colonies and Dominions this feeling is growing strongly. Nowhere is this shown more than in Canada, where British firms handling certain lines of Continental-made cameras under their own names, have been driven to a rather curious expedient. To obtain admission as British-made goods it is necessary to certify that a certain proportion of the price is represented by British labour, and to do this the cameras are all supplied with British-made lenses, and entered as complete articles, lens included.

I believe that the preference for the British-made goods is based on a correct idea—the recognition of a high standard of quality and workmanship, and I am confident that the next ten years in the history of the photographic trade will see British manufactures more than holding their own.

J. B. B. Wellington.

## THE UNDUE MULTIPLICITY OF BRANDS OF PLATES.

The ingenuity displayed by our secretary in placing this paper in juxtaposition to the presidential address suggests that he desires that our 1911 Convention shall not be opened in the dullness of all-round agreement, and that he would not object to see "wigs on the green." I present a frankly controversial subject, and from the point of view dictated by the average convenience of the user and the retail seller of photographic plates. My argument is that if all the numerous brands of any one firm of plate-makers be exposed, developed, and compared, the results show no justification for the number of different brands or labels.

Let me clear the ground by explaining that I do not suggest any limitation in the number of competing firms. "Let them all come": competition leads to efficiency. Nor do I write as an expert in emulsion making. My only experience in that direction was in the early days of Kennett and Bennett, when "gelatine dry plates" were in an experimental stage, and photographic journals were full of a subject on which they are now as silent as the grave—the making of emulsions. I remember making up a batch of emulsion, coating and drying the plates, and successfully using them on a boating trip, incidentally making two discoveries—namely, that when a liquid emulsion is spread on a plate with a glass rod, the line of least resistance is along the rod down the coat-sleeve, and, from the results that followed, that emulsion and marking-ink were akin in their composition.

It may be said, Why should not a maker have plenty of brands? It is simply between him and his customer, who can make his own choice! The answer to this lies in the actual facts of the method of distribution. A plate-maker does not—in the majority of cases—sell direct. The user goes to a dealer, who is expected to keep the particular plate and size in stock, and the difficulties of keeping stock of fresh plates is enormously increased by the recent—as I claim—unreasonable increase in number of brands. The result is a tendency to stale plates in the hands of the dealer, to the detriment of the consumer.

The chief makers each issue about ten brands of plates for ordinary negative-making, exclusive of process, X-ray, and lantern plates. I claim that this ten contains much unnecessary lumber, partly due to the supposed desirability of new brands for advertising reasons, the old ones being retained.

There are two main reasons for issuing different brands—namely, speed and orthochromatic qualities. At present the need for distinct brands of "ordinary" and "ortho" plates must be conceded.

Let us examine the need for multiplying brands on account of speed. When I first practised photography, but one speed of plate was known—namely, that of the wet plate, which was used alike for lantern-slide making and shutter work—"and the world went very well then." We cannot return to this simplicity, but need not rush into an extreme.

Examining four plate lists—namely, Barnet, Ilford, Imperial, and Wellington—I find that—leaving out ortho, process, and lantern plates—they have an average stated speed-range of from 65 to 337, and that each of the makers divide this range into either six or seven different brands. This is an absurd number. It makes the average advance from one speed to another as only 1 to 1¼.

I have no hesitation in saying that there is no possible need to issue brands having different names on account of speed nearer together than 1 to 2. The range of speeds issued would, I claim, be amply covered by three brands only—namely, Ordinary, Rapid, Top Speed.

It will at once be said that there is need for another variation in quality of plates besides speed—namely, contrast attainable (the gamma infinity of our investigators)—and that for studio use different brands are desirable. I am not so sure that the portrait photographer does well to use a plate which will not give much contrast, for such a plate must have but small latitude, and he can always avoid over-contrast by avoiding over-development. In fact, I have not found those plates branded as "Studio" give a smaller contrast in a given time than other brands of the same maker. In very rapid plates the tendency to give contrast is seldom excessive, and I can see no need for a second brand for studio use. In medium or rapid plates there might possibly be a commercial need for a second brand for studio use, as the ordinary emulsion gives more contrast than needed. This would allow four brands instead of the six or seven now in vogue, and, with two brands of ortho plates (ample for all purposes), a total of six brands, in place of the present ten of most makers.

To illustrate the present superfluity, let me name the Special Rapid and Special Sensitive Imperial plates of 225 and 275 speeds respectively. Also the Extra Rapid and Special Rapid Barnet plates, also given as 225 and 275 respectively. In neither case is there any claim for differences in characteristics between the two brands, save in speed, and what this is may be judged by the fact that if 1-225th of a second is correct for an exposure with the one plate, 1-275th of a second is right for the other. And as regards names, who on earth can remember which is supposed to be fastest, a Special Rapid or a Special Sensitive plate, an Extra Rapid or a Special Rapid? Might I suggest an improvement—namely, to call them Tweedledum and Tweedledee?

The struggles of the plate-maker in naming his plates are very entertaining. Like one of W. W. Jacobs's characters, he appears to regret the poverty of the English language. When I think of the unfortunate maker who, say, two years ago, has brought out a Special Extra Ultra-Sensitive plate, and now has a still more rapid (or foggy) one to put a name to, I am reminded of the loyal and enthusiastic navvy who attended Queen Victoria's Jubilee procession. He had shouted "Hurrah!" as the soldiers and sailors went by, a little louder for the Colonial troops, still more emphasis for the foreign Princes, and had got his "Hu—rah!" into two words for the English Royalties. But when the Queen's carriage came up enthusiasm put on the maximum emphasis with a fervent "Hu—crimson—rah!"

One otherwise intelligent firm, in calling their top speed plate Extra Speedy, mutilate the first word by omitting the first letter, and then, evidently in doubt whether they are using intelligible English, add the explanation in brackets (Ultra-Rapid).

Another source of confusion is the habit of giving two names to a plate, as, Extra Rapid (blue label). One consumer always speaks of it as So-and-So's Extra Rapid, while another does not recognise this, but only thinks and speaks of it as So-and-So's Blue Label plate.

I have hitherto assumed that every plate-maker is able to make an ample variety of emulsions, and this may be the case with our best English makers. But when foreign and American makers are brought in, the average plate-maker (judging by testing all his brands together) seems capable of making two types of emulsion only, the rapid one being afterwards sorted out, according to the accidental variations of different batches, and labelled with different names.

And now for a practical proposal to remedy some of these matters.

There exists, I think, a Plate and Paper Makers' Association, whose principal work has hitherto been the organised restriction of discounts. Let them spare a few meetings to work to benefit the plate consumer. In the first place, they could come to some uniformity in the exact meaning placed upon such terms as extra, special, rapid, sensitive, and ultra. If we knew that a plate named ultra or top speed was always the fastest plate made by that particular maker, and that another stated term—such as rapid—was reserved for his middle speed, a great advance would be made. And a self-denying ordinance could be passed, by which makers would restrict themselves to a certain number of non-ortho brands. It might probably be necessary to allow each maker to have one brand of what I might term the "crank" class of plate. By this I mean a plate with a chunk of dark-slide, or fixing bath, or tripod, or developer, or colour-screen, or lens, glued to its back or front. It evidently pleases them, it hurts no one very much, and is something to advertise.

To sum up, I claim that English plate-makers, who make the best plates in the world, would gain in dignity and simplicity by a drastic overhaul of their lists of brands.

Alfred Watkins.

# PRICE-LISTS, RE-ORDERS, AND A SUGGESTED REMEDY FOR THE COPYING EVIL.

THERE is an unquestioning conservatism inherent in British professional photography—a conservatism that clings to the apparatus and business-practice of previous generations without reference to their adaptability to present conditions.

The "head-rest," the nerve-shattering outside-lens shutter, the studio stand that will not lower enough—the use of these, together with the stare-producing eye-rest, and that fearsome accessory known as the triangular baby-seat, is more or less obsolete. More or less, for it would surprise the young, ultra-modern professional, who probably thinks of them as antique curiosities, to learn in how many studios of wide reputation they are still used. But, doomed they *are!* and it is not to speed the parting that these words are written, but to ask whether we, emancipated modern professionals, ourselves are not clinging to some outgrown fetish.

There are quite a number of professional practices that will not bear examination from a business point of view, but the outstanding example, to me, appears to be the giving out of small printed price-lists.

### The Evil of the Price-list.

Presumably, we pursue our craft for gain, like all business men in all trades and professions, and it follows, then, that all our practices should be calculated to achieve that end.

One of the main factors in photographic success is *quality*. In both our direct and indirect advertising we emphasise *that*—in the Press, the selection of mounts, the window display, in the constant exercise of taste attractively to set off the product of our skill—it is our guide. That is business, for it is the core of good business to give the best value possible for the price charged. And here is where the price-list does harm. No matter what the grade of photographer, it cost him more or less time and trouble to acquire his skill, and in his price-list he sets his own valuation on his experience. It is fairly safe to generalise that greater skill results from longer training, and that this prolonging of the unremunerative training stage, and its consequent increased ability are reflected in the price-list. All established businesses have a clientèle attached to them, sitters who come yearly, and who are well acquainted with the charges. Therefore, it is not for this class that the list exists, and its reason for being—if any—can only be to attract unattached, floating business; in short, *competitive* business. But, when the British public wants to be photographed, and, by some chance, cannot make the arrangement personally, a deputy collects two or three price-lists from the local studios, and the higher-priced work is judged only by comparison of *sizes* and *lesser prices*. A price-list cannot convince of quality, it only accuses of expensiveness; hence, the better the photographer the worse it serves him in gaining competitive business. It may be of use to a very cheap trade; it cannot help a fair-priced one.

### Impress Quality: Then, a Price.

Take an alternative. The deputy makes request for a list, but is informed that Mr. ——— so prides himself on the quality of his work that, finding a price-list often prevented possible clients from examining it, owing to a comparison with prices of inferior work, he ceased publishing it. While this is being explained in a casual manner, the enquirer, all unconsciously, has been led to the particular style judged by the receptionist as most likely to impress. The particular points of it are explained in reference as much as possible to enquirer's proposed sitting, and at the same time the price per dozen is pointed out on the large hand list which stands prominently and readily available in the reception-room. That deputy takes home a number of price-lists, and—a voluble description of "a lovely style of Mr. ———," and the price of that style only. Whether deputy or prospective sitter, mere price-lists cannot compete once the enquirer is forced to look and to have to remember.

### The Error of a Reduced "Re-Order" Price.

Another current practice that lacks sound business reason is that of giving reduced rates for repeat orders. No modern photographer, whose portraits are good enough to attract re-orders, gets more than fair interest on the skill he lays out in obtaining them. Why, then, should reprints escape this interest? The difference is usually too great to be the value only of the material used in producing the negative, and it follows that it is charged mainly for operating skill. So long as a picture is valuable because of that skill, so long should it bear interest on its outlay. But photographers say the reduced price is, in itself, an inducement to re-order. It is not. Clients to whom that argument appeals take the photographs to some unscrupulous copyist who does them at cut-throat prices. On the other hand, a second dozen copies ordered when sitting may legitimately be reduced in price, as it is an accepted business principle to offer some inducement to a large single order, as opposed to smaller separate ones, and this photographers deliberately divest themselves of the power to do.

So much for destructive criticism. Now let us examine the fragments, and see if anything really business-like can be patched up out of them.

There is the price-list, the reduced re-order rate, and, incidentally, the prevention of piracy.

Now, as professional photographers, we rely for business on the public, and the public is used to price-lists, and to reduced repeat order rates. Besides being practically impossible to explain the reason of their abolition to clients used to them, it would be very bad business to attempt it, unless absolutely necessary, as it would probably destroy at once that feeling of "being-at-home" which is so valuable an asset when dealing with old clients. Some method must be found to make the old forms fit the new ideas. This is ready to hand in the dainty little folders used now by nearly all firms for following up special business.

### The Copying Evil: A Charge for "Prints."

Leaving the price-list question for a moment, and dealing with that of the piracy of our work—a very serious matter, as almost all photographers know to their cost—we find the law will not assist us so long as we charge for the taking of the photograph, the copyright being then owned by the person ordering it. But suppose we state that the price charged is per dozen *prints*, and that, to protect our clients against the unauthorised use of photographs now getting so prevalent, we have decided to retain the copyright, and in order to do so no charge will be made for photographing. It looks practicable at first sight. Let us see if it can be worked out to combine the other items. An examination of a number of price-lists shows that, for what may be termed the standard cabinet work, the price per dozen varies from 17s. 6d. to 25s. in ordinary middle-class studios, and for re-orders from 2s. 6d. to 5s. less, this difference, inferentially, being the value of the actual sitting. For ease of illustration, let us suppose Mr. A—— agrees with these arguments, and decides, in future, to have no lists at large to send floating business to lesser-priced work; that he will have one fixed price for each style whenever ordered, and, finally, that he will make some effort to restrain the cheap enlargement and other pests of the middle-class photographer from pirating his work with impunity. He orders a quantity of small folders daintily produced, and small enough to go into a lady's purse. As a portrait photographer he relies upon four main classes, *i.e.*, children, ladies, wedding and family groups. Therefore, he varies the wording of the inside front page, so getting four different sets of folders. After the short paragraph upon, say, his ability in obtaining natural likenesses of children, the statement about the retention of the copyright for his client's protection (suggested above) is inserted, and this is printed on *every* folder of each class. The inside back page is left clear, but the outside bears a few concise notes of advice about dress, etc., varied according to the class addressed in the inside sentence. In addition to the folders, he has a number of thin, adhesive-back leaves printed, of a size to fit on the blank inside of the folder, and each bearing the price per dozen of only one style, followed by words to the effect that "this price is for prints solely, and does not include any charge for photographing. If, however, the sitter requires the copyright a charge of ( ? ) will be made for the sitting, in addition to above price of one dozen prints." (Prices compared suggest 5s. for cabinets.)

Again the enquirer enters. She wants to know prices of, say, children's portraits. After showing the various styles, and mentally registering the possibilities of business, the receptionist turns to the desk and selects one of the adhesive leaves priced for the style she has guided client to select. A slight pressure on a damper and it is affixed to a folder with children "copy."

The only other detail to note is that it is advisable to have a book of tear-off forms stating that, "in consideration of no charge being made for the sitting, the subscriber agrees that the copyright in the photographs taken of self on (date) remains the property of Mr. A——"

Very little trouble would be experienced in getting sitters to sign if full use were made of it being done for their protection; but, though advisable, this is not really an item essential to the plan, provided the other wording is clear, and that the sitter's attention is drawn to it. In fact, one of the surest ways is imprinting the gardee envelope to the effect that through the sitting being free the copyright is the firm's.

In this way the price-list is done away with (the folder being practically advertisement, with a memo of price of one particular style added), the price being for prints *only*, naturally is unaffected by the date of the order; and, finally, all mounts can be marked "copyright," and a judicious registration of subjects likely to be pirated would soon enable the photographer to drop heavily on some of the newspaper enlarging and other vampire firms whose exit would probably follow the loss of their present immunity.

N. Ashford.

# SAFE-LIGHTS FOR THE DARK-ROOM IN THEORY AND PRACTICE.

## III.

THE important results obtained by research for new sensitising dyes have naturally had their effect on collodion emulsions. The existing red safe-lights quickly proved quite insufficient for emulsions sensitive to red prepared by means of ethyl-violet, etc. Fr. Haberkorn[36] advises using such plates with a green safe-light passing rays of wave-length about 500. He gives the following formula:—12 gms. of gelatine are allowed to swell for an hour in 200 ccs. of distilled water, 3 gms. of acid green added, and the whole heated on a salt bath. To this solution are added 1.2 ccs. of 3 per cent. tartrazine solution and 2 ccs. of 4 per cent. naphthol green. After well mixing, the whole is filtered hot. The glass plate to be coated is thoroughly cleaned with hydrochloric acid, and then with alcohol and ammonia. It is then given a substratum of 1 : 2,000 solution of potassium silicate, and levelled. Having made it slightly warm, the glass is flowed over with the gelatine-dye solution, which is used in the proportion of 7 ccs. per 100 sq. cm. As soon as the gelatine is set, the plate is put to dry in a cupboard, and is afterwards coated on one side with matt varnish. Two of these plates are bound together, film to film, and the filter thus made is found to possess a considerable degree of "safety," and is still largely adopted in practice. Dr. König has made considerable contributions to the use of dyes in safe-lights. In his capacity as chemist to a large dye works, he has had facilities which have not been open to others. For a bright red screen, which allows only light from 620 to 700 to pass, and permits of the development of highly sensitive and orthochromatic plates, he gives the following formula[37]:—

| | | |
|---|---|---|
| Gelatine ............................ | 12 gms. | |
| Water, distilled .................. | 200 ccs. | |
| Tartrazine ........................... | 1.2 gm. | dissolved in 40 ccs. water. |
| Solid red D ......................... | .6 gm. | |

It may be noted that, following fruitless attempts to popularise the Miethe screens, manufacturers gave up attempts to improve safe-lights, the defects of which were well known. The cause should be rightly attributed to the fact that the lamps used in dark-rooms were not suitable for these filters in consequence of their form and insufficient ventilation. Makers thus had no assurance that such filters could be largely used among photographers. The plate factory of Wratten and Wainwright, enjoying the strict scientific direction of Dr. C. E. K. Mees, was a commendable exception. This factory supplies dry plates unique of their kind as regards sensitiveness and indispensable in scientific research. As there were no safe-lights suitable for the development of these plates, the factory set out to provide them. The makers were thus led to provide also safe-lights for the manipulation of ordinary plates and papers, and these latter may be placed among the best that have been issued on the market. The Wratten 00 safe-light is a yellow screen for the development of slow lantern and transparency plates: the 0 is an orange screen for the development of bromide papers and lantern plates. Safe-light No. 1 is an orange screen for the development of ordinary plates, whilst No. 2 is a red safe-light for extra rapid plates and orthochromatic plates of the ordinary type sensitive to green and yellow. The series 3 safe-light is a green screen employed for the development of the Wratten "Panchromatic" and "Verichrome" plates, and of others sensitive to red. All these screens include, in addition to two glass plates bearing stained gelatine films, a semi-transparent paper between the two glasses and likewise impregnated with colouring matter. This paper is of greater or less transparency according to the end desired, so that not only is the light transmitted restricted to a certain part of the spectrum, but the intensity is likewise adjusted by the paper. It seems to me that by this means one obtains only a useless absorption of non-actinic rays, and, personally, I consider it preferable to increase the safety (of the light) by suppressing a greater portion of the spectrum.

### Green Dark-room Safe-lights.

It is an undoubted fact that red light exerts an unpleasing effect upon many workers. It is impossible in some instances for persons of highly strung nervous temperament and those who are colour-blind to work by red light. Carnegie[38] has noted that the latter persons not only cannot see clearly by red light, but that in general, on account of the bad correction of colours by the eye, exact accommodation in red light is possible only to a small extent for objects of short distance. This is due to the fact that the principal focus of red rays for these objects is at the back of the retina. Persons having normal vision can see such objects sharply only by means of bi-convex glasses. If the majority of persons are able, nevertheless, to see clearly in red light, it is probably due partly to the particular nerve of accommodation and partly to the large number of persons suffering from myopia among photographers. In 1906 Ocoum[39], at the Finsen Institute, made experiments on the action of lights of various colours on the blood, and he showed that darkness and red light reduced the quantity of blood 3 to 3.3 per cent. Since a man possesses about 5,000 ccs. of blood, he would thus lose, by prolonged work in a dark-room, from 15 to 18 ccs. By means of a light bath the quantity of blood can be increased to an appreciable extent in four hours. After remaining for over three hours in the dark-room the quantity of blood in the heart is likewise reduced. In a bright light the blood pressure is reduced; in the dark it is increased. Long previously to any knowledge of these effects, attempts had been made to substitute a different colour of safe-light for red. The yellow safe-light of Baden-Pritchard has already been mentioned. It answered well for dry plates of the low sensitiveness then in use, but, as already stated, modern progress has rendered such an illumination of a low degree of safety, and it can only be employed for lantern-plates and slow papers. R. E. Liesegang[40] has made an ingenious experiment in order to produce a safe-light free from any particular colour. A solution in water of a mixture of 3 parts of nickel chloride and 1 part of cobalt chloride possesses no colour by transmitted light. The light it passes would seem to be non-actinic, but I have never been able to find any data concerning the use of this filter. Before the French Photographic Society in April, 1895, Davanne made the (then) astonishing announcement that in the dry plate factory of Lumière emulsions were prepared by deep green light. This led to the making of many experiments on the safety of green light for dark-room work, and the general conclusion was that red light was almost "safer," but that, by taking some small precautions, it was possible to develop highly sensitive plates in a green light. One great advantage of this is that the eye is especially sensitive to weak green light as compared with weak red light, and a deeply coloured filter may thus be successfully employed, producing a light of considerably increased safety.

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[36] "Phot. Korresp.," 1906, p. 344.
[37] "Das Arbeiten mit Farbenempfindlichen Platten," p. 56.
[38] "Phot. Korresp.," 1907, p. 607.
[39] "Phot. Korresp.," 1907, p. 356
[40] "Phot. Archiv.," 1890, p. 122.

Ordinary green glass is insufficient for the purpose (see the tables by Houdaille previously given). Delagny recommended the combination of a matt yellow glass with a cathedral green, and Malatier formed a combination of cathedral green glass with a matt glass consisting of two glasses of yellow colour produced with silver. Houdaille advised the combination of green and yellow glass, and it can be seen from his tables that it gives satisfaction. Eder[41], commenting on this green light, made some notes, which are still of interest:—"We note that the green glass can be employed only when it is yellowish-green and allows little of the blue-green of the spectrum to pass. By this combination of glasses we obtain a light of very considerable 'safety.' Naturally, the red glasses offer the greatest safety for dry plates, but they are objectionable to the eye. Yellow glasses combined with blue-green give less light, but are much more non-actinic than yellow glasses used alone." According to Eder[42], oiled paper of brown colour forms a practicable safe-light, but the best improvement in the green light of the dark-room is that obtained by the employment of organic dyes. In the series of flexible gelatine safe-lights devised by Miethe we find the following varieties:—Safe-light V.—clear green, and absorbs all light up to about 540: suited for development of dry plates and ordinary development papers. Filter VI.—deep green, and absorbs light up to 550: is used for the same purposes as safe-light V., but with more intense sources of light, *e.g.*, daylight. Filter VII. is brown, and absorbs light up to 560: it serves the same purposes as II., V., and VI.

At a later date the firm of Wratten and Wainwright issued greatly superior safe-lights:—Their series IV. is a bright green safe-light, specially prepared for extra rapid plates, but not for those of the orthochromatic kind. The Wratten series V. safe-light is of bluish-green, and serves for the development of orthochromatic plates, though the makers themselves do not strongly recommend it. As far as concerns "safety," it should be placed greatly inferior to those of series II. The original solution is well given by Dr. E. König[43]. He gives formulæ for dark-room filters which allow only red light and green light, practically complementary, to pass. There is thus obtained an illumination of a fawn colour, which avoids the use of red light, and is "safer" than that transmitted by any green filter at present known. There are a variety of safe-lights. The brightest is of green colour by daylight and by that of incandescent gas, but gives, with electric incandescent lamp of 16 candle-power, the characteristic fawn colour. With this latter light the dark filter is redder, but gives the fawn colour by daylight, or by incandescent gas. The light-filter allows rays to pass from 670 to 700 and from 515 to 550. It can be used for the development of ordinary plates sensitive to yellow or green. For a dry filter the formula is as follows:—

| | |
|---|---|
| Gelatine, 6 per cent. solution | 500 ccs. |
| Dark-room safe-light green, 4 per cent. solution | 100 ccs. |

For a liquid safe-light the following is employed:—

| | |
|---|---|
| Dark-room safe-light green, 4 per cent. solution | 8 ccs. |
| Tartrazine | 10 gms. |
| Water | 1,000 ccs |

If the light given by this liquid filter is red it is a sign that the solution is too concentrated. It should be diluted by means of 1 per cent. tartrazine solution until the delicate fawn colour is obtained.

The dark filter allows rays to pass from 670 to 700, together with a narrow band in the blue-green from 520 to 540. It serves for the development of panchromatic plates sensitised with orthochrome, pinaverdol, pinachrome, or pinorthol I. The light is not sufficiently "safe" for development of plates sensitised with pinacyanol, pinorthol II., or dicyanine. The following is a formula for the dry safe-light:—

| | |
|---|---|
| Gelatine, 6 per cent. solution | 500 ccs. |
| Dark-room safe-light red (dark), 4½ per cent. solution | 100 ccs. |

For the liquid safe-light the formula is:—

| | |
|---|---|
| Dark-room safe-light red (dark), 4½ per cent. solution | 16 ccs. |
| Tartrazine | 10 gms. |
| Water | 1,000 ccs. |

The manufacture of these dry filters will be described in detail in a later chapter. Von Hübl[44] advises green light for the development of panchromatic plates and those of the ordinary kind, advising certain precautions, even for the development of orthochromatic plates, which precautions are likewise indispensable for plates very sensitive to red and of low sensitiveness to green. For orthochromatic plates a combination with blue is, however, better: there is thus obtained a blue-green light, in which plates may be handled with care. Von Hübl advises, for the preparation of good dark-room safe-lights, naphthol green, which gives a permanent light and completely absorbs the red combined with blue. This latter dye is dissolved in heat as follows:—

| | |
|---|---|
| Filter blue | 1 gm. |
| Water, distilled | 100 ccs. |
| Ammonia | 1 cc. |

To prepare the safe-lights the following solution is made:—

| | |
|---|---|
| Gelatine, 8 per cent. solution | 120 ccs. |
| Naphthol green | 1 gm. |
| Blue solution as made above | 4 ccs. |

7 ccs. of this mixture are used for each hundred sq. cm., and such filters serve for the development of pinacyanol and dicyanine plates. It is found that plates sensitised with pinaverdol, pinachrome, orthochrome, etc., require a deeper green; for this purpose the quantity of gelatine in the above formula is reduced to 85 ccs. Such a safe-light is not bright, but is of greater luminosity than a red light of equal "safety."

The above historical notes on the methods for the production of dark-room safe-lights will show the progress which has been made in the direction of using organic colouring matters. Following the discovery of pot ruby glass, coloured glasses have so far not been further improved. As far as "safety" and brightness are concerned, the above coloured glasses at present known do not approach the gelatine safe-lights or the liquid filters.

In the formulæ of safe-lights prepared with organic dyes it is seen that the result of experiments with the yellow dyes has led to the adoption of the yellow tartrazine. This latter is considered the best substance for absorbing actinic violet and blue rays up to the green. Crystal violet has not been replaced by a better violet dye. The other dyes may still be said to be too liable to change to possess a permanent value. The number of organic dyes is very great, and so far the absorption spectra of only a relatively small proportion of them have been photographed. In all such experiments on the properties of dyes the work of the investigator has been greatly advanced by the use of the "Spectrum Panchromatic" plates of Messrs. Wratten. In the research laboratory of this factory Dr. Mees still continues experimental work on the spectral qualities of the organic dyes, and there is no doubt that in the future still greater improvements will be made in dark-room safe-lights.

A. P. H. TRIVELLI.

*(To be continued.)*

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[41] Eder's "Jahrbuch," 1894, p. 392.

[42] "Handb. d. Phot.," 1903, p. 348.

[43] "Das Arbeiten mit Farbenempfindlichen Platten," p. 37.

[44] Referaat, "Phot. Mitt.," 1910, p. 300.

# THE FOGGING POWER OF DEVELOPERS.

## III.

FIG. 7 shows the effect in the case of two slips. The upper curve shows the result of development for five minutes in N/10 hydroquinone plus N/10 soda hydrate, while the lower curve shows that of adding N/100 quinhydrone to the developer. It is evident here that it acts as a restrainer and does not increase fog.

We then tried its effects on unexposed plates as a fogging agent. A plain solution of quinhydrone had no effect, but on adding alkali a most powerful agent was produced, which fogged an unexposed plate to a density of approximately 4 in 20 minutes, and also produced a strong stain. The compound acts very slowly at the start, producing no effect for two minutes or so, but, once started, the fog grows very rapidly. Tested on an exposed plate it failed to produce an image, the fog growing too rapidly.

It thus appears that while quinhydrone restrains development it acts as a powerful fogging agent when in conjunction with an excess of alkali, and therefore its actual effect on the plate will vary with the conditions. If the developer is kept well stirred the quinhydrone becomes distributed and has no local effects. If not well distributed and formed locally in small quantities in presence of an excess of alkali it may act as a fogging agent. A restraining effect is often visible if a plate is not completely immersed in the developer, strong staining but very little reduction of silver taking place just at the air boundary. This is especially noticeable when a high density is at the boundary. Low densities, when there is little material to reduce and little oxidation product is formed, are, on the other hand, often covered with mottled fog, this effect ceasing abruptly at some one particular density where the concentration of the bromide produced is sufficient to lower the reduction potential of the fogging agent below that necessary to develop unexposed silver bromide.

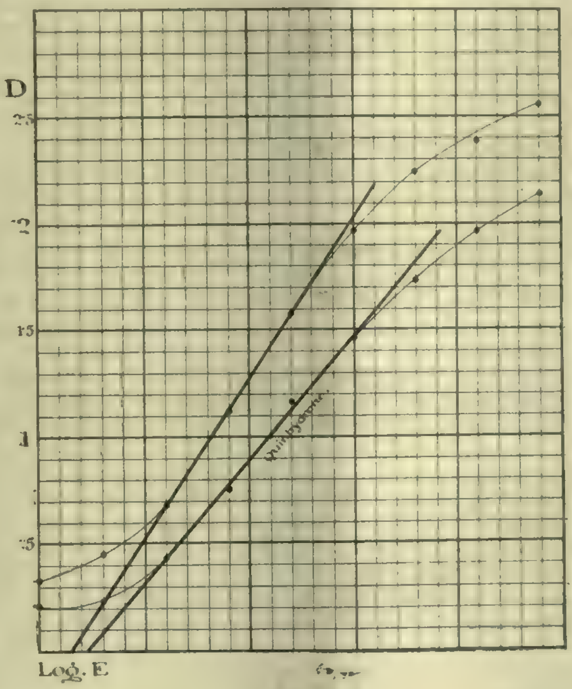

Fig. 7.

Sulphite reduces quinone—and therefore quinhydrone—to hydroquinone, and this removes the staining compound and also the cause of oxidation fog; at the same time it introduces the sulphite fog to which we have previously referred.

These experiments would seem to show that alkaline quinhydrone has so high a reduction potential that it reduces silver bromide and the latent image substance at the same rate. But a first addition of quinhydrone will diminish the reduction potential of the hydroquinone as a result of the general rule that the addition of reduction-products lowers the available energy of a reaction. Since the reduction potential necessary to develop a grain is increased by the addition of potassium bromide, because the solubility of silver bromide is diminished by the addition of small quantities of a soluble bromide, we should expect to get the results obtained in the experiments showing the effect of potassium bromide in retarding the appearance of fog, both with sulphite, and especially in the case of oxidation fog, where small quantities of bromide are sufficient to raise the potential required to develop unexposed silver bromide above that of the alkaline quinhydrone.

### Dichroic Fogs.

The conditions determining the production of dichroic fogs have been discussed by MM. Lumière and Seyewetz ("Phot. Journal," August, 1903), but dichroic fogs present some analogies with the black fogs which we have investigated, and by the kindness of Dr. S. E. Sheppard we are enabled to include in this paper the results of a preliminary investigation into the behaviour of dichroic development fogs conducted by him in the research laboratory of Messrs. Wratten and Wainwright, Ltd. His results are as follows:—

Two emulsions, a Lippmann emulsion and the Wratten "Instantaneous" emulsion, were used, these emulsions being coated on patent plate as usual in sensitometric work. The developers used were ferrous oxalate and metol-hydroquinone; Lippmann emulsion, with ferrous oxalate developer. An exposure of 300 candle-metre-seconds was made on part of the plate so that an exposed portion of the plate could be compared with an unexposed portion.

### Effect of the Time of Development.

TEMPERATURE 13° C.

| Developer. | Time. | Exposed Image. | Fog on Unexposed Image. |
|---|---|---|---|
| M 100 ferrous oxalate | 1½ hours | Black-brown, dense | Slight, grey-brown veil. |
| | 8 hours | Very dense | Dense brown fog. |
| | 12 hours | No change | Very dense black-brown. |
| | 20 hours | " " | No change. |
| M/40 ... ... ... | Similar effects in shorter time, the early tones being somewhat warmer. | | |

### Effect of Temperature.

These experiments were repeated with M/40 developer at 40° C. and at 65° C. With rise of temperature, fogs of all colours were rapidly obtained on the Lippmann emulsion, but the developer was rapidly oxidised so that the fog image soon ceased to grow in strength, and sometimes even became weaker as development was prolonged. Owing to the oxidation, moreover, it was not possible to repeat results with sufficient regularity to determine the time and temperature which corresponded to a given colour.

The addition of hypo to the ferrous oxalate produced more rapid fogging, but did not increase the maximum fog obtained by prolonged treatment.

At high temperatures, formaline being added to harden the film, the fog showed a shiny, silvery surface, most marked on the glass side of the film.

With metol-hydroquinone developer similar results were obtained with Lippmann plates, but the "instantaneous" plate gave no coloured fogs with this developer, and only slightly warm tones with ferrous oxalate at high temperatures.

### Resistance of the Fogs to Oxidation.

In order to see whether there is any relation between the appearance of the dichroic fog and its resistance to oxidation, a number of the fogged plates were treated with a solution of permanganate of potash containing .04 per cent. permanganate and .1 per cent. sulphuric acid.

| Appearance of Fog before Action. | Action of Oxidiser. |
|---|---|
| *(a)* Black fog ... ... ... ... ... ... | Fog disappeared in 5 minutes, but left a grey-brown veil not removed by sulphite bath. |
| *(b)* Dichroic fog; red looked through, green by reflection ... ... ... ... ... | Fog disappeared in 7 minutes. |
| *(c)* Pleochroic fog, very dense and changing colour according to the angle at which it was examined ... ... ... ... ... | Fog disappeared in 10 minutes. |
| *(d)* Dichroic, appearing yellow by transmitted light, violet by reflected light ... ... | ,, ,, ,, 5 ,, |
| *(e)* Dichroic, silvery and reflecting ... ... | ,, ,, ,, 8 ,, |
| *(f)* Pleochroic, pink to violet ... ... ... | ,, ,, ,, 10 ,, |
| *(g)* Silvery white, fine and coherent deposit ... | ,, ,, ,, 3 ,, |

These results are not sufficiently definite for accurate conclusions to be drawn from them, but from a rough comparison of the degree of pleochroism (that is, from the degree to which the colour of the reflected light varies when the angle of the surface is varied) it appeared that both extremes of the scale, that is, the strongly absorbing black fogs and the strongly reflecting silvery deposits, are more easily attacked by oxidisers than the intermediate pleochroic fogs.

### Influence of the Oxidation of the Developer on the Production of Fog.

From some experiments where air was bubbled through a developer during use, it seemed probable that an oxidised developer produced fog more rapidly than an unoxidised one, and this was confirmed with both pyro-soda and rodinal developers. The conclusion drawn was that the first oxidation product of a developer is a more powerful reducer than the developer itself (see earlier on "oxidation fog"), and there seems reason to believe that the resistant pleochroic fogs contain a certain amount of the oxidation product of the developer absorbed to the silver particles, the black and silvery deposits consisting of almost pure silver and being more subject to the attack of an oxidiser than when protected by the absorbed oxidation product.

### The Production of Dichroic Fogs.

It will be seen that dichroic fogs are similar to the sulphite fog in that their appearance is conditioned by the presence of a silver solvent in the film, lowering the resistance potential of the silver bromide.

In the case of the Lippmann plates the fine subdivision of the bromide in itself lowers its resistance potential so that no specific solvent is required, but with the "Instantaneous" plates, the dichroic fog cannot be formed without the presence of such a silver solvent.

The difference between sulphite fogs and dichroic fogs seems to be due to the time interval between solution and reduction; if this be great the silver bromide passes out of the immediate neighbourhood of the grain from which it comes, is distributed through the film, and deposits from dilute solution as very finely divided, and therefore coloured, silver, often, as we have seen, with oxidation product absorbed to it; if, on the other hand, reduction follows rapidly on solution, the silver is deposited from a greater concentration in the neighbourhood of the generating grain, and is therefore coarser-grained and black.

The transition from black sulphite to highly coloured dichroic fogs can be studied by means of a developer containing increasing quantities of thiosulphate, the smallest quantities giving sulphite black fog and larger quantities of dichroic fogs.

C. E. Kenneth Mees.
C. Welborne Piper.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between June 26 and July 1:—

Daylight Development.—No. 14,851. Daylight developing tanks for roll or/and cut films or plates. John Matthew Young.

Shutters.—No. 14,855. Camera shutters. Theodore Brueck and Rudolph Klein.

Focussing.—No. 15,027. Mode of and means for mechanically focussing photographic lenses. Lodewyk Jan Rutger Holst.

Viewing Instruments.—No. 14,840. Optical instruments for viewing photographic transparencies in colour or in monochrome. Alexander Tracy Morrison.

Cinematographs.—No. 14,916. Cinematographic projection apparatus. Oswald Buechner and Hans Buol.

Daylight Cinematography.—No. 15,223. Apparatus allowing cinematograph and the like pictures to be viewed in daylight. Alexandre Rota.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Cinematograph-Phonograph.—No. 6,390, 1911 (March 15, 1910). The invention consists of an automatic starting device for running a cinematograph synchronously with a phonograph. The disc of the phonograph itself closes an electrical circuit actuating an electro-magnet, which by releasing a lever starts the cinematograph, the circuit being open as soon as the cinematograph is acting. The means upon the phonograph for obtaining synchronism for the starting of the cinematograph consists in fixing upon the turntable of the phonograph a "snug," which engages in an opening in the disc. This opening is formed in such a position that when the circuit is starting the cinematograph is closed, it is along the straight line connecting the centre of the disc with the point in the furrow, which corresponds to the datum picture on the cinematograph film. Société des Etablissements Gaumont, 57, rue St. Roch, Paris.

Cinematography.—No. 12,574, 1910 (May 24, 1910). The invention relates to films for cinematograph machines of the type in which the pictures are borne on a rotatable film, provided with a spiral series of perforations, into which the actuating mechanism engages. The object of the invention is to provide an improved film, which will allow the operation of the actuating mechanism when it reaches the end of the spiral series without rotating or damaging the film in any way. The invention also seeks to strengthen or reinforce the edges of the film to prevent parts of the film buckling or sagging when in use. The claim is for a rotatable film having a spiral series of perforations, recesses, or such like, which serve in the actuation of the film, characterised by an enlarged opening, recess, etc., at one end of the series. Alexander Ferdinand Victor, Toledo Terminal Building, Toledo, Ohio, U.S.A.

Non-Focal-Plane Reflex Camera.—No. 20,016, 1910 (August 27, 1910). The object of the invention is to construct an improved reflex camera without the usual blind shutter. A mirror is used which is pivoted or hinged at its rear as usual. This mirror in rising first releases the shutter blade situated near the lens, which blade has been overwound, thereby leaving the lens open. The shutter blade is arrested by the ordinary shutter catch closing the lens. The camera is provided with a pivoted screen, and after the mirror has risen sufficiently to shut off the light at the top of the camera and has allowed the shutter to close as above stated, it permits the screen to rise, and when it has risen sufficiently to clear the path of the rays passing from the lens to the plate, the shutter blade is released and the exposure is made.

In carrying the invention into effect, the mirror or the screen or both is caused to rotate a shaft or pin provided with gearing, which gives rotary motion to a shaft passing in the forward direction. This last-mentioned shaft is carried by fixed bearings, but is continued forward by means of a flexible shaft, which gives motion at its front end to another shaft carried by bearings on the rising front of the camera. The flexible shaft is so constructed that it may be elongated or shortened as the lens is focussed. The universal joints in the flexible shaft and its power of elongation enable the rising front to be moved.

As a modification of the above construction, the shaft may be driven by means of a spring, and the mirror and screen by connections with this shaft.

Means are provided for preventing the shutter blade being opened until the mirror and screen have been set to protect the plate. Such means preferably consist of a link pin jointed to a disc on the end of the shaft, carried by the rising front. This link has a gap at one end, one end of which engages with a pin on the rotating shutter blade to hold this latter in its overwound position, and the other end of which engages with another pin on the shutter blade to lock this latter until the mirror is set and the plate protected. Arthur Samuel Newman, and Newman and Sinclair, Ltd., both of Whittington Works, 2, Salisbury Road, Highgate, London.

Preventing Double Exposures.—No. 25,463, 1910 (November 2, 1910). For ordinary box hand-cameras the arrangement consists of a pivoted trigger, which is capable of being kept in two different positions by means of a spring, which works the trigger by means of a heel passing to either side of the pivoting point of the trigger, thus forcing it either one way or the other.

A spindle, kept normally upwards by means of a spring, is mounted on two bearings in a suitable position beside the trigger. The upper end of the spindle forms a knob for operating with the finger, and the lower end engages the operating lever of the shutter.

This spindle has fixed near its lower end to it a disc; near its upper end it has a recess cut into the spindle. The trigger is pivoted near this spindle in such a way that the disc, when the spindle is pressed downwards, hits the tail-end of the trigger and moves it radially upon its pivot until the spring acting upon the heel of the trigger clicks the upper end against the side of the spindle. When the pressure is withdrawn from the spindle, it is carried upwards by its spring, and the upper end of the trigger clicks into the recess upon the spindle by virtue of its spring. The spindle cannot be again depressed until the trigger has been brought to its first position, i.e., the shutter cannot be operated again until this has been done.

The trigger has been brought to its first position by means of a rod or flexible shaft, one end of which is connected to the mechanism for bringing into position an unexposed plate, and the other end of which pushes a projection upon the lower end of the trigger until its spring, acting upon its heel, clicks it back to its first position, thus unlocking the spindle. A suitable spring keeps the rod away from the projection upon the heel of the trigger when the plate-changing mechanism is not being operated. From this construction it follows that after an exposure has been made by depressing the spindle it is necessary to operate the plate changing mechanism before it can again be depressed. Hans Deutsch, 60, Venner Road, Sydenham, London, S.E.

Cinematograph-Phonograph.—No. 21,817, 1910 (September 20, 1910). The invention consists in an improvement in synchronising connections described in Patent No. 453, 1909. The Rotary Photographic Company, Ltd., 12, New Union Street, Moorfields, London, E.C., and Ferdinand von Madaler, 4, De Burgh Crescent, West Drayton, Middlesex.

Combined Opaque and Transparency Projection Lantern.—No. 13,061, 1910 (May 30, 1910). The apparatus consists of a box having projecting tubes, supplied with one or more lenses and reflectors, and preferably consists of a duplicate arrangement whereby the same apparatus can be employed at will either for reflecting from opaque surfaces or projecting through transparencies. Within the apparatus light sources are arranged, some of which are employed for working by reflection, others by projection. The apparatus is provided with frames or holders for carrying the cards or slides employed in the apparatus, and these are so constructed that the pictures can be turned so as to obtain the representation either lengthwise or crosswise on the sheet. These card or slide-carrying frames have horizontally hinged portions, so that the pictures can be readily removed and replaced, and the frames are so constructed that while one picture is being shown upon the screen, another picture can be arranged in position. This object may conveniently be effected by providing a frame which slides in guides, and this holder as a whole carries several secondary hinged holders, so that when the first picture has been shown, the holder can be pushed along bodily, when the second one will come into position, and while this second one is in position, the one previously shown can be removed and another one arranged in place, thus providing for continuous display. A. Thornton, 38, Chancery Lane, London, W.C., for the Buckeye Stereopticon Company, Cleveland, Ohio, U.S.A.

Cinematograph Projector.—No. 9,006, 1911 (April 13, 1910). The claim is for the rotation of the apparatus round the axis of the lens, in order to project ordinary films as well as multiple films, having the slides arranged with their height perpendicular to the axis of the film. Carlo Rossi, Manufacturer, 78, Corso Vittorio Emanuele II., Turin, Italy.

Cinematograph Mechanism.—No. 3,629, 1911 (February 13, 1911). The invention consists in a film guide for cinematograph projectors, consisting of a roller provided with two taper flanges, between which the film passes. The smallest distance between the flanges is less than, and the greatest distance is more than, the width of the average film, the roller being fitted adjacent to the gate of the machine. Ernest Francis Moy and Percy Henry Bastie, Greenland Place, Camden Town, London.

Cinematograph Mechanism.—No. 27,784, 1910 (March 18, 1910). The claim is for the arrangement of means whereby the displacement of the optical system (comprising the lens, the condenser, the light-source, and the exposure-opening of the apparatus) is effected simultaneously, the pictures of the film remaining in constant register in the film carrier during this operation. The Compagnie Générale de Phonographes, Cinematographes, et Appareils de Précision, 98, Rue de Richelieu, Paris.

Cinematograph Mechanism.—No. 25,074, 1910 (October 28, 1910). The claims are for :—1. A machine for taking and exhibiting animated pictures, having the flywheel mounted on the driving shaft in close proximity to and preferably forming one of the bearing cheeks and driving members for the dog-roller. 2. A machine having the driving shaft mounted in an elongated bearing enclosing the greater part thereof, and a detachable extension bearing on the end on this first-mentioned bearing, substantially enclosing a pinion on the driving shaft and cut away to permit of the pinion meshing with driving gear. Henry John Reece, 18, Oxendon Street, Haymarket, London, W.

The following complete specifications, etc., are open to public inspection, before acceptance, under the Patents Act, 1901 :—

Photographic Transmission.—No. 15,503. Transmission of pictures of moving objects. Sinding-Larsen.

Cinematographs.—No. 14,916. Cinematographic projection apparatus. Buechner and Buol.

## New Trade Names.

Congress.—No. 333,861. Photographic mounts (cardboard) and albums. Houghtons, Limited, 88 and 89, High Holborn, London, W.C., manufacturers of and dealers in photographic, optical, and scientific apparatus. May 25, 1911.

Porcelette.—No. 333,558.—Photographs and photographic reproductions, included in class 39. Walter Hugh Keep, Knud Larsen, and August Sjöholm, trading as Electrophot Company, Welsbach

House, 352 to 354, Gray's Inn Road, King's Cross, London, W.C., merchants. May 12, 1911.

A. H. AND S. (DESIGN).—No. 332,651. Prints, printed matter, and photographs, all being goods included in class 39. Henry Hildesheimer, trading as Albert Hildesheimer and Son, 50, Moor Lane, London, E.C., fine art publisher and colour printer. April 8, 1911.

LAINOSCO.—No. 333,956. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Leadless Paint Co., Ltd., 2, Coleman Street, London, E.C., manufacturers. May 29, 1911.

ASSUR.—No. 333,260. Chemical substances used in manufacture, photography, or philosophical research, and anti-corrosives, but not including alizarine dyes, and not including any goods of a like kind to alizarine dyes. Chemische Fabrik auf Actien (vorm. E. Schering), 170 and 171, Müllerstrasse, Berlin, Germany, manufacturers. May 2, 1911.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Carrying the Camera on a Cycle.

My camera (writes Mr. F. Freeman in the "C.T.C. Gazette" for July) is a 5 x 4 in. Sanderson, with plate carriers carried in a solid leather case, 12 in. x 7 in. x 4½ in., with two metal snacks. The cycle camera carrier consists simply of two leather straps and a piece of solid leather, which may be about 10 in. x 4 in. This is pierced by double slits about 2 in. from each end through which to pass the straps. This forms the rest for the camera case. The straps are then passed round the camera case and over the top tube, and, if long enough, completely encircling it once. The camera case is thus suspended from the top tube, and is free from contact with any part of the bicycle. Thus it is absolutely free from vibration or concussion, and even though it may be loosely packed there is no rattle. The release of one strap sets the camera case free, and so the camera may be withdrawn from its case in three or four seconds, a matter of consequence for taking snapshots. The case may be replaced with the same dexterity by sliding it through the one strap, which may remain in permanent position, and again fastening the one buckle. The position is good, as it prevents back-wheel drag, is fairly well protected from dust, also from rain by the over-covering of the rider's cape. The leather rest is not a necessity; two straps alone serve. The speed gear wire should come *within* the triangle of the straps. Likewise the tripod may be released by undoing one strap. Two straps are used, one encircling the front fork between crown and brake guide, and then being loosely buckled round, the lower end of the folded tripod remains fixed. The other strap encircles the steering head, and passing through the upper tripod strap when fastened serves to hold it in place, and its release allows of withdrawal of tripod from lower strap, and may be replaced in like manner. There is no occasion to fasten any of the straps tightly, and slight looseness expedites release.

### Developing Negatives at Sea.

Although in the largest and most modern ships (writes Mr. Arthur H. Coleman in "Photography and Focus" for July 11) the supply of fresh water is as liberal as it is on shore, in the great majority of vessels it is limited, though not to such an extent as to interfere with the carrying on of photography if the passenger wishes. It would certainly be best to use fresh water for the developer, for any washing of silver prints before toning, and for the making up of the toning and fixing solutions; but almost all the washing, whether of negatives or prints, can be done with sea water as well as with fresh. I have finished off a good many negatives and prints in this way, washing them as thoroughly as possible with sea water, and giving them two complete changes of fresh water, leaving them in for five minutes and draining well between each to finish up with. The negatives are as good as ever, and one or two of the prints, which I still have by me, show no signs that there was anything out of the way in their production. I have heard of negatives being fastened into a rack and towed astern for washing purposes, but should hardly expect that the method had really been tried. With a piece of muslin or something similar round the rack to protect them from fish, etc., I see no reason why they should not be hung over the side while the vessel is at anchor, although I have never tried it.

# New Books.

"Angewandte Photographie in Wissenschaft und Technik." Edited by K. W. Wolf-Czapek. Berlin: Union Deutsche Verlagsgesellschaft Zweig-niederlassung.

Parts II., III., and IV. of this comprehensive review of scientific and industrial applications of photography have now been published under the general editorship of our confrère, Herr K. W. Wolf-Czapek. Part II. is perhaps the most technical of the volumes, since it deals with the use of photography in the various branches of biological science. As in Volume I., each subject is treated by a professor of the science, and thus the text fulfils the intention of the editor to show the service which is rendered by photography to the study of botany, zoology, and physiology, anatomy, and pathology. In Volume III. are considered branches of work more akin to photography itself. Here Professor E. Dolezal deals with photogrammetry; Professor R. Süring with balloon photography; Lieutenant H. Nonn with the applications of the camera in military investigations; Dr. M. Seddig with the employment of photographic methods in engineering and industrial work, whilst lastly, the modern development of photography for the Press is the subject of a short article by a member of the staff of the large Berlin firm of publishers, Messrs. Scherl. The services of the camera in the study of types of mankind, folklore, etc., are the subject of the first part of Volume IV., in which also an interesting chapter appears on the application of photography to criminal investigation. In this volume also the employment of photographic methods in routine bibliographical work and in bibliographical investigations is dealt with, whilst the concluding chapter concerns the use of the camera in art teaching and research. Those who visited the International Photographic Exhibition held at Dresden will not be likely to forget the size and importance of the various scientific sections, each of which included collections of photographs and apparatus, far too great for a complete study on a passing visit. Herr Czapek may be said to have taken these scientific sections as the basis of his work; he has reproduced many of the most interesting photographs; has supplied drawings of many pieces of apparatus, and lastly has rendered the student of applied photography still more indebted to him by the copious references to original papers with which the text is interspersed. The volumes are unique of their kind in any language, and will assuredly be accepted for many years to come as a standard of reference by those interested in the scientific applications of photography.

# New Materials, &c.

**The Ilford "Panchromatic" Plate. Made by Ilford, Ltd., Ilford, London, E.**

Users of Ilford plates—and they must be numbered in their thousands in all parts of the globe—will learn with much interest of the addition of a new plate to the orthochromatic series which the Ilford Company have manufactured for many years past. The new product may be said to complete the series of Ilford colour-sensitive plates for the purposes of practical photography, since it is of the panchromatic variety, sensitive, not only to the green-yellow part of the spectrum, but also to the orange and red. A number of exposures which we have made have shown us that in its pronounced "panchromatic" sensitiveness and high general speed the new plate is fully capable of fulfilling the requirements which practical photographers of all classes now demand from such a product. The average speed is given as 180 Watkins, F90 Wynne, or 270 H. and D., an indication which our camera exposures showed to be by no means an exaggerated one. Used without a filter, the plate gives excellent colour-rendering of landscapes to a degree which should satisfy hand-camera workers who aim at securing orthochromatic effects in their negatives, and, at the same time, require to give instantaneous exposures. But using a deep yellow filter the exposure is prolonged only about 2½ times, so that, with a filter on the lens, hand-camera work is easily within the capacity of a camera fitted with an objective of aperture, say, *f*/6. Not only for outdoor amateur work, but also in portraiture, and in the "commercial" photography of many subjects, such as furniture, manufactured articles, etc., the Ilford "Panchromatic" will be found equal to producing the highest class of negative.

Such panchromatic plates, of course, require to be handled throughout in the dark, and to this end the makers enclose with each packet of plates a card giving the times of development at various temperatures with the two developing formulæ recommended. These are metol-hydroquinone for dish development, and pyro-soda for use in a tank. The manipulation of the plates is thus enormously simplified by these precise instructions. The plates may be obtained either backed or unbacked: the backing dissolves away in the developer and subsequent baths, and calls for no trouble on the part of the worker. A word of praise should be said, also, for the convenient way in which the plates are packed in pairs, a method which greatly conduces to convenience in loading dark-slides or changing-boxes. For as long a period as many present-day photographers can remember the Ilford Company has deservedly maintained its reputation for the uniformity of its high-class materials, and the new "Panchromatic" is evidently the result of the same thorough investigation and painstaking care in manufacture which has made the term "Ilford" a synonym in photography for reliability.

THE "EMPIRE SPECIAL PORTRAIT" PLATE. — The Leto Photo-Materials Co. have recently issued a fresh brand of plate specially for portrait work under the above name; their special claim on behalf of the plate, that it yields a brilliant negative with full detail in the shadows and half-tones, is one which we have been able to confirm. The plate will give full density readily, and negatives suitable for enlarging or P.O.P. printing, as well as for the processes—such as carbon and platinum—which require a greater degree of contrast, are quite easily obtained with a short time of development. The plate is of high speed (marked 250 H. and D.), and is sold on the basis of the popular price of 2s. 3d. per dozen in half-plate size.

# New Apparatus, &c.

VAPOUR LIGHTS.—A clean and convenient substitute for the oil lamp or night-light, such as photographers require to use in dark-room lamps employed on tour, has been introduced by Messrs. Gerard and Co., 243, Hyde Road, Manchester, under the name of the "Moonlight" vapour night-light. The little accessory consists of a metal chamber, the stuffing of which is simply saturated with ordinary paraffin, and then forms a lamp which supplies a flame similar to that of a candle, but burning from 6 to 20 hours without re-charging. The metal night-light is clean in use and cannot give rise to the annoying subsidences of the wick which are liable to occur when using an ordinary wax candle. It is supplied, post free, 6d.

## CATALOGUES AND TRADE NOTICES.

CINEMATOGRAPHS AND LANTERNS.—A new catalogue of cinematograph and lantern apparatus, manufactured by Mr. R. R. Beard, reaches our table. It includes the types of projecting lantern designed by Mr. Beard, cinematograph stands, and all accessories for illumination by oxy-hydrogen jet and arc lamp. Mr. Beard's long experience in this special branch of manufacture is a sufficient guarantee of the efficiency and reliability of the apparatus. The list may be obtained free on application to 10, Trafalgar Road, Old Kent Road, London, S.E.

CHEMICALS FOR PROFESSIONAL PHOTOGRAPHY.—Messrs. Johnson and Sons, Manufacturing Chemists, Ltd., 23, Cross Street, Finsbury, London, E.C., have just issued a price-list of chemicals in bulk and packet form prepared primarily for use by professional photographers and others employing photographic chemicals on a large scale. The list is not a large one, but it contains practically every substance in ordinary use in photography, including a number of preparations of Messrs. Johnson's manufacture, such as acid fixing salts, compressed pyro, collodion, flash-powder, intensifier, mountant, sepia toner, photo-tints, and varnishes. The list is evidently compiled with a full knowledge of photographers' practical requirements, whilst Messrs. Johnson's long reputation as manufacturing chemists is a sufficient guarantee of the high purity of the materials which they offer. Queries reaching our table so frequently indicate the use of impure chemicals in the preparation of developers, etc., that we can give our readers no more useful advice than to order their supplies from a firm the products of which are beyond question. The list is obtainable free by professional readers of the "B.J." on application to Messrs. Johnson.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### SATURDAY, JULY 15.

Derby Photographic Society. Outing to Monsal Dale.
Halifax Camera Club. Ramble to Rishworth.
Worthing Camera Club. Excursion to Southwick and Shoreham.
Manchester Amateur Photographic Society. Ramble to Worsley.

### SUNDAY, JULY 16.

Chelsea and District Photographic Society. Outing to Isleworth.
Balham Camera Club. Excursion to Guildford.
The United Stereoscopic Society. Outing to Uxbridge and Denham.

### MONDAY, JULY 17.

Southampton Camera Club. Half-hour Demonstrations by C. Daw, R. E. Parson, and W. H. Trigg.

### TUESDAY, JULY 18.

Bradford Photographic Society. Excursion to Esholt Springs.
Manchester Amateur Photographic Society. "Bolton Abbey and the Surrounding District." F. Whitaker.

### WEDNESDAY, JULY 19.

Southampton Camera Club. Outing to Salisbury.
West Surrey Photographic Society. "Two New Methods of Toning Bromides." V. Sern.
North Middlesex Photographic Society. "Development." W. Pringle. Print Competition Outing, Laindon.
Manchester Amateur Photographic Society. Ramble to Bolton Abbey.
Balham Camera Club. "Manipulation of Self-Toning Papers." W. Ifould.

# Commercial & Legal Intelligence.

NON-ACKNOWLEDGMENT IN REPRODUCTION OF PHOTOGRAPHS.—In the High Court last week, before Mr. Justice Hamilton, an action was heard in which Boissonnas and Taponier, photographers, of Paris, sued the Rotary Photographic Co., claiming damages for breach of an agreement in connection with the reproduction of certain photographs of his late Majesty King Edward VII., and also an injunction.

Mr. George Wallace, K.C., and Mr. H. C. Gutteridge appeared for the plaintiffs; and Mr. Gore-Browne, K.C., and Mr. J. Hunter Gray for the defendants.

The plaintiffs' case (as reported in the "Times") was that having taken certain photographs of King Edward VII., they were applied to by the defendants for permission to make and sell copies. This permission was granted on payment of a small sum, and on the condition that on each reproduction the name "Boissonnas and Taponier, Paris," should distinctly appear.

The plaintiffs complained that in breach of this agreement the defendants had sold a large number of reproductions without placing thereon the plaintiffs' name, or when they did put it on they printed the name in small letters.

By their defence the defendants admitted that they had sold a considerable quantity of cards which had not the plaintiffs' name printed thereon, and they admitted that this constituted a breach of the agreement, but save to this extent they did not admit any other breach of the agreement.

M. Taponier, a member of the plaintiff firm, in giving evidence, said that it was of immense importance to his firm to have been selected to take the photographs of King Edward VII. The mere fact of getting the sittings from the King was an advertisement for his firm. Their business in the sale of the photographs at the time of the King's death had been completely paralysed by the sale of the copies by the defendants. He could not say how many copies of the photographs his firm had sold.

They had granted the right of reproduction to various newspapers and magazines in this country between 1906 and 1910. With regard to the right granted to the defendants, the fee charged by his firm was 25f. in respect of each of the original photographs. He anticipated a large advertisement in England from the copies bearing his firm's name that would be sold by the defendants.

Evidence was also called as to the importance of having the name of the owner of the copyright appearing on reproductions.

Evidence was given by the defendants' manager that the mistake in omitting the plaintiffs' name from a number of the reproductions arose by referring only to the actual licence received from the plaintiffs, which did not contain the stipulation that their names should appear. That stipulation occurred in a letter which could not be found at the time. When the omission was brought to his notice he gave instructions that the plaintiffs' name should appear on all further reproductions.

Other evidence was called for the purpose of establishing that the value of the stipulation for the mention of the photographers' name on reproductions was practically nil.

Mr. Gore-Browne, for the defendants, submitted that no actual damage to the plaintiffs had been shown. A nominal sum was sufficient to compensate the plaintiffs in respect of the breach of the contract, which was due to an oversight on the part of the defendants. They had paid £10 10s. into Court in respect of that breach, and that was sufficient.

Mr. George Wallace, for the plaintiffs, contended that they were entitled to succeed, as they had suffered damage by reason of the non-appearance of their name on the copies published by the defendants. The plaintiffs were entitled to more than nominal damages.

Mr. Justice Hamilton, in giving judgment, after stating the facts, said that the plaintiffs' case was as to the enlargements made by the defendants from the photographs taken by the plaintiffs, that they were outside the licence altogether, and as to the postcards there was a breach of the agreement by not putting on the plaintiffs' name.

The question he had to decide was what damages the plaintiffs were entitled to recover. Were the damages to be merely nominal or were they to be substantial? The plaintiffs said they were photographers of artistic skill, and that, in his Lordship's opinion, was proved by the work which had been produced. They further said that it was important to them as a young firm that reproductions of their work should bear their name. His Lordship thought the want of advertisement by the non-appearance of their name had inflicted a material wrong upon the plaintiffs, although how to measure the damage was another matter. On the whole, he thought they were entitled to a sum of £50 in respect of the damage they had sustained, and there would be judgment in their favour for that amount, with costs.

## FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Entries close September 1 (Britain), August 21 (foreign). Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.

All About Patents.—A useful résumé of the formalities connected with application for patent protection has been published as a 32-page booklet by Mr. C. W. Crossley, 18, Pollard's Hill North, Norbury, London, S.W., by whom it is issued at the price of 9d.

# News and Notes.

Messrs. Griffin advise us that they have engaged Mr. J. Richardson as an additional country representative for their photographic department.

An Official Guide to Rhyl and many beauty spots accessible from it, has been published by the Rhyl Urban District Council, and may be obtained free on sending a penny stamp to the Council's Offices, Town Hall, Rhyl.

Royal Visit, Machynlleth.—Mrs. Esther Davies, Dovey Studio, Machynlleth, has had the great honour of permission from the Honourable Lord Herbert Vane Tempest to take photographs of their Majesties the King and Queen, the Prince of Wales, and Princess Mary, and the house party, during the Royal visit to Machynlleth. Mrs. Esther Davies has only just opened the above studio, having succeeded Mr. John Jones.

East Coast Holiday Resorts.—A well-compiled guide of the many coast resorts in East Anglia and of other places on the Great Eastern Railway system, including the Norfolk Broads, has just been published under the title of "On the East Coast." It is well illustrated, contains a number of maps, and particulars of golf links and other attractions to the holiday maker. It may be obtained free on application to the Superintendent of the Line, Liverpool Street Station, E.C.

Oliver Goldsmith Photographic Society.—Mr. H. E. Edmeads, hon. secretary of the above society, informs us that he has removed from Peckham to 42, Solon New Road, Clapham, S.W., to which address all future communications should be sent. The headquarters of the society are at Collyer Schools, High Street, Peckham, and Mr. Edmeads will be pleased to send full particulars to any photographers in the district who may be desirous of joining a photographic society, if they will communicate with him as above.

The Exhibit of Messrs. W. Butcher and Sons, Ltd., of Camera House, Farringdon Avenue, London, E.C., in the British section of the Turin Exhibition demonstrates in a remarkable manner the excellence of their productions. Cameras and sundries of every kind are on view, a very fine display being made with the "Carbine" and "Klimax" cameras. Enlargers and optical lanterns are well represented, and the complete equipment of a cinematograph projecting chamber is shown, including projector, arc-lamps, etc. It may interest our readers to know that this firm is held in very high esteem by showmen who are great users of their apparatus. The stall is in charge of their Italian representative, Mr. Martino de

Angeli, and is one of the attractions of the British section. Messrs. Butcher are to be congratulated upon their enterprise.

Complimentary Dinner to Mr. T. E. Freshwater.—Mr. T. E. Freshwater, who has been associated with the firm of Messrs. Newton and Co., of 3, Fleet Street, E.C., for over fifty years, and has recently retired, was the chief guest at a dinner given by the firm to their employees at Anderton's Hotel, on June 30.

Practically all the male staff, numbering nearly eighty, were present.

Messrs. H. C. Newton and R. S. Wright, the remaining partners of the firm, presented Mr. Freshwater with a silver inkstand, and the employees asked him to accept a silver table centre together with an illuminated address as a token of the regard in which he was held by the entire staff. A smoking concert, at which Mr. Freshwater took the chair, terminated the proceedings.

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

## THE COST OF CARRIAGE OF PHOTOGRAPHS BY RAIL.

To the Editors.

Gentlemen,—Can you tell me if any steps are being taken by photographers to prevent the Railway Clearing House from putting photographs into Class III. instead of into Class I. or II.? The reason we have to pay the highest rate now, Class IV., is surely due to the apathy of the photographers in London. Why, Sir, did they not protest and ask for photographs, which because of their late appearance on this planet are not now so much as specified in any list, to be added to the list of rates for parcels? Now, as you are doubtless aware, because all articles not mentioned in the lists are charged as belonging to the highest rate, photographs are considered as belonging to Class IV., with plate glass, silvered mirrors, etc.

Is there no one in London who can go to the Railway Clearing House and say, "Look here, gentlemen, you do not seem to know that the average value of a photograph is a penny, and that it is hardly fair to put these things into your Class III., as I hear you intend to, along with paintings and steel engravings, which are worth hundreds, if not thousands, of pounds"? That same man might add, "If you will condescend, gentlemen, to tell me why you carry stamps, maps, bank-notes, and printed matter of every description under your cheapest class, Class I., or in Class II. with glass, except plate glass," my brother photographers would be grateful.

There are other things which are absurd in railway rates, but now that Lord Kitchener has been turned into a railway man we may have them put right.—Apologising for troubling, Yours very truly, Frank Sutcliffe.

## BUSINESS METHODS.

To the Editors.

Gentlemen,—As a —— professional photographer, I strongly protest against what I think a very unfair system of business being worked in our city by a well-known and, I thought, a fair-dealing firm in London, who send representatives around to some of our best schools and families and do business which most surely belongs to us who reside here. To my knowledge they have secured some of my best customers. This is most unfair, and ought to be stopped. What would these first-class firms who do this system of business think of —— photographers (150 miles away) canvassing their best customers, who they look upon as their own preserves? Why, I fancy they would cry out very quickly, and quite right too in so doing.

We can well understand the ordinary canvasser doing this class of work, but really, when a great leading London photographer (and a Royal photographer) stoops to it, it is rather too much, and should be strongly condemned. We have at present bad trade in our neighbourhood owing to serious strikes, and on the top of this to find some of our best business taken away in this manner is not at all comforting.—Yours truly, R. A.

## SUNDAY CLOSING AND THE SHOPS BILL.

To the Editors.

Gentlemen,—I have read the discussion on Sunday opening in the "B.J." week after week with keen interest. It seems quite incomprehensible to me that photographers or assistants should advocate Sunday opening. It is bound to cause deterioration of one's physique and moral character in time. What a relief it must be to the man who has been doing bromide printing or enlarging in a stuffy dark-room, with the temperature outside ranging from 80 to 120 degrees, to have one whole day absolutely free. A day for recreation for body and mind. Most of us look forward after a week of strenuous labour to the Day of Rest; a day that we can fill our lungs with the delightful fragrant air of the country, and to fully enjoy and appreciate a pleasant walk or cycle spin along the charming country roads of England, and to visit the quaint old-world villages which England is famous for. It seems quite ridiculous for photographers to talk about people wishing to be photographed on Sundays. I am certain that the majority of middle-class folk have no wish whatever to have their photograph taken on Sunday. I have been an assistant for a number of years, and like the majority of them, I have travelled about, and during my travels I have only had to work on Sundays at one place, and that was in the Isle of ——. Hoping you will find space in your valuable paper for this humble letter, Yours truly, C. F. W.

To the Editors.

Gentlemen,—I think it would be much better if those like "Free Sunday" would leave the Sunday closing question to those whom it more directly concerns. I say this, although I am not a Sunday worker myself.

Conditions, peculiar to the photographic business, are in evidence in certain studios which cater for a certain section of the British working public, and these conditions show the demand for, and necessity of, Sunday trading, if the proprietor of this class of business is to meet financial obligations. If a man can only do this by Sunday operating, which surely is an honest, harmless occupation, all honour to him; he is doing good, and, to quote "W. G. Plucknett," "It is lawful to do good on the Sabbath."

Certainly it is very nice to have a day off, but it need not necessarily be Sunday. If in order to live, etc., it is necessary to work on that day, one may still appreciate the "walk along the white country roads or on the springy turf" any day during the week which is usually granted Sunday workers.

I am sorry to notice a few of our better-class men who do not need to open on Sunday (and whose clients would not patronise them if they did) are somewhat harsh and unsympathetic with our less fortunate brothers. "Live and let live" ought to be their motto, and is A Sympathetic Professional's.

To the Editors.

Gentlemen,—I fear that I am playing excessively upon your patience in trying to further argue against the proposed inclusion of Sunday closing in the Shops Bill. There are some fallacies still advanced in support of same that I wish to dispose of.

Now, I entirely repudiate the assertion that present conditions will compel photographers hitherto closed to open on Sundays. I think that I can put that sweepingly, that there is not enough of casual patronage to make the taking by them of such steps worth it. I think that I am taking the broader view of the subject in expounding the cause of the poorer photographers, inasmuch as they are exerting their powers in extending the market to the humblest house. They are the main check against those ambitious gentlemen directing dependent branches from head offices, commanding as they do great business ability, scrutinised economy, and skilled labour, formidable competitors that I think deserve guarding against with more apprehension than the casual encroachers of the order of ex-shoemaker. I think the display of fear from any of them ridiculous; but it has been proved.

by this time, that protected trade decreases the demand on the one hand, and augments monopoly on the other.

Altogether, those against whom the suggested legislation is aiming are photographers who create their own custom. It is largely the case with those who organise clubs, with those engaged at seaside resorts, and those who cycle away on a Sunday tens of miles in search of worms. I cannot imagine that gentlemen representing the P.P.A., or others endowed with sentiment, will persist in this unworthy venture, to cause ruin to many fellow independent men, to throw about those who managed to escape, to degrade employment conditions, vacancies of guaranteed permanencies expiring at the end of the busy season, and stamping many more of us as "too old" at once. I for one, who suffered such transformations, dread the mere idea of it. Personally, I am fortunate to keep my studio closed on Sundays, except for strict appointments. I am looking for my salvation in the columns of this "Journal": I read with absorbing interest every information that I may turn to good account. The results are such as to encourage fellow photographers to follow.—Yours faithfully,

A. Cohen.

9, Mary Street, Dublin.

## SEEING BEFORE THE EVENT.

To the Editors.

Gentlemen,—I have twice had an opportunity of hearing Dr. Adolphe Abrahams lecture upon high-speed photography, and on each occasion he treated at full length the phenomenon of the anticipation of vision, which I believe he was the first to describe in reference to photography. I have naturally been much interested (and, I may add, much amused) by the correspondence upon the subject which has recently appeared in your columns. After your own lucid explanation, it may seen superfluous to dwell any more upon the matter, as the true state of affairs must be evident except to the very obstinate or very obtuse. But you have introduced one detail upon which I venture to offer some remarks. You state that it cannot be said at exactly what distance the laggard-velocity of sound makes itself evident. I have recently been doing a little work in this direction. I asked a friend to strike one piece of wood with another, and observed him through a pair of powerful prism binoculars from a distance of seventy yards. At this distance there could be no question of the distinct interval between the impact of the pieces of wood and the arrival of the sound produced. I then advanced until I had reached such a point that now I could detect no such interval. I found this distance to be forty-five yards. I then experimented with other sounds, including a pistol and gong, and found the distance to be increased, so that I presume that the duller the sound, the slower it travels, and impact on wood is about the dullest easily producible. I must also add that my friend and I reversed positions, and it was very interesting to find that in all cases our observations approximated very closely—*e.g.*, 45 yards—42 yards; 62 yards—60 yards.

I have communicated with Dr. Abrahams on these details, and he has expressed much interest, and has very kindly gone into the matter. He states that he himself has not considered this aspect at any length, because obviously sound does not enter into the question at all, as photography of his subjects is conducted at no greater distance than fifteen yards—well within the range of simultaneity of occurrence and appreciation of sound, and that, moreover, there is hardly a subject in which sound is ever involved. All this, of course, is photographic, and I conclude also that it squares exactly with "M. R.'s" experience of the wedge-driving, which doubtless he observed very closely indeed.

Dr. Abrahams added that I must be sure to obliterate all chances of anticipation of sound (this, of course, occurs quite as surely as anticipation of vision) by not observing after long-continued practice. He dealt also with a number of interesting details with which I need not burden you, but it is worth while pointing out, should any of your readers desire to repeat or amplify my experiments, that acuity of sound-perception is likely to vary a great deal in different people, quite apart from any such complications as varying latent period for sounds in different people, which scientifically would have to be considered.

Suffice it to say that, as one firmly convinced of the anticipation of vision (a phenomenon which is absolutely the only one to explain successful "instantaneous" photography), I am very glad indeed to be able by these little experiments to endorse what you yourself have said.—Yours faithfully,

B. M.

## WANTED: A SPECIAL SIZE OF CAMERA.

To the Editors.

Gentlemen,—With the advent of the reflex camera, professional photographers are fairly well catered for by manufacturers. There is still one improvement, that would cost little to effect, and yet give a good return to the firm that takes it up, as it would be a real help to most photographers who have a fair amount of outdoor work to do, *i.e.*, a camera to take a plate 5⅞ x 3⅞. This would give a print that would be suitable for any cabinet mount in the market. The quarter-plate is the handiest at present, but is too small; the postcard is not reversible; the 5 x 4 is obsolete; and the half-plate too heavy and too large for all practical purposes. The advantages of a camera of that size would be many. It would be lighter to carry than a half-plate, at the same time producing a print for all practical purposes the same size. It would be cheaper than a half-plate, as a lens suitable for a 5 x 4 would do. It would reduce the chances of vibration, so apparent when using a 8½ in. focus lens (fitted to most half-plate cameras), when a 7 in. focus is all that is necessary; and then the plates used would be cheaper.

Hoping some of our enterprising camera makers (British preferred) will take this up, with thanks and anticipation.—Yours faithfully,

Wm. Wallace.

1,041, Argyle Street, Glasgow.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood *& Co., 24, Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee,*

Photographs Registered:

J. Leech, 20, Ginns, Whitehaven, Cumberland. *Photograph of King George V. Coronation Bonfire ablaze at Whitehaven, June 22nd*, 1911.

A. Sutcliffe, 47, Well-ith Lane, Lower Place, Rochdale. *Photograph of Rushcart and Stretcher Bearers (an old custom), taken at Spring Hill, Lower Place, Rochdale.*

Miss A. F. A. Russell, The Studio, 20, South Gate, Chichester. *Photograph (combination) entitled Coronation Arches at Chichester, June*, 1911, *showing N., S., E. and W. Gates, with Arms in centre.*

**Relief and Others.**—In our next.

**T. L. Howe.**—Apply to Underwood and Underwood, 104, High Holborn, London, W.C.

**Country Member, P.P.A.**—We have arranged for the article you suggest, and it will appear shortly.

**Manover.**—If your employer cannot tell you, we are afraid neither can we. It is out of our province.

**F. A.**—You will notice that almost your exact query was dealt with in an article last week.

**Lestinge.**—You should address your query to one of the farming or country papers, such as the "Field," Messrs. Horace Cox, Bream's Buildings, London, W.C.

**J. H. and Son.**—The trade mark is that of the Rotophot Co., 110, Alexandrinenstrasse, Berlin, S.W., 68. The prints are evidently tinted with aniline colours, such as are sold by dealers. Messrs.

Johnson and Sons, among others, prepare a set of tints specially for this work.

**Autochromes Frilling.**—I have had a number of Autochromes to develop lately, and have been troubled with frilling, in some cases practically all over the plate. I have regulated the temperatures of the various solutions with ice, to 60 deg., in every case. Will a preliminary bath of formaline do anything?—Autocolor.

Your trouble is unusual nowadays, but no doubt the hot weather has contributed to it. Formaline will probably help, but if it does not, you had better try the old dodge of rubbing wax round the edge of the plate.

**Developer, Etc.**—1. Could you inform me of a suitable formula for diamidophenol for postcards, films, and plates? 2. I am thinking of purchasing a half plate reflex for press work, etc.; as they are rather costly, would you advise buying a second-hand one, or are they too heavy or bulky, or would a folding focal-plane suit?—Enquirer.

1. Use the formula for amidol (diamidophenol ) in the "Almanac," page 767. 2. A half-plate reflex is a big thing, and not the best for press work if you have to get about much. Press photographers in general use a folding focal-plane, 5 by 4 or half-plate.

**Gaslight Emulsion.**—May I request a favour at your hands by asking you if you could inform me of any photographic firm who would supply me with emulsion for coating and sensitising fabrics for gaslight printing; or would you favour me with the recipe for same?—W. G.

It is by no means an easy job to coat fabrics with gelatine emulsion, and we doubt if any of the manufacturers would undertake it for you. You had better write to one or two, but we think you will find you are attempting a task which at present is a practical impossibility.

**Marked Negative.**—I splashed a negative (three circular spots) with developer in the dark-room before development, and it has caused three darker spots. Now this negative has been intensified with chromium, and I am wondering if I could reduce these spots locally with Farmer's reducer and brush. I am unable to obtain similar negative, which is a landscape.—A. L. Cranch.

It is not a very easy job, and we advise you if you value the negative to make a transparency before touching the negative. In doing this, you might improve matters by putting a mask in front of the negative, with three holes in it, so that extra exposure could be given through the spots. If they are not very small you may be able to secure an even transparency without tampering with the negative.

**Sepia Bromides by Development.**—1. Can you give formula for bromide developer, giving sepia-coloured prints? 2. Do you know of any firm manufacturing special paper that gives sepia-bromides without toning?—Anxious.

1. It is not a very satisfactory process—far less so than sulphide toning of the developed prints—but you may try a developer made as follows:—

| | |
|---|---|
| A.—Pyro | 30 grs. |
| Metol | 30 grs. |
| Potass bromide | 1 oz. |
| Water | 20 ozs. |
| B.—Soda carbonate | 3 ozs. |
| Soda sulphite | ½ oz. |
| Water | 20 ozs. |

Mix equal parts of each. The warmth of the tone is corrected by extra exposure of the paper, and, if necessary, further addition of bromide. But if you require prints in numbers all alike in tone, it is a thoroughly bad process. 2. A paper, but not a bromide, is made by the Wisto Works, Hayes, Middlesex.

**Protecting Stain-remover.**—Will you kindly advise me in the "Journal" *re* the following:—I have discovered a recipe that will take away (without danger of poisoning in case of cuts) in a few minutes any pyro or chemical stains on nails and hands. Kindly inform me (1) if there is any such preparation; (2) how I go about it to patent it. Have I to register recipe, or only the name? If so, where?—A Constant Reader.

1. Yes, several firms—*e.g.*, the Vanguard Co.—supply such preparations. 2. You must recollect that if you apply for (and are granted) a patent, the composition of the solution must be disclosed, and thus photographers may make it up for themselves, and it will be very difficult for you to ascertain that your invention is being pirated. Unless the preparation can be compounded only with some chemical which is difficult to obtain you will be ill-advised, we think, to patent it. The best thing you can do is to prove the efficiency of the preparation to some firm of manufacturers of photographic chemical preparations, and then to offer to disclose the composition to some independent expert (to be agreed upon), who shall say whether your invention is a novelty, and bears what you claim for it as regards cost of production.

**Diffusion for Large Portraits.**—I should consider it a very great favour if you will kindly answer me the following questions:—Lens.—How can I get the diffusing, or soft focus, with any other lens for larger sizes than the 3 B or 4 B Dallmeyer will permit, 12 x 10 or 15 x 12 work in the studio? Does the method of unscrewing the back combination apply to any lens, or must the lens be specially adapted; or how to obtain this result? Also, where can I obtain the best scraping knife possible for negatives?—H. Hunter.

Practically the only lenses in which diffusion of focus, or soft definition, can be obtained by unscrewing one of the components are portrait lenses made on the Dallmeyer "Patent" model, or the Cooke portrait lenses. Many modern portrait lenses are of the former construction, but the back lens requires removal in order to effect the unscrewing. It is useless to unscrew the back lens of a rapid rectilinear, anastigmat, or "ordinary" portrait lens. If you have a 4 B, we recommend you to try using the front combination alone, and in its ordinary position. At full aperture you will get a very soft image, which can be sharpened to any desired degree by reducing the aperture. The most convenient knives for working on negatives are sold by Mr. T. S. Bruce, 4, Villas-on-the-Heath, Hampstead. See advertisement "B.J. Almanac," 1911, page 30.

**Right to Reproduce.**—We supplied to a local paper a number of prints for reproduction (of Coronation events). They were duly illustrated in the paper. We agreed beforehand to accept a lump sum for them. In last week's issue the editor states that owing to the issue running out, they have decided to produce a set of views in book form on art paper, to be sold by booksellers and others at one penny each, which means our photographs will again be used. I have written to the paper, saying that if they use them again, as proposed, I shall expect to be paid the second reproduction fee, setting forth the amount expected. The editor replies that the *blocks* are his property, he can use them as he likes, and he is simply producing these books for the purpose of meeting demand and supply, and that he cannot entertain any claim other than the first. Will you be good enough to advise me as to my position, and if my claim would hold good if it came to court proceedings? I have registered the photographs in question.—Cani.

Ownership of the blocks gives the editor no right to use them. If in charging for the photographs in the first instance your letter or invoice made it clear that the fee was for reproduction only in a certain one issue of the publication, further use cannot be made, but if your invoice is capable of interpretation as an absolute assignment of copyright, you may fail in an action for payment of the further fees.

**Tank Development, Etc.**—I am an out-door operator. taking views, groups, etc., and find my time very limited in developing and attending to my other duties during summer months. I intend trying tank development, but before I take any further steps I should like to have your opinion and assistance towards successful negatives. 1. Can I use with success a tank developing process to develop plates—some evidently a shade under-exposed, others over-exposed—together in one solution? Kindly give me formula for pyro-soda or any other developer, preferable for tank development, best to meet requirements of question No. 1, with full instructions how to work? 3. Can you give me the name of any photographic dealer who can supply me with a smoked glass vignette, 1 5-8th in.? (By placing this smoked vignette before the lens you can vignette the sitter same time as you expose the plate.)—Andrews.

1. Yes, providing that the plates are only slightly on the over

or under side of exposure, tank development (for a fixed time) will give you a very good average of results, though in theory it is for correctly exposed plates. 2. Select a tank fitted with a water-tight cover, so that tank can be stood first on one end and then on the other for alternate periods of, say, five minutes, during a total time of development of from twenty to thirty minutes. We cannot give you a developer for a fixed time and temperature. Apply to the maker of your plates. 3. Unless you can obtain what you want from a large firm, such as Marion's, Houghton's, or Fallowfield, we do not know to whom we can refer you.

Bromide Postcards.—Is there any short stop for bromide postcards for hypo-alum toning? I usually develop 150 to 250 cards, placing them in a bowl of running water, but I find some are stained yellow at the corners when finished. I have no help, so cannot fix as developed, but fix batch in one lot. Also, after hypo-alum toning (hot), find a lot of cards with scum marks when washed and dried, which I cannot remove with meth-spirit or borax. Some are so badly marked I cannot use them. I never change my bath or filter it, but add new as required; do you think it gets too thick, due to evaporation? Should I discard old bath, or add water sometimes? I enclose a spoilt card to show what I mean. I get real purple P.O.P. tones, as you will see. I use about an ounce of alum to each quart of fixing bath, and also put cards, after toning, into alum bath before washing. Thanking you for your help.—Inquirer.

The best stop for developed bromides is an acid fixing bath, and it is just as easy to put them into the fixer as into running water. You can dip each print into running water on its way to the fixing bath, and we do not see why this should be any more inconvenient than your present method of working. The scum marks on hypo-alum toned cards are no doubt due to failure to wipe the prints over before drying. Use a wad of wool to brush the scum off, and then you should have no trouble. There is no need to discard old bath, but water should be added to make up loss. If you do not do this it must in time become too thick.

Various.—I should be much obliged if you will enlighten me on the following matters :—1. What is the image of a negative composed of, and does its composition vary with different developers? 2. What hardener can be added to a fixing bath for bromides which will have no ill effect? I believe ordinary alum affects the permanence of the prints. I should like to have the hardener in the fixing, if possible. 3. Is there any method of testing a fixing bath to find out if it is exhausted? 4. Can you give me the address of a firm which buys old negatives? I see they have ceased advertising in the "Journal."—H. E. Pearse.

1. The image consists of metallic silver, with which is present in the case of some developers a certain (small) proportion of stain—*i.e.*, product of oxidation of the developer. 2. Potash alum, a very good formula for a fixing bath for bromides, is as follows :—

| | |
|---|---|
| Water | 64 oz. |
| Hypo | 1 lb. |
| Soda sulphite | 1 oz. |

When the crystals are all dissolved, add :—

| | |
|---|---|
| Glacial acetic acid | 1½oz. |
| Potash alum (dissolved in 5 oz. water) | 1 oz. |

3. Put an unexposed and undeveloped plate in it and note the time required for the white emulsion to disappear compared with a fresh hypo bath. 4. Chas. Bowen, 58, Grove Road, Holloway, London, N.; A. Smith, 72, Norton Street, Hockley, Birmingham; J. and S. Smith, 6, Lennox Road, Finsbury Park, London, N.

Ultra-Violet Light.—I am puzzled as to the use of the ultra-violet rays in photography. Some time back you reproduced some photographs taken by these rays, but Mr. Turner, before the P.P. Congress, opined that most lenses, and glass particularly, cut off ultra-violet light, discrediting the idea that they were of prime importance or usefulness. Dr. Mees, however, points out in one of his booklets on orthochromatic work that it is a losing game to try to photograph any coloured object by the ordinary method, expecting to get a correct rendering, when the ultra-violet rays constitute the main portion of the light which acts upon the photographic plate. I have noted that the colour-values in flashlight work are generally badly rendered, except the object be within close range of the light and the charge is a full one. The result is comparable to a picture taken in a weak light or with a short, if not under-timed, exposure. Over-exposure, on the other hand, gives a comparatively better result as regards colour value, especially in the case of persons with such colour "taken" in white dresses. What I would like to know is, Who is right? If ultra-violet light gives such bad colour-rendering, then the construction of lamps and powders that emit these rays in particular is on a bad principle, and the panchromatic plate is the only sensible means to use. Yet maybe the excess of light and full exposure with such lights conduces to correct rendering; but then, why not use a more ordinary light at possibly the same exposure?—W. J. Pluckneld.

Glass is not absolutely opaque to ultra-violet, therefore some rays get through, and, the plate being so very sensitive to them, the effect may be considerable. Much, of course, depends on the glass used in the lens. Seeing that ultra-violet light is quite invisible, it stands to reason that its effect in a photograph renders the values incorrectly. As regards your flashlight results, we think that the false values are most usually caused by under-exposure.

◆

A Photographic Debate.—A debate on a photographic subject, and carried out on the lines adopted by well-known debating societies, is a rather new idea, and one which might be seriously considered by secretaries of photographic societies when making up their programmes for the coming lecture season. It is unusual for a photographic meeting to be well attended in the height of summer, but there was a very large meeting of the members of the South Suburban Photographic Society on the 5th inst. to hear a debate on "Backed Plates and Tank Development," the debaters being Mr. P. R. Salmon and Mr. E. W. Thew. Each was allowed half an hour in which to state his case, and, after a brief discussion, a few minutes in which to reply, the proceedings being finally summed up by the president, Mr. John Nixon. The volumes of the "B. J." apparently had been ransacked from beginning to end for quotations in support of the questions in debate, while the opponent—an opponent for one evening only, it may be stated—relied upon quotations from Emerson's "Naturalistic Photography" and other sources. Remarks were at times extremely personal, but all were taken in good part, as it was well known how very friendly the debaters were. The debate, however, served to bring out the good and weak points of the questions under discussion, as each speaker had been at work on the subjects for some considerable time. There was no vote at the conclusion, but it was clear that almost all the members were strongly in favour of backed plates, and also tank development, providing the latter was carried out properly and common sense used. Debates of this kind could be easily arranged, but it would be well perhaps if the speakers were genuine opponents.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2672. Vol. LVIII. FRIDAY, JULY 21, 1911. Price Twopence.

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## SUMMARY.

At the annual general meeting of the Photographic Convention it was decided to meet in Holland next year. (P. 547.)

The Convention exhibition is briefly reviewed on page 547, and a group of the members is reproduced on page 550.

Some curious points in photography formed the subject of a paper read before the Convention by Mr. Arthur W. Clayden, M.A., Principal of the Royal Albert Memorial College, Exeter. (P. 548.)

An improved method of silver intensification, in which the trouble of stain is avoided, was described at the Convention by the president, Mr. J. B. B. Wellington. (P. 551.)

Night photography was dealt with in considerable detail by Messrs. J. Keane and S. J. Taylor at the Convention. (P. 532.)

Some of the points of studio shutters are enumerated in an article on page 546.

A convenient method of developing bromide prints of extremely large size is described in an article by Mr. F. D. Maisch reprinted on page 554.

Dr. Adolphe Abrahams has made some interesting comparative tests of focal-plane and multi-speed shutters. (P. 546.)

The desirability of testing exposure meters is referred to in a note on page 546.

A further paper on experiments in solarisation, by Mr. G. A. Perley, commences on page 556.

We reprint an article by Mr. C. H. Claudy on tank development. (P. 555.)

All materials in connection with the Ozobrome process are in future to be manufactured and supplied by Messrs. Illingworth and Co., Ltd., Willesden Junction. (P. 557.)

Some useful hints in regard to exposures with Autochromes will be found under "Analecta." (P. 559.)

The sale of ammonia is in future to be under certain restrictions laid down by a new Order in Council. (Pp. 546 and 562.)

Vertical enlargers, cinematograph films, and colour screen-plates are included in our "Patent" columns this week. (P. 559.)

We make some comments on another photogravure patent which has recently been published. (P. 558.)

Seeing before the event and the cost of carriage by rail are again the subjects of correspondence. (P. 561.)

## EX CATHEDRA.

**The Photographic Convention.** Conventioners this year have had nothing to complain of in regard to weather, the climatic conditions having been ideal throughout the whole of the week. This is a welcome contrast to the state of things last year, when the weather was of all kinds, and none of it very satisfactory. The various excursions, which are very important features of a convention, yet very dependent on the weather, have in consequence been a great success and much enjoyed, especially the one down the Dart to historic Dartmouth. The revival of technical lectures and papers has also been a welcome feature, and all the meetings have been well attended and appreciated. Fine weather, a good programme, an excellent President in the person of Mr. J. B. B. Wellington, and the exceedingly generous hospitality of the Mayor and good people of Exeter, have therefore all combined to render the Convention of 1911 a most enjoyable and successful one.

* * *

**The Sale of Ammonia.** Under a new order in Council which we print on another page, no solution containing more than five per cent. by weight of free ammonia may be sold by retail unless distinctly labelled with the name of the substance, the word "Poisonous," and with the name and address of the seller, the penalty for each offence against this order being a fine not exceeding five pounds. This applies to all retailers, whether chemists or not, therefore photographic dealers must make a note of the new order. Attention should be given to the fact that the mere use of the customary "Poison" label will not be sufficient under the order, which distinctly says the word "Poisonous" must be used. Ammonia B.P., which contains ten per cent. free ammonia, will be covered by the order, but the photographer's conventional ten per cent. ammonia solution will not, seeing that it is only a ten per cent. mixture in which one part of ammonia, .880, is contained in ten parts of the solution. As ammonia .880 only contains thirty-six per cent. of real ammonia, the dilute mixture only contains 3.6 per cent. To avoid misunderstanding it may perhaps be as well to drop the term ten per cent. in relation to this mixture. According to the "Pharmaceutical Journal," it will be also necessary to use a special-shaped poison bottle that can be distinguished by touch, and to add a label "not to be taken." Presumably, these additional regulations come under the "other regulations" referred to in the order, but not specifically mentioned. The same journal also reminds us that the section under which the order is made, so far as it relates to mineral acids and soluble salts of oxalic acid, which also concern photographic dealers, comes into force on October 1, 1911, but the new order relating to ammonia is not in force until February 1, 1912.

**Testing Exposure Meters.** In our "Analecta" column Mr. W. Partridge is quoted with reference to the subject of exposure with Autochromes, and it is worth note that he devotes attention to the preliminary testing of the meter, a precaution that, we fear, few practical workers ever take. It stands to reason that the sensitiveness of different batches of meter test paper must vary, and this fact is recognised by the meter manufacturers, who generally issue new standard tints with each set of refills. The trouble of changing the standard tints is, however, too much for the average photographer, who is generally content to use quite modern refills with standard tints that were affixed to his meter probably several years ago. Mr. Partridge gets over the trouble by simply standardising his meter, taking as the standard four seconds for darkening the paper to the full tint in midday sunlight. If a fresh paper takes less or more than this, he considers the meter to be fast or slow accordingly, and modifies his exposure in due ratio. Possibly some would find this a more troublesome method than the orthodox one, but it is very desirable that all should recognise the necessity of allowing for variations in meter speed. In any case, Mr. Partridge's method is a good one for determining whether it is really necessary to change the standard tint or not when a new refill is inserted.

* * *

**Cutting Glass Circles.** The photographer is often at a loss when some little out-of-the-way task comes in his direction, and for want of knowing how to proceed sometimes incurs unnecessary expense. Such a task may be the cutting of a glass circle, which few will attempt owing to the apparent lack of the necessary apparatus. If, however, a diamond is available, no apparatus is required other than a sheet of thick millboard, from which a circle can be cut of a diameter about one-fifth of an inch less than that of the glass circle required. The circle is struck with compasses, cut round, and then the edges are smoothed with glass paper. A few dabs of Seccotine are then applied to the millboard disc, and it is laid down on the glass that is to be cut. After a few minutes under pressure it will adhere sufficiently, and all that is then necessary is to run a diamond round the edge and so cut out the circle. When the glass has been broken away, outside the circle a few sharp points will probably be left, and these can be removed quite easily with a carborundum block. Dip the block in water, lay the glass down on a board or table with its edge overhanging, and then rub away the sharp pieces. The action is very rapid, and in a few minutes a neat ground edge can be provided all round the circle. In a similar fashion the edge of any sheet of glass can be smoothed and ground, or even bevelled, and a carborundum block, being about the best thing for the purpose, is a very useful article to possess. In its absence an ordinary file kept moist with turpentine can be used, but the carborundum is much quicker and safer. Any shape of glass can, of course, be cut in the same way, but circles are most often wanted, sometimes for picture framing, sometimes for enlarging-lens caps, for which purpose ordinary amber glass is quite efficient, whilst sometimes a ground glass circle is required for diffusing the light in the lantern. A diamond is the best cutting instrument to use, but a good wheel cutter is also serviceable. It is, however, not quite so easy to cut circles with the wheel.

* * *

**Multispeed versus Focal-Plane.** In an article in a contemporary, Dr. Adolphe Abrahams describes and illustrates some experiments which once more tend to demonstrate that the focal-plane shutter is not the ideal instrument for very rapid work. The author made comparative tests with a "Multispeed" shutter and a focal-plane reflex camera, the result being that the former shutter proved to be more efficient, faster, and also to have a lower latent period. The shutters being released simultaneously, the focal-plane caught the moving subject one-sixth of a second later than the "Multispeed" shutter, this difference being, of course, partly due to the time required for raising the reflex mirror. As regards the arrest of movement, Dr. Abrahams came to the conclusion that the "Multispeed" at 1-450 second was about equivalent to the focal-plane at 1-1,000 second. With both shutters set at 1-1,000 second the "Multispeed" not only gave the sharper negative but also a much more fully exposed one. These results seem to confirm the experiences of other workers, but while the greater rapidity of the "Multispeed" shutter can easily be understood, it is by no means clear why it should at the same time be so much more efficient. From its construction it should be a shutter of rather low efficiency, and we believe that it can be shown to be one by actual measured test. We have before suggested that the use of a very large shutter will compensate for this to some extent, but this alone does not seem enough to account for the difference observed by Dr. Abrahams. Possibly his focal-plane shutter has an exceptionally low efficiency at high speeds, but if this is not the case then some neglected factor must come into play, and it would be of considerable advantage to determine whether this is so or not. It is not improbable that one lens was much faster than the other. We should like to suggest to Dr. Abrahams that measured tests of both shutters and lenses would most likely clear up the matter, and perhaps also afford some valuable new information.

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## STUDIO SHUTTERS.

In a recent article on studio cameras we promised to deal with the shutters usually employed for studio work, and we may commence by saying that although most of them are far from perfect, most of them are fairly satisfactory in work. It is, perhaps, hardly within the scope of our title to deal with so primitive a shutter as the lens cap, so that we will merely say that this should be an easy fit and that a soft deep velvet cap slightly stiffened with a cardboard ring is often to be preferred to the rigid article issued with the lens. It can be made loose enough to remain on the lens until it is desired to remove it, which can then be done without the risk of moving the camera, a thing which we have known to happen with a tight cap and easy-running castors on the camera-stand.

The velvet flap-shutter with the ball and tube attachment has had a long reign since it was first introduced by Mr. Cadett, and there are probably few studios in which a specimen cannot be found. They are mostly, however, known by the name of the French manufacturer, M. Guerry, and few people now remember to whom the credit for applying the pneumatic action to photographic shutters is really due. Convenient as this form of shutter is it has its drawbacks, one of the greatest of which is the liability to be put out of action at inconvenient times by leakage of the internal bellows, which is, by the way, rather costly and not easily replaceable, while a sitter is waiting. It is noiseless and reliable in action if care be taken to prevent the flap from catching in the bellows and stopping up after the pressure is relieved. The earlier patterns were made to fit outside the lens, but in this position the action of the flap is very likely to attract the sitter's attention and to cause movement in the case of children and animals. An improvement on the flap appeared some years back in the form of the hemispherical bellows model of Grundner, popularised in this country by Messrs. Watson and Sons. It has the advantage of requiring less room inside the camera, is not so liable to raise dust, and allows of a moderate projection of the lens behind the front panel of the camera. It shares the disadvantages of the internal bellows with the Guerry, but renewals are even more troublesome and expensive. As considerable pressure is necessary to keep the shutter open, we prefer the "Antinous" release to the ball and tube. This is practically everlasting, and, except for the somewhat inconvenient handle or knob by which it is worked, entirely satisfactory. It should not be difficult to make the handle work on the principle of a pair of nutcrackers or pliers, and we can assure the patentees that the sale would be increased if this modification were introduced; it would then also be easy to make a satisfactory clamp to keep the shutter open while focussing.

An excellent shutter was made a good many years ago by Messrs. Newman and Guardia. It consisted of two flaps opening vertically, which balanced in the open position for focussing, and closed upon a second squeeze of the bulb. A later pattern of this type of shutter is sold as the "Silento" by the Kalamazoo Shutter Co. Both these shutters have the advantage of a metallic piston instead of the rubber bellows, they permit of a very large opening relatively to the outside size of the case. A very efficient and popular type is that manufactured by the Michigan Shutter Company, and known as the Packard Ideal. This is somewhat on the lines of the sector shutters, now so generally fitted between the combinations, but is simpler in construction and is made in large sizes, we believe, up to eight inches in diameter. It balances open for focussing, and permits of quite short exposures of, say, one-fifth of a second, while in the medium sizes instantaneous exposures can also be given. It has the metallic piston and can be worked either with the ball and tube or "Antinous" cable. We prefer the former as it is easier to keep the shutter open, but for export there is an advantage in a shutter entirely free from all rubber fittings unless the vulcanite leaves can be so regarded. We have had one of these shutters in constant use for four or five years, and it has never lost us a plate or given any trouble in repairing.

Of quite a different type is the Thornton-Pickard studio shutter, yet quite as reliable, and, except for its greater bulk, as convenient. In our opinion, however, this shutter is seen at its best when used upon the hood of the lens, the action of the blind being silent, there being no click and no flap to raise, it is quite possible to photograph even nervous children or alert dogs without attracting their notice. Particulars of most of the shutters mentioned will be found in the current "B.J. Almanac," and it is hoped that this brief resumé of their principal points may aid some of our friends who have to make a selection.

# THE PHOTOGRAPHIC CONVENTION OF THE UNITED KINGDOM.

## THE TWENTY-SIXTH ANNUAL MEETING, AT EXETER, JULY 10-15.

II.

The annual general meeting was not held on Monday night as originally planned, because of the great length and interest of the President's Conversazione programme. On Wednesday morning, when the temptation of the glorious cathedral and the Bishop's garden was very strong, the business was transacted quickly. After some protest against taking the Convention away from the British Isles, it was decided, by a very large majority, to go to Holland next year, and the following council was elected:—

G. W. Atkins, A. C. Baldwin, J. H. Baldock, W. J. Ballard, R. R. Beard, G. E. Brown, F. B. Cattley, E. F. H. Crouch, E. L. Davis, A. H. De'Ath, F. Martin Duncan, W. E. Dunmore, Dr. A. R. F. Evershed, S. H. Fry, T. K. Grant, F. W. Hindley, W. S. Hobson, T. Illingworth, S. G. Kimber, F. J. Mortimer, J. Norval, S. A. Pitcher, Walter F. Potter, Ralph Robinson, P. R. Salmon, F. H. Sanderson, T. Scotton, H. M. Smith, W. H. Smith, Jas. Taylor, F. B. Tompkins, A. J. Tucker, T. C. Turner, J. H. Walker, G. W. Watson, Courtenay Wells, A. Werner, A. W. Westrop, C. Winter, S. H. Wratten. These, with the Secretary (Mr. F. A. Bridge), the President (Mr. J. B. B. Wellington), and the past-Presidents (Messrs. Andrew Pringle, C. H. Bothamley, George Davison, A. Haddon, F. de P. Cembrano, William Crooke, Thomas Bedding, G. Herbert Strutt, E. J. Humphrey, Alfred Watkins, H. Snowden Ward, Godfrey Bingley, Dr. John Joly, Sir Howard Grubb, Sir William Herschel, Sir Robert S. Ball, Sir Robert Pullar, and Sir E. Cecil Hertslet) form the Council, which will proceed to elect a President for next year and make the detailed arrangements for a Convention in Holland.

### The Exhibition.

In the Barnfield Hall the three leading firms of local dealers —J. Hinton Lake, Holman, Ham and Co., and Boots Cash Chemists—had stands for the display of apparatus and materials, with collections that gave a good idea of the enormous variety in modern photographic wares.

The Platinotype Co., as usual, at the Convention, had a large collection of prints on their various papers and fabrics, with Mr. W. H. Smith and his staff of assistants, not only to explain but also to demonstrate the various processes. The illuminated Lumière stand with a large display of modern Autochromes, collections of prints and enlargements on the Wellington and on the Gevaert papers, and a kiosk, at which the "Amateur Photographer" was represented, combined to make up an interesting, varied exhibition.

In the small hall a very creditable exhibition of pictures by Devonshire photographers, was arranged, with some two dozen prints loaned by the President of the Convention, and typical of his work and progress for the past twenty years or so.

Mr. B. Browning, R.N., showed an interesting lot of prints made in the 'sixties, including a group of naval officers, for which thirty seconds was the exposure.

Miss Hare's landscapes included an evening scene with Stone Pines against the sky, treated with good feeling. Miss K. Clarke showed local landscapes and architecture, and Mr. Albert J. Tucker, the local secretary, had varied and very good work dealing with local subjects. Mr. and Mrs. Weaver Baker showed much originality, and their prints attracted a great deal of attention. The joys and sorrows of a party of Pierrot dolls, twelve chapters in the adventures of a kitten, studies of grasses and of flowers, and a few architectural details, all suggested an original point of view, and were well handled.

An effective use of two-colour toning was shown in Mr. Wardle's "Head of a Spaniel," in which the head was toned to a liver-coloured brown, with a slate blue background.

Mr. C. Cole (pictures taken in 1896) and Mr. Tanner dealt with the sea-coast and cottages; and Mr. G. T. Harris's half-dozen evening landscapes with strong clouds dominated the end of the room. Mr. L. Tosswill showed skill in finding a few unusual view-points from which to make attractive views, and other well-represented exhibitors were Mr. Carslake Winter-Wood, the Mayor of Exeter (Mr. A. T. Loram), Dr. Solly, J. C. de Walton Reade, J. W. Lake, and J. Hinton Lake. "Roses," "Portrait," and "Peacock," by Mrs. Marillier, were amongst the best things in the exhibition, and reached a very high standard.

## SOME CURIOUS POINTS IN PHOTOGRAPHY.

(A paper read before the Photographic Convention on July 13, by Mr. Arthur W. Clayden, M.A., Principal of the Royal Albert Memorial College, Exeter.)

When I was honoured by an invitation from your energetic Secretary to read a paper before this year's Convention, I felt that it was no easy task to hit upon a topic which was likely to prove at all interesting to an assembly of experts such as this meeting would produce. Fortunately, however, my study of photography has followed somewhat unusual lines, so that I have been brought into contact with what may well be called some of the bye-ways of the science, lying considerably off the ordinary routes followed by photographers in general. Some of these bye-ways have a peculiar interest in themselves, while others have considerable bearing on the theory and practice of photography, and are not yet matters of common knowledge. I propose, therefore, to-night, to consider several different phenomena, more or less distinct from each other, which have been hit upon by scientific investigation in the course of observations carried out by photographic processes.

I will begin by briefly referring to two methods by which photographs of a kind can be taken without any lens or camera.

The first is exceedingly simple. By it documents, line engravings, and similar objects may be copied. It depends upon the fact that when all parts of a negative have been exposed, if one part has had an appreciably greater exposure than the other, it is possible to so modify development as to exaggerate that difference to almost any extent we please. In the "Comptes Rendus" for April 18, 1911, there appears a paper by G. de Fontenay describing the method and the result of his own experiments and those of others.

The method is this:—A sensitive plate is placed film side downwards on the document, and pressed firmly down so that the contact is everywhere close. Light is then allowed to fall on the plate. The light, of course, passes completely through the film, and, so far as this light is concerned, all parts of the film are similarly exposed. But, after traversing the film, the light is reflected back again from the document. Suppose, now, the descending direct light be represented by the number 100, that reflected from the white paper may be 50, while that from the black writing will be negligible. Consequently the total actinic effect over the paper will be 150, while that over the writing will be little more than 100, and careful development will enable us to emphasise the difference.

In developing it must be remembered that this difference of exposure is greatest on the surface of the film which was in contact with the document, and that the difference is very small in the part of the film in contact with the glass. The negative is therefore apt to be foggy, but the positive obtained from it may be quite good.

M. de Fontenay finds that better results are obtained by employing yellow, or even red, light, with a consequently increased exposure. He also recommends slow plates.

It appears to me that this method is one which deserves to be known, because we can easily conceive occasions upon which it might be desirable to copy some writing or print, and yet find it impossible, for one reason or another, to apply the ordinary method of the camera. The mere use of a slow plate with some opaque paper to do duty for a dark-slide, and it becomes perfectly possible to obtain a photographic copy of the exact size of the original without any need to remove it from any book in which it occurs.

The best results appear to be obtained by using a quick-acting strong developer, and only allowing it to act upon the superficial layer of the film, in which the differential action is most pronounced. If the negative is then washed and fixed before the development has reached the back of the film, a fairly clear, but thin, negative is the result. This can then be built up by using a suitable intensifier.

The next point I come to is one upon which I happened a good many years ago, but which was fully described only so recently as last April in the pages of "Knowledge." In the physical laboratory we have a piece of electrical apparatus called a Tesla Transformer, a device whereby an electric discharge is obtained which has many peculiarities. The discharge is known technically as a High Tension discharge, and one of its most interesting properties is that conductors carrying it are faintly luminous in the dark.

The discharges between the terminals are very beautiful. If, for instance, a metal plate is laid on the table, covered with a sheet of glass, and some coins are placed on the glass, if the metal plate is connected with one terminal while the coins are touched by the other, beautiful radiating coronæ are seen surrounding them.

It occurred to me that if the experiments were performed in an otherwise dark room, and if a photographic plate were substituted for the glass, the radiating discharge should be reproduced on development.

On putting this idea into practice, I was surprised to find the radiating structure of the discharge very perfectly reproduced, and still more astonished to find the modelling of the face of the coin in contact with the film clearly shown in quite small details.

For this method it is desirable that the relief should not be great, as the effect is spoilt by raising the coin only the thickness of a sixpence from the film.

Now, it is not at all certain whether the production of the latent image in this case is an instance of electric action, or whether it is due to a faint luminosity of the coin.

I found that similar pictures had been obtained by Mr. F. E. Smith some years previously, but his method seemed different. He attributed his results to an electric action on the silver salts.

In my own results I am inclined to attribute them not to any electric action on the silver compound, but rather to that luminosity of the conducting substance, to which I have already referred. The density of the electric charge on any conductor of irregular shape varies from place to place, and is greatest where the convexity is sharpest. Hence, also, the discharge from the surface is greatest where the edges or convexities have the shortest radius of curvature. The light is thus manufactured on the surface of the coin in contact with the sensitive film, and is brightest where the discharge is greatest—that is, where the convexities are most pronounced.

As there is some doubt as to how far these pictures are to be regarded as photographs or not, while there is no doubt as to their electrical origin, I have described them as Electrographs. They illustrate several things of interest to the electrician, but to the photographer they are notable only as a peculiar way of securing an action on the photographic film.

I now come to consider some points which have arisen in the astronomical use of photography. The tendency in recent years has been to more and more replace visual observations and measurements at the telescope by more leisurely results obtained from photographic plates. One type of observation is the measurement of the relative brightness of stars by the sizes of their images.

At the focus of a telescope the image of a star is a small round disc, whose size is not determined by the size of the star or its distance, but simply (other things being equal) on its brightness. If the air is still, and the lens is good, this round disc is surrounded by a series of concentric narrow rings of light, which are due to the fact that light is a wave movement—that is to say, they and the disc-like image are a diffraction phenomenon. The curious thing about this is that, for a given star, the larger the aperture of the telescope the smaller is the disc, and the closer and less conspicuous are the rings. But the matter is more complicated by the effect of a prolonged exposure. For a given star the size of its image depends partly upon the length of time the exposure lasts. In the "Astrophysical Journal" for January, 1911, Dr. C. E. K. Mees prints the results of some investigations on this spread of the image under the description of "Photographic Irradiation." Putting it in his words, "the square root of the diameter of the image is proportional to the logarithm of the exposure."

Now, a star is practically a point, and it follows that whatever happens to its image must, under similar circumstances, happen to the image of each constituent point of an extended object. Hence it follows that if we want critical sharpness of detail, we should aim at large aperture and short exposure, or large aperture and a slow plate.

To take an example, it seems that such small markings as the so-called canals of Mars cannot be seen in a telescope of less than eight inches in diameter.

Of course, in ordinary photography such exact precision of detail is even scarcely desirable, and the question of depth of focus becomes more important, but the above considerations must apply in full force to many copying processes.

This phenomenon of irradiation doubtless applies to all cases in which the object is exceedingly brilliant, and it may be lessened by lessening that brilliancy by an absorbent screen, or by photographing a reflected image.

This last device I have often adopted when photographing brilliant clouds. The method serves the purpose of greatly prolonging the exposure, so that it becomes easy to hit that which will just enable you to bring out the difference between the cloud and its luminous background. The use of a black mirror in a similar way renders it easy to get the detail of an extended distant view. Moreover, when placed at the right angle before the lens (it should be so that its surface makes an angle of about 33 deg. with the optic axis), it refuses to reflect light which is polarised in a plane at right angles to that surface. The blue light of the sky can thus be partially quenched. The glare of light from the haze of the atmosphere is similarly diminished, and the light reflected as surface glitter from leaves is also extinguished. Moreover, when sunlight is reflected from water it is partly polarised, almost entirely so at certain angles, and this can be so completely extinguished that it becomes easy to photograph objects which would otherwise be lost in the glare.

But I think the most curious of all photographic phenomena I know are those connected with what is known as the reversal of the image, and I feel convinced that some day or other they will lead to substantial evidence as to the nature of the "latent image." We all know the sub-bromide theory expounded by Sir William Abney, and the oxy-bromide theory discussed by Professor Meldola, but modern investigations into the effects of light on matter are leading rapidly towards another theory in the direction of radio-activity and the liberation of "ions" by the action of light.

The phenomena of reversal are among those which are most difficult to explain by any purely chemical theory, and the more they are known the more they suggest some physical modification of the particles.

Perhaps it is not everyone who knows that mere pressure on the sensitive film leaves a developable mark; a slight abrasion of the gelatine surface develops out as a black line, and many a negative has been spoiled by wiping the plate too vigorously before exposure.

However, to take the phenomena in their proper order, let me first briefly refer to the fact, long known, that unduly long exposure does result in inversions of the normal effect.

In the year 1889 there was some discussion among meteorologists and physicists as to the explanation of certain photographs of lightning flashes which yielded black, or reversed, prints.

I happened to be one of those who got such a photograph. The plate showed symptoms of over-exposure, and I felt sure that in some way that over-exposure accounted for the reversed image of what I had seen as a brilliant flash.

I carried out a long series of experiments in the laboratory, substituting an electric spark for the lightning flash. Plate after plate was exposed to repeated discharges in vain. At last it struck me that the conditions were different. The sparks had only the background of the dark laboratory, while the lightning had a dazzling white cloud behind it. Consequently I put a piece of white cardboard behind the sparks to imitate the cloud, and at once I got reversed images. Wholly reversed if the sparks were small and thin, bright with dark margins if they were more brilliant.

The next step was to separate the two actions by exposing the plate first to the images of sparks, and subsequently to the action of ordinary diffused light. Again reversal was the rule, and it was immaterial whether that diffused light was lamplight, gaslight, daylight, or even that from a series of electric sparks.

Now came the question: Is this action due to the total action of the two exposures (spark image plus diffused light) together bringing the action up to the pitch necessary for ordinary reversal? If so, it should make no difference whether the diffused light came first or second.

On putting this to the test I found the order of the exposures to be all-important. Diffused light first gave no reversal, spark image first always gave reversal. Perhaps the most striking example of this is in a negative in which nothing but spark light was used. I first exposed a plate to the images of some vertical sparks. Then a piece of ground glass was held in front of the lens while a few sparks were passed between the same discharging knobs, and, lastly, the glass was removed, and some horizontal sparks passed. The first sparks are reversed, the last not reversed, where the plate is fogged by the glare through the ground glass.

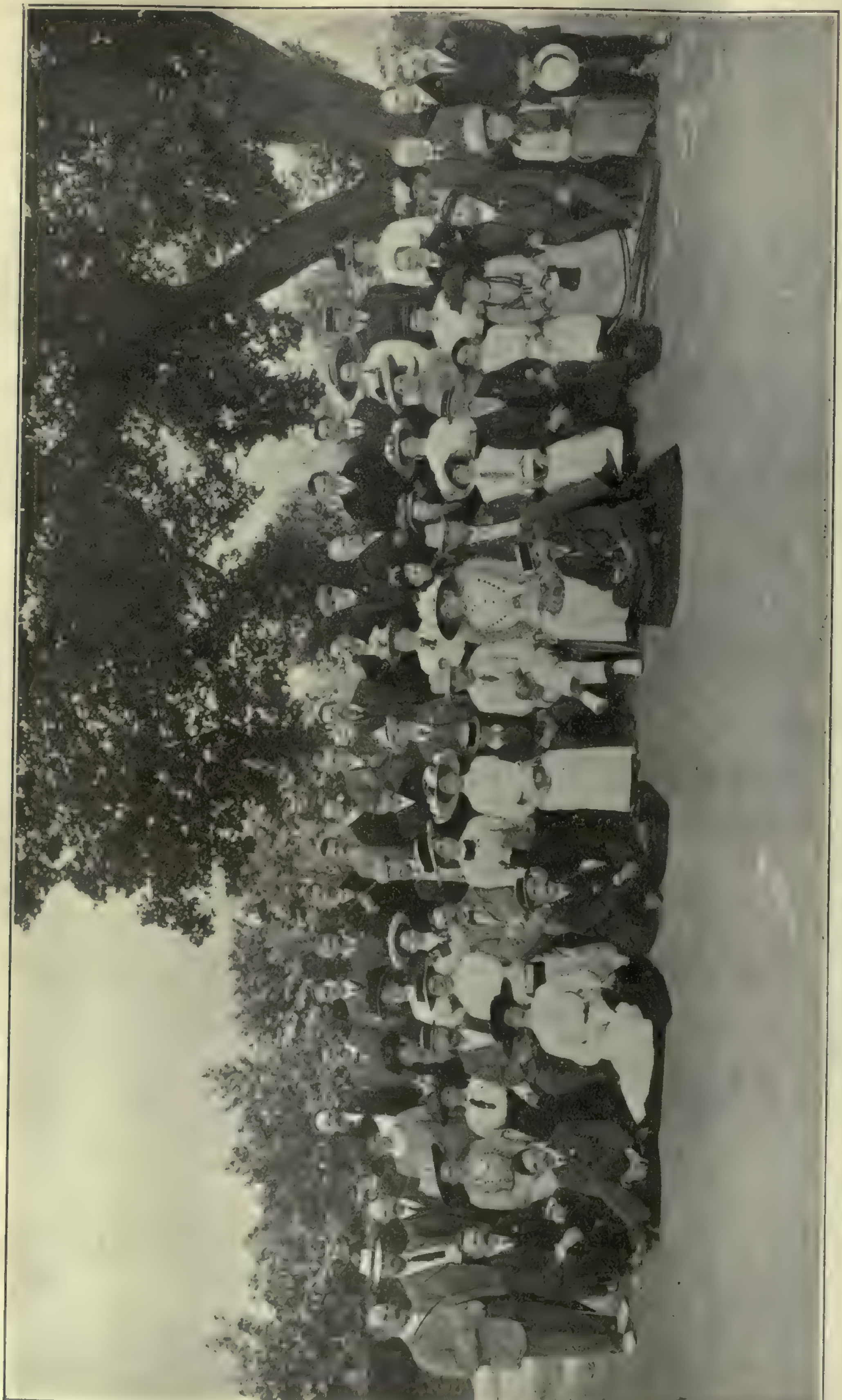
Another question was whether the refrangibility of the light had anything to do with the matter, as it had been shown long previously that the ultra-red rays had the power of reversing the action of the more actinic parts of the spectrum.

To test this I took two plates and exposed one to a large number of spark images, and subsequently to the spectrum for varying lengths of time. In this plate reversal took place, and it was evident that the most complete reversal was effected where the ordinary actinic action was strongest. The second plate was treated in a precisely similar way, except that the order of the two exposures was reversed. It yielded no reversal.

Many other experiments were made, but the result was always the same—namely, that the image of an electric spark can be reversed by *subsequent* action of any form of diffused light, provided that the action of the spark image had not exceeded a certain maximum.

Hence the conclusion was reached that the short exposure to the image of the spark produced a latent image on the film different from that due to the diffused light, though both latent images could be developed.

*Continued on page 551.*



MEMBERS OF THE TWENTY-SIXTH ANNUAL PHOTOGRAPHIC CONVENTION OF THE UNITED KINGDOM.

HELD AT EXETER, JULY 10TH TO 15TH, 1911.

*Henry Greenwood & Co., Publishers,*
*24, Wellington Street, Strand, London.*

Negative by HEATH AND BRADNEE,
235, High Street, Exeter.

*Continued from page 549.*

I tried to get similar results with other short exposures, but could not get satisfactory reversal of any impression but that due to a spark.

These results were published in 1889.

About four years later the matter was taken up by Prof. R. W. Wood in America, and he published a remarkable paper in the "Astrophysical Journal" for June, 1903. In this paper he classified reversals as divisible into five types:—

1. Ordinary over-exposure where the image is reversed if exposed 300 or 400 times too long
2. Reversal by developing the plate in ordinary light.
3. Reversal by exposing the plate to light between developing and fixing.
4. The Clayden effect.
5. Reversal of a previous exposure by a bath of bichromate of potash and nitric acid.

The effect I had discovered he showed was limited to cases in which the previous exposure had been less than 1-1,000th of a second, and he verified my result that the reversing light must be equal in actinic power to the light of the original image. He described these short exposures as "light-shock."

Prof. Wood went further. He experimented with pressure marks, and Röntgen rays, and found that it was possible to arrange the four causes of action in a series thus:—

Pressure marks, Röntgen rays, light-shock, and diffused light, so that if a latent image is impressed by any one of them it can be reversed by the subsequent action of any one higher in the series, but in no circumstances by one earlier in the list.

In January, 1904, Mr S. Skinner, at Cambridge, added the action of radium to the list and showed that it could reverse spark images, while, in itself, reversible by diffused light.

In November, 1909, Mr. H. J. Channon, in the "Photographic Journal," drew attention to the reversibility of the effect of X-rays by diffused light, and stated that if a plate is first exposed to X-rays, and then in the camera, it will develop as a positive rather than a negative.

Still one final "curiosity." Mr. E. S. King, in a paper read before the Astrophysical Society of America, publishes some results in connection with Astronomical photography among which he states:—

1. That a photographic plate is more sensitive when cold than when warm.
2. That dampness, even humidity in the air, materially lessens the sensitiveness.

ARTHUR W. CLAYDEN.

## A NEW SILVER INTENSIFIER.

(A paper read at the Photographic Convention on July 13 by the President, Mr. J. B. B. Wellington.)

THE ideal method of strengthening a developed silver image would seem to be by the deposition of metallic silver upon it from a solution of a silver salt, much in the same way as a wet negative on a wet collodion plate is intensified. As many of us know, the silver intensification of a wet plate is about as perfect a process as any we have in photographic chemistry, but since the introduction of gelatine as the vehicle in place of collodion, silver has not been much employed as an intensifier.

I do not intend to enter into the various methods of intensification that have been advocated since the early days of the gelatine dry-plate. There have been very many, most of them containing mercury in some form or other, and of the vast multitude probably the best and most scientific is that one advocated by Mr. Chapman Jones, in which, after bleaching with mercury, the plate is darkened in a ferrous oxalate developer. It is my province this evening to deal with the building up of the image by the deposition of silver upon it, the method being that given in my original formula, containing sulphocyanide and hypo. One of the most admirable qualities of this method is that it retains the same ratio of gradation which existed in the original negative. In certain cases, where it is necessary to obtain very great contrast, it may be found useful to employ one of the other methods, though I hope, later on, to show that even with the silver intensifier it is possible to alter the ratio of gradation, when it seems necessary to do so.

Although the silver intensifier with sulphocyanide and hypo has been published for some twenty years, and has proved satisfactory in the hands of a few, for one reason or another it has never taken a strong footing amongst the many. There are one or two reasons for this. In the first place, it was found that the action of the sulphocyanide so softened the gelatine that with some plates it actually dissolved the film. Then again, staining took place so badly with it at times that when intensification was carried to an extreme limit, so intense was the dichroic fog produced that its red stain in the clear portions was even more intense than the deposited silver. If these faults could not be remedied, so that the process could be worked with certainty, it was of no value for everyday use.

It is a curious fact, that with some emulsions there is no trouble from staining. Whatever the reason, we know so little of the complications that occur between the organic developer, the silver, and the gelatine, that it would be futile on my part to discuss the theory of it.

I may say, however, that I have noticed that with some formulæ for emulsion making, used under certain conditions, green fog is liable to be produced if pyro and ammonia is employed for development; and that the same thing occurs with my silver intensifier, with pyro and ammonia, or even if other alkalies are used in place of the ammonia. This points to the fact that there is some compound formed between the silver and gelatine.

Mr. Blake Smith two years ago published various formulæ for the clean working of silver intensification, as well as for getting rid of what he called "resin stain" of the developer. These methods were admirable in their way, from a chemical point of view, but the many manipulations required quite put it outside everyday use.

I felt so convinced that the sulphocyanide of silver intensifier was capable of good results that I determined to try to make it practically usable under all conditions; and I hope to prove to you this evening that I have done so. The whole secret lies in a nutshell. We must first attack the invisible compound of silver and gelatine which causes the stains. There are several reagents capable of doing this; copper chloride, potassium ferricyanide, acid bichromate being amongst the most successful I have tried, the latter being perhaps the most reliable of all, an immersion of the negative to be intensified for one minute in a very weak solution, followed by a two or three minutes' washing before it is placed in the silver solution, being quite sufficient to prevent all signs of staining.

The practical details are as follows: In the first place, it is very necessary to harden the film. A bath of formalin is therefore used, so that the plate will withstand the softening action of the sulphocyanide. A soaking in a bath of one part of formalin to ten parts of water, for five minutes, is sufficient. This bath may be kept as a stock solution, and used over and over again. After a few minutes' rinsing, the negative is placed in either of the following for exactly one minute, the bichromate being recommended by preference:

| | |
|---|---|
| Potassium ferricyanide | 20 grs. |
| Potassium bromide | 20 grs. |
| Water | 20 ozs. |

or

| | |
|---|---|
| Potassium bichromate | 1 gr. |
| Potassium bromide | 20 grs. |
| Hydrochloric acid | 60 minims. |
| Water | 20 ozs. |

Too long an immersion in either of these baths causes the image to bleach, which we wish to avoid, if we desire to retain the original gradation. In the time prescribed, there is little apparent change; but the reducing agent has done its work, and after a few minutes' rinsing the negative is ready for the intensifying solution.

The intensifier may be kept in the form of two stock solutions, which will keep good for years.

| | |
|---|---|
| A.—Silver nitrate | 800 grs. |
| Water (distilled) up to | 20 ozs. |
| B.—Potassium sulphocyanide | 1,400 grs. |
| Sodium hyposulphite | 1,400 grs. |
| Water up to | 20 ozs. |

Half an ounce of B is taken, and to it is added half an ounce of A, stirring vigorously with a glass rod. The result should be a clear solution; if the stirring is omitted it is apt to be turbid. To this is added one dram of a 10 per cent. solution of pyro preserved with sulphite, and two drams of 10 per cent. ammonia. The negative is laid in a chemically clean dish, and the silver solution poured over it. The deposition of the silver begins to take place in a minute or two, and the image gradually gains in strength. As soon as sufficient density is acquired, the negative is placed in an acid fixing bath, until the slight pyro stain is removed, and is then well washed, as usual. It is well to rub the surface of the film with a tuft of cotton wool at some time during the washing, to remove a slight surface deposit which will be found upon it.

There is one thing upon which I must lay stress, and that is that the negative to be intensified must have been thoroughly fixed in a clean, fresh hypo bath, and not merely have been left for some indefinite period in a stale or dirty solution of hypo that has been used on other occasions. This is important, but is a point on which I am afraid a good many photographers are apt to be careless.

So far, the process, as described, does not alter the density ratios, merely increasing the vigour of the image proportionally right through. If, however, the original negative is flat from over-exposure, we may get greater contrast by carrying the intensification rather far, and then reducing with the ferricyanide and hypo reducer. Or we may allow the negative to remain in the clearing bath for a considerably longer time, until a decided bleaching action is visible. This bleached image is partially soluble in the silver solution, and so a portion will be dissolved, whilst the alkaline pyro will reduce the remainder. This treatment is on the whole not really satisfactory; so that I prefer to treat the intensified image, which, by the way, should be a trifle overdone, with the Howard Farmer reducer, as just described.

In a similar way we have it in our power to make a hard negative flatter or softer, by employing ammonium persulphate, this salt (in contra-distinction to the ferricyanide) attacking the denser deposit first.

I need not point out the obvious advantage of being able to watch the growth in the density of the image, and to be able to stop it at the desired moment, which we have in this method. Moreover, the result is permanent.

It is not an everyday occurrence that a negative requires strengthening, but when the necessity does occur, with the stock solutions at hand, it is only the matter of a very few minutes to remedy it, and the work may be done on the lines I have indicated, with the certainty that the solutions used have not deteriorated, and that the work can be done without any risk of a hitch, or of failure from staining, or from any cause whatever.

J. B. B. Wellington.

## NIGHT PHOTOGRAPHY AND HOW IT IS DONE.

(A paper by Messrs. J. Keane and S. J. Taylor, read by Mr. J. Keane at the Photographic Convention on July 14.)

I was somewhat surprised to learn from Mr. Bridge some time ago that the subject of to-night's paper has never been dealt with at a Convention meeting. Perhaps no one has been found with sufficient hardihood to stand before you and talk about a branch of photography that has little to recommend it in the way of novelty, a branch of photography moreover which, as you all know, is full of pitfalls and presents many obstacles to success. If when my collaborator and I started to prepare this paper we were eager and determined to overcome all difficulties and brush them aside, I beg you to believe that long before our task was finished we had learned to have a very great respect for those difficulties and to exercise much caution to overcome them. As you may easily imagine, it is not possible in dealing with night subjects to get what photographers call "a cocoanut" every time a plate is exposed, and we must be prepared for a certain number of negatives that refuse to yield up all the charm and gradation and mysterious elusiveness that we expected of them. It seems to us, therefore, that it would not be fair to put before you successful pictures only and say "this is night photography," but that examples of our failures (of which we had many to choose from) as well as our successes should also be shown, and the sub-title of our paper might well have been "How *not* to do it," but that would have involved contradicting the Convention Secretary, and that is a dangerous thing to do!

Now, although there is nothing new about the subject we have chosen for our lecture to-night (for years past we have all been familiar with the photographic print purporting to represent a night scene of some sort or another), yet it is only comparatively recently that any serious attempt has been made to extend the possibilities of this branch of the photographer's art; and we trust, therefore, that it may come as a fresh thing, even to those of you who were exposing plates and mixing developers when we were playing marbles or making night hideous instead of beautiful, as we have been lately trying to do with such success as you shall presently judge.

Our title, "Night Photography," is a wide one, and it occurs to us that although we intended it to mean landscape and outdoor photography by night, some may be expecting a dissertation upon astronomical research or flashlight photography perhaps. Some of you, maybe, spend chilly nights perched on the roofs of your houses with telescope and camera, recording the position of stars and discovering comets. For the present, although we have been out on decidedly chilly nights, this department is outside our subject, and we shall aim more particularly at showing the pictorial possibilities of night work, and shall set forth the pleasures and difficulties of what we have heard an intelligent onlooker describe as "tikin snapshots in the dark."

Early attempts at night photography were usually fakes pure and simple, if there is such a thing as a pure and simple fake. The camera was directed towards the sun, when he had conveniently retired behind a cloud, as he has rather a habit of doing. The resulting negative, purposely under-exposed to simulate the effect of night, was heavily printed in blue and presented as a moonlight or night "study," although there was generally something which gave it away; and it would be hard nowadays to deceive anybody—except a judge—by such transparent trickery.

Since those days, help from many quarters has been extended to the camera user, especially by the plate-maker and the optician. The former has given us plates of greatly increased speed and colour-sensitiveness, and the latter has steadily eliminated the faults of his earlier products, increasing their working aperture, improving their definition, and rendering possible many feats which in olden days would have been considered hopelessly out of the range of practical photography. We are no longer limited to such night subjects as the flaring gin palace, or the firework display at Brock's Benefit; with our yellow- and red-sensitive plates and our lenses working at apertures from $f/2.2$ downwards, we can even include moving figures in our night exposures, with shutter speeds as rapid as half, or even a quarter, of a second.

Feats of this kind naturally call for extremely large aperture lenses, and although we shall show you one or two such pictures, we must confess that we have not been able to equal the results obtained by Mr. Harry Wild, whose articles on the subject in the photographic papers will be familiar to most of you. But there is no need for the possessor of an ordinary Rectilinear lens to be discouraged because these short exposures are impracticable for him; there is plenty of work to be done with an $f/8$ lens, and the exposure in most cases need not be outrageously long, although the photographer may have to exercise a certain amount of patience.

It would be possible, we suppose, to print in figures in a night picture, but the process would be a very difficult one, and would call for a considerable amount of faking to get the lighting right; and very likely the results would not be worth the trouble. But all the pictures we shall show to-night are perfectly bonâ-fide ones, and in each case we shall name the plate and the exposure. The aperture in most cases was $f/4.5$, and when we say nothing to the contrary, this must be understood; those who wish to take notes for their own guidance should double the figures for $f/6$, or quadruple them for $f/8$.

If figures are to be included in the photograph, i.e., if we consider the presence of one or more figures is really necessary, we must either select a well-lighted scene where exposure may be cut down and wait for the crowd to arrange itself to our satisfaction, or we must engage the services of a model.

We must give some credit for the success with which short exposures are given to the enormous power of modern gas and electric lighting, as compared with the old-fashioned open gas jet and paraffin burner; the streets of our towns are mostly lighted by either inverted incandescents or powerful arc-lamps, and the actinic value of these, when several are grouped together, is very great indeed, provided orthochromatic or panchromatic plates are employed. We think the so-called "Ordinary" plate may be ruled out of consideration for this work, for the man who attempts to use it is handicapping himself to an enormous extent, by losing the whole effect of the red and green rays in which artificial light is so disproportionately rich. H. and D. numbers are of small value as guides to exposure for night work, even if plate-makers could be depended on to state them with some degree of uniformity; the slow ortho plate may prove much superior to the ultra-rapid "Ordinary" when we come to deal with artificial light, and we have therefore wasted no time in experimenting with any but orthochromatic plates. Film users will, of course, employ their favourite negative medium, but here again we fancy they are handicapping themselves; for it is said, and we believe it to be a fact, that the same emulsion, coated on a glass plate and on a celluloid film, will be considerably faster on the former than on the latter. Films may offer some advantages in regard to the avoidance of halation, as to which we may have more to say later on; but speed is really the main consideration, when exposure is a matter of minutes, instead of seconds only.

As to the make of plate we prefer, it is perhaps a little invidious to mention names; but we have used Imperial Special Sensitive Ortho., Wratten Panchromatic, and Barnet Super Speed Ortho. with satisfaction; and, despite the fact that the H. and D. numbers, as marked on the box, range from 400 down to 120, we have found no appreciable difference in actual work. The plates, it is unnecessary to remark, were always backed.

We may remark also that terrific speed is obtained by colour-sensitising one's own plates and using them within a day or so, for they will not keep longer, but this is really outside the range of possibility for most amateurs.

Now as to apparatus. We do not suppose that anybody is going to scrap whatever apparatus he has and invest in new expressly for night work, nor is there any reason why he should do so. It is true that our negatives were mostly made with reflex cameras, but the reflex offers very little advantage over other patterns, and has certain drawbacks. As a matter of fact, the difficulty of holding the camera steady whilst quantities of mechanism are disporting themselves inside renders the reflex rather an unwieldy instrument for handwork at night; but if we use a tripod, which is eminently advisable, it is convenient to be able to plant it down anywhere, with the camera extended and dark slide already drawn, focus, and expose without delay, and before we have attracted the attention of passers-by. Under any other circumstances than these the ordinary small "hand-or-stand" type is quite as useful; and if the circumstances are such as to justify an exposure of a second or less, it may be used in steady hands—the hands of a teetotaller for preference—without any outside support. A focal-plane shutter is no advantage; it will seldom work at a slow enough speed, and the size and weight of the moving parts is a disadvantage and tends to vibration; we should much prefer a between-lens shutter of the Unicum type, with an air-brake, admitting of exposure up to a second by a single finger-pressure. Bulb exposures might perhaps be managed with roller-blind shutter, but this would need a steady hand indeed, for the movement of the working parts would produce more vibration and more shock than with the light vulcanite leaves of the Unicum pattern.

Still, any camera may be used successfully, with certain reservations as to the kind of subject which it is possible to tackle. We may say that the only essentials are a steady tripod, a lens not slower than $f/8$, and, most necessary of all, an abundant stock of patience on the part of the worker; patience with the selection of subject and view-point, patience with the exposure, and most difficult of all to acquire, patience with the vagaries of the English climate.

We may lay it down that the smaller the camera the greater are the chances of success; for focussing is a difficult matter at night, and if we can employ a short-focus lens, the need for extreme accuracy is much less pronounced; for, of course, everybody knows that, at a given aperture, the short-focus lens possesses greater depth of field than the long-focus. We are in practice obliged to compromise between rapidity and depth of field; we can obtain a 4½- or 5-inch lens which covers a quarter-plate at $f/6$, but if we desire to use an aperture of $f/4.5$ we immediately find that the shortest focus practicable is something like six inches, and much greater care will be necessary in estimating distances with the larger aperture and greater focal length. There is one lens which is claimed to cover a quarter-plate with a focus of only 4¾ inches at $f/4.5$—the Beck Isostigmar—but how far this claim is borne out in practice we cannot say from experience. If it actually does what is stated it should be an invaluable lens for those who require great rapidity combined with depth of field. The Cooke lens also covers a quarter-plate at 5in. focus.

J. Keane.
S. J. Taylor.

*(To be continued.)*

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Eastman Kodak Company.—The directors of the Eastman Kodak Company, of New Jersey, have declared an extra dividend of 5 per cent. upon the common stock of the company, payable on September 1, to stockholders of record at the close of business on July 31. The usual quarterly dividends will be paid on October 2.

# A NEW METHOD OF DEVELOPING BROMIDE PRINTS OF LARGE SIZE.

[Mr. F. D. Maisch, head of the photographic department of the Philadelphia Museums, describes, in the following article from the "Photographic Times," the method devised by him for handling such large bromide enlargements as those 24 x 70 during development, fixing, and washing. He uses a fairly light framework of quarter-inch pine as a support for the wet prints.—Eds. "B.J."]

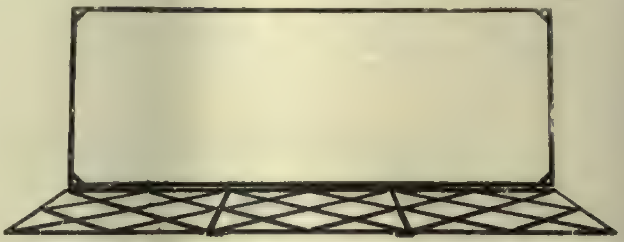
In a recent issue of the "Photographic Times," the writer described the making of some two feet by six feet bromide prints. A tray measuring twenty-five inches by forty inches was used for developing and fixing, necessitating drawing the print back and forth through the eighteen quarts of solution. It was at best a makeshift arrangement, using apparatus which happened to be on hand, nor could any part of the developer be saved. It was necessary to throw it into the sink to make way for the acid short-stop or the rinsing and fixing. The time of two men was required, and the paper had to be cut several inches longer at either end to serve as finger hold. All this was waste which at first it did not seem possible to avoid. Besides all this, the print was washed in a porcelain sink, which, although large enough to accommodate 400 or 500 9 x 7 Velox prints, still required the constant attention of one man during the hour's washing, carefully folding and turning it over. On account of folding the print during the washing, blisters occasionally formed, and more waste time was required for their removal. To do this the paper underlying the blisters is freely punctured with a pin, the print then laid face up on a table, excess water blotted off, and the blisters frequently treated with alcohol by means of a tuft of absorbent cotton. With due care and unlimited patience the blisters will disappear. The method finally adopted for developing, fixing, and washing eliminates every one of these objections.

Three tanks were built, two inches wide, seventy-five inches long, and thirty inches deep, inside measure; good quality white pine one and one-half inch thick was used throughout. Two coats of "Probus" were put on all lumber before joining and bolting together. Two of these tanks are mounted on castors, which are fastened into six-inch extensions at either end of the tanks. The third tank is raised about three feet from the floor and attached to the waste pipe. A valve in the waste pipe allows the operator to empty the tank or keep it full at will. A swinging arm fitted with a spigot and attached to the water supply pipe just clears the top of the tank.

The first tank described contains the developer, the second the fixing bath, and the last, the one attached to the drain, is used for the acid short-stop and the final washing. These tanks probably appear like heavy artillery to the photographer accustomed only to tray development, but the conveniences and economies described later on will probably prove to him that they are at least serviceable.

Before making the exposure the tanks are filled with the solutions, which is quite an operation in itself, their capacity being twenty and one-half gallons. The developing tank is placed along one side of the dark-room opposite to the short-stop and washing tank. The fixing tank is immediately in front and below the washing tank. The dark-room is just wide enough to swing the print from one side of the room to the other. A short step ladder is necessary to reach the top of the washing tank.

It is certainly impossible to lower an unprotected sheet of paper into a tank of this kind, but if the paper is firmly clamped between two frames of equal size, it is not only practicable but is decidedly easy to manipulate. The illustration gives an idea of the construction of these frames. Carefully selected white pine one-quarter inch thick was used and accurately joined, the two frames then hinged together. A line of pins running around the lower frame, which is the same width as the paper, twenty-seven inches, serves to keep this in position. The end of the roll of paper is placed flush with the end of the lower frame, the paper unrolled, and the upper frame closed down with the paper between the two. They are then fastened together with the little brass hooks shown in the illustration. The paper is then cut from the roll with a sharp knife. Exposure, developing, fixing, and washing are all carried on without removing the paper from the frame, the progress of development being observed by raising and lowering the frame. Two hand-holds will be noticed on the side of the frame. It is almost impossible to dip a light frame of this kind into a thirty-inch-deep solution and prevent its coming into contact with the sides of the tank. Once it does this, considerable pressure must be used to overcome the capillary attraction which immediately asserts itself. Clamps of spring brass attached at either end of the lower side of the frame and extending half an inch from the front and back, avert this difficulty.



By the use of this contrivance the paper can be cut, at the start, to the exact size of the finished picture, the margin covered by it being of practically the same width as the rabbet of the picture frame. The paper, of course, stretches and buckles as soon as it is wetted, but not sufficiently to mar the print in any way. The entire operation is about as simple and easy of accomplishment as the making of a 16 x 20 enlargement.

Now as to the economies effected. After the paper has been placed in the frame, the entire operation requires the time of one man only. Even the washing requires no attention—a weight is placed on the top of the frame to prevent its rising out of the water, the valve in the drain pipe is opened, and the print left undisturbed for an hour. The frame is then taken out, laid on a table, the print removed and hung on a line by means of photo-clips.

Another economy is the saving of the developer, which will remain good and thoroughly active for a considerable length of time, if the tank is kept covered, the quantity being sufficient for quite a number of such prints. The developer can also be pumped out and filled into bottles and used for developing-out paper, the normal strength for Royal Bromide being the same as that for Special Velox. The fixing bath will keep indefinitely.

When not in use the tanks are placed side by side and covered with nicely joined, planed boards, furnishing a table measuring three feet by seven and one-half feet. This table top is also used for copying purposes supporting plans and maps of large size.

An amplification of this method was used by Mr. William H. Rau in developing his magnificent and immense transparencies about to be installed in the Pennsylvania Railroad Station in New York.

On account of the great weight of the glass, Mr. Rau found it necessary to construct a system of pulleys and counter balancing weights to raise and lower the transparencies during development. The carrier for the plate was of metal heavily padded with rubber.

When the magnificent Pennsylvania Railroad Station in New York was finished, it was found that it would be necessary to include in the Dining Room and Buffet two of the stores that fronted the Arcade. This left an unfinished effect, which Messrs. Geo. W. Boyd and F. N. Barksdale, of the Passenger Department, decided could be used to advantage by illustrating in colour, on large sheets of plate glass, the scenery of the line, and two of its most famous trains, the "Pennsylvania 18 hour limited" and the "St. Louis limited." One of these, the "18 hour limited," taken on the New York Division, going at the full speed of 70 miles an hour with a steam engine; and the other, the "St. Louis limited," taken at the speed of 35 miles an hour, pulled by one of the new double electrics, approaching the Manhattan Transfer.

The views represent the most beautiful scenes along the line, and were painted by a specialist, Mr. G. Hamner Croughton, who was brought to this city from Rochester for this purpose.

Owing to the great size of these plates, it was found necessary to build special tanks with counter-balancing arrangements for lowering the plates into the solutions for developing, fixing, etc., as it would be a sad commentary on good photography to have these plates discoloured after a short time, which would be the case if they were not thoroughly handled chemically, which was only possible by the special methods employed. Of course, plate glass was used, and the plans for the dividing up of the various sections were approved by the Architects of the Station, Messrs. McKim, Mead, and White.

The electricians of the Pennsylvania Railroad have planned a method of indirect lighting which illuminates them perfectly, notwithstanding their enormous size. The section now on view, one of twelve, will be placed immediately over the door, and on each side of the door will be placed the announcement of the Passenger Department in reference to their limited and express trains.

Fred. D. Maisch.

# THE TECHNIQUE OF THE TANK.

[In a recent issue of the "Camera," Mr. C. H. Claudy, who has been a most consistent user and advocate of tank development, deals with the methods of using the tank. His article, which we print below in a slightly abridged form, is prompted by a number of queries addressed to the writer by readers of our contemporary.—Eds., "B.J."]

One letter says, speaking of some of my stories in these columns, "Mr. Claudy has, on several occasions, mentioned the words 'normal development.' I would like him to tell me why there is more than one kind of development when using the tank, and how to select the different kinds of negatives for different development." Presumably, my correspondent means "how to select the different kind of plates, or exposures," since one does not develop a negative, but an exposed plate, thus making it a negative.

Normal development, as I use the term, is that process of acting upon the light-affected emulsion of a plate or film, by a developing agent, which will produce a negative from a perfect exposure in which the deepest shadow has details, and the highest high-light has details; it is that development, in other words, which yields a negative from a perfect exposure which will make the most truthful possible print, compared to the original scene, in point of tonal values

Lest this seem too technical, let us take a concrete example. The example is a white house, with green shutters, a red chimney, green trees on the lawn, a yellow fence, and brown clay road leading up to it. The time is mid-afternoon, the sky clear. In the middle of May, with the average speedy plate, an exposure of one-twentieth of a second at a stop of f8 or U.S. 4 will, with normal development, yield a good, plucky, printable negative—we will assume it to be a perfect exposure for the sake of argument. Now, an exposure of one two-hundredth of a second at the same stop will yield a printable negative, and an exposure of one-fourth of a second will do likewise. If all the negatives are developed together in a tank for that period of time, with the developer and at the temperature which will yield the best possible negative from the perfect exposure, all of the plates will have had a normal development. The one two-hundredth of a second plate will be very thin, and the one-fourth of a second plate will be thick, but they will have had a normal development.

The old hand-way of developing would have kept the under-exposure in the developer until the high lights were as dense as those in the normally developed, normally exposed negative. The result would have been accomplished by keeping the plate in the developer two to three times the time of normal development. The prints from this negative would have been of such violent contrasts that the picture would be utterly untruthful.

The old hand-way of developing would have taken the over-exposure out of the development as soon as the high lights had attained the density of those in the normally developed, normally exposed plate. The result would have been accomplished by taking the over-exposed plate out in from one-third to one-half of the time of development given the normally exposed plate.

The tank keeps them all in the same length of time. The result is a thin plate, without much details in the shadows, to be sure, but printable high lights, in the case of the under-exposure, and a thick plate, which takes a long time to print, in the case of the over-exposure. But the print from the normally developed under-exposure is much more truthful—i.e., much more like the original, in Nature, than it would be had development been prolonged. And the print from the thick negative is very truthful indeed—the negative has plenty of contrast—which was a feature of the original scene—but it has details in both shadows and high lights. Had it been taken out in half the normal time of development it would have had the details, to be sure, but not the contrast—it would not, then, have produced a normal, truthful print.

Now, there are times when you want a print which isn't truthful. It is not always possible to make a perfect exposure —let alone easy to do. When it is impossible, what you want to get from your improperly exposed negative is a good presentable print—whether it is actually as near the truth of the original as possible or not, matters less than whether it is a good looking print or not. As an illustration, take a man playing tennis on a green court, marked in white, against a background of green trees. He is dressed in white. To stop the motion of the racket and ball, you give, let us say, the five-hundredth part of a second with a focal plane shutter at a stop of f6.3. The result is a plate which is under-exposed. If you develop it normally, you will get detail in rather thin high lights, but no density or detail in the green grass or trees. The print will be as truthful as it could be, from such an exposure, but it won't be a good photograph or a pleasant one to look at. But if you give that negative double the normal development, force it, in other words, you will get some detail in your shadows, but at the expense of all details in the white clothes. At the same time, your man will have a white face, and not a black one, as he would in an under-exposed negative not forced in development. Now, the print resulting from the forced negative will be untruthful. There will be little or no detail in the white clothes, but the white lines of the court will be strongly marked on the grass, which will show some detail. The result will be much more presentable than that you could obtain any other way. The deeper shadows will be without detail, to be sure, and the result hard and contrasty, but it will be a print you can show and say "I made it," without shame. Conditions were too much for you and your lens, you had to under-expose.

Therefore, for under-exposed plates of action pictures, where pluckiness and contrast are less objectionable than weakness and truth, you should increase the tank time over that of normal development.

On the contrary, it not infrequently occurs that you wish to decrease the contrasts in a scene you want to photograph. You think it would look better or prettier if Nature had left out some of her contrasting paints. The way to decrease contrast is to over-expose and under-develop. Therefore, if you have a portrait of a girl to make, and she insists in posing in a white gown, with a red ribbon in blonde hair, against a green bush, and you want detail in gown, hair, ribbon, and bush, the thing for you to do is to deliberately, of malice aforethought, over-expose. Over-expose roundly—three to four times what you would ordinarily give in that light to a more quietly dressed subject. Then cut the normal tank time in half or thirds. The negative will be flat, with comparatively little contrast. It won't be truthful. The original was contrasty. But the print will be more to your satisfaction, perhaps, than the print of a normally developed, normal exposure.

Therefore, for over-exposed plates, which have been purposely so made and with the idea of reducing contrast in the original, you should give less than the normal time in the tank—decrease the time of normal development.

Now, note this well; nothing in the foregoing is to be taken to mean that the time of development on negatives made in the tank with a normal solution (one perfectly balanced in constituents), acting at normal temperature (65 degrees), should be altered for the improvement of results, when the correctness or incorrectness of the exposures are unknown, or if known, have been given wrongly by mistake.

The tank development for a normal time, with normal solution at normal temperature, will give you the best possible (i.e., most truthful) result on all plates, all kinds of exposure. You cannot improve results by juggling with the time of development, unless you are seeking some special result, and can, therefore, regard its attainment as an improvement.

For all average or "normal" work, don't juggle the tank. Put your day's run of negatives in, see that your solution is of proper temperature, after it is in the tank, that your chemicals are all dissolved and that you reverse the tank regularly, and at the end of the normal time you will find that good under-exposures and over-exposures have been developed better—more truthfully—than you could possibly do it by hand. Your under-exposures will not have been forced, your over-exposures will have been given enough development to bring out the necessary contrast, and all your plates will have all the detail the exposure allowed without a blocking up of high lights or the coarse grain of a development with too strong a solution. Your constant reversal of the tank, whether film or plate, will have prevented "drifting" of the image, a phenomenon which takes place at times on contrasty negatives with pyro for a developer, and will have seen to it that the solution does not settle and so act on the sensitive emulsion unevenly. And no juggling the time can improve on normal development, except as noted—with a special, known exposure, and a special planned result in mind, when less than normal or more than normal development will yield those special results.

Trust your tank. Learn to use it properly and then mix your developer with faith. The pernicious practice of taking the cover off the tank and examining the plates every few minutes "to see how they are getting along," is enough to ruin a good batch of plates. Two of the great advantages of the tank—absolutely unfogged and unscratched negatives—are thereby nullified. Moreover, constant "monkeying" with a tank full of negatives will tend to oxidise the developer, will tend to cool or heat it, according to the outside temperature, and, on all grounds, is to be decried.

The technique of the tank is simplicity itself—"follow directions and leave it alone" comprise it. All the more reason, then, for not attempting to improve on what is already simplicity itself—leave the tank alone and let it work!

And, save for the special result, the increased printing density and contrast of a known under-exposure, or to decrease contrast and printing density of a known over-exposure, do not attempt to juggle the time of development. Normal development, in a normal solution, at the normal temperature, form the best possible set of factors for the production of normal negatives from any exposures within the range of the latitude of the plate or film you are using. C. H. CLAUDY.

# EXPERIMENTS ON SOLARISATION.—II.

(A Paper in the "Journal of Physical Chemistry.")

THE following work was undertaken in order to account for the remaining doubtful points in regard to the whole subject of solarisation. [See two previous papers in "B.J.," June 23 and 30.] This represents a continuation of the previous work, and the same stock developer was utilised.

| Solution A. | | Solution B. | |
|---|---|---|---|
| Water | 1,000 gms. | Water | 1,000 gms. |
| Soda sulphite anhydrous | 126 gms. | Soda carbonate anhydrous | 252 gms. |
| Hydroquinone | 21 gms | | |

Homolka[1] cites a very interesting case where an exposed plate previously immersed in a dilute solution of stannous chloride yielded only a black silver image upon development with indoxyl, and no indigo image. With an ordinary exposure to light he was able to develop the latent image on the silver bromide gelatine by means of indoxyl. Both a silver and an indigo image were obtained. Such a difference between the action of stannous chloride and that of light seemed to warrant a more careful study.

Accordingly a solution of indoxyl was made by the method of Heumann and Bachofen,[2] fusing indigo at 110° C with pure caustic potash in an atmosphere of nitrogen. The fusion was prolonged until the blue indigo colour had disappeared and the melt had assumed an orange-red colour. The crystals thus obtained dissolve in water forming a yellow-green solution. During the whole operation much care must be taken in order to exclude air. An indoxyl developer of the following type was made:—

| | |
|---|---|
| Indoxyl | 2.0 gms. |
| Soda sulphite anhydrous | 8.0 gms. |
| Potass. bromide | 0.5 gms. |
| Water | 100.0 gms. |

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[1] Eder's "Jahrbuch der Photographie," 21, 58 (1907).

[2] Ber. chem. Ges. Berlin, 26, 225 (1893).

Plates were immersed in a solution of stannous chloride for varying intervals of time, and after a thorough washing were developed in the indoxyl developer. In Table I.: are tabulated the best data:—

Table I.

| Number. | Stannous chloride solution. | Immersion. | After treatment with KCN. |
|---|---|---|---|
| 1 | 25 g. in 100 cc. water | 4 hours | blackish |
| 2 | ,, | 1 hour | bright pink |
| 3 | ,, | 30 min. | light pink |
| 4 | ,, | 10 min. | blackish |
| 5 | ,, | 1 min. | dark pink |
| 6 | ,, | 10 sec. | pinkish blue |

After development with indoxyl the plates were fixed, and then treated with potassium cyanide solution for the same length of time. Due to the excess of silver in Nos. 1 and 4 the image remained black; however, if all the silver was dissolved by means of the cyanide in sufficient quantities a pink rather than blue image was found to be present. It is now easy to explain why Homolka failed to obtain anything but a dark silver image with his experiments on stannous chloride. The effect of a solution of varying concentration of stannous chloride upon a photographic plate is analogous to that of light. With increasing concentration of stannous chloride the silver bromide is reduced to a substance lower in bromine. Upon development with indoxyl, less indoxyl is oxidised for the higher concentration of stannous chloride, and accordingly there is a silver image much more dense than the indigo one. This excess of silver then masked the indigo image. When the latent image is developed by indoxyl we have a reduction to metallic silver, but, at the same time, the indoxyl is oxidised to the blue indigo. Hence it is perfectly easy to see the error caused by the masking effect.

### Effect of Stannous Chloride.

It seemed advisable to determine the effect of some of our weaker reducing agents upon a silver bromide plate. A standard solution containing 0.6 gram of stannous chloride per litre was first employed. Bromide plates were immersed in varying concentrations of the above solution, taking care to maintain the time of immersion constant. Table II. gives the results:—

Table II.

| Number. | Stannous chloride in cc. | Water in cc. | Immersion. | After development. | Type. |
|---|---|---|---|---|---|
| 1 | 1 | 100 | 22 min. | 1 min. | dark |
| 2 | 5 | 100 | 22 min. | 1 min. | ↓ |
| 3 | 10 | 100 | 22 min. | 1 min. | |
| 4 | 25 | 100 | 22 min. | 1 min. | graded slightly |
| 5 | 50 | 100 | 22 min. | 1 min. | towards a |
| 6 | 100 | 100 | 22 min. | 1 min. | darker tone. |
| 7 | 150 | 100 | 22 min. | 1 min. | |
| 8 | 200 | 100 | 22 min. | 1 min. | ↓ |

Only a slight gradation in the densities of the developed and fixed plates was noticeable in Table II. In other words, we had only the first analogy to light action. No maxima (or minima) in the density degree of exposure curve could be detected. The whole experiment was unsatisfactory. As no reduced silver could be observed from the action of the stannous chloride alone upon the plate the possibility of using too dilute solutions was considered as a cause for the failure of the analogy of this solution to that of light action. A more concentrated solution of stannous chloride was then tried with more fruitful results. The initial data are given in Table III:—

Table III.

| Number. | Stannous chloride in grams. | Water in cc. | Immersion. | After development. | Type. |
|---|---|---|---|---|---|
| 1 | 0·06 | 100 | 22 min. | 1 min. | black |
| 2 | 10 | 100 | 22 min. | 1 min. | white |

With just these few measurements it was perfectly evident that under the proper conditions a very close analogy to the action of light on the plate could be obtained by proper treatment with stannous chloride. No. 1 represents the action of a weak light in producing the first negative, while No. 2 is analogous to the solarising action of light.

In order to gain better control of this work a new method of attack was attempted. A new solution was made as a standard, containing 250 grams of stannous chloride per litre. A silver bromide plate was immersed a certain depth in this solution, and kept there for a suitable length of time. It was then immersed still farther in the solution for another period of time. By continuing this process one end of the plate received the longest exposure, and the gradation could be followed from one end of the plate to the other. Utilising such a scheme Tables IV. and V. give the data obtained.

Table IV.

| No. | Grams of stannous chloride in 100 cc. water. | Immersion. | After development. | Type. |
|---|---|---|---|---|
| 1 | 25 | 32 min. | 1 min. | white |
| 2 | 25 | 7 min. | 1 min. | medium black |
| 3 | 25 | 30 sec. | 1 min. | slightly black |

Another run which yielded far better results was the following:—

Table V.

| No. | Grams of stannous chloride in 100 cc. water | Immersion. | After development. | Type. |
|---|---|---|---|---|
| 1 | 25 | 8 hours | 1 min. | slightly dark |
| 2 | 25 | 1 hour | 1 min. | lighter |
| 3 | 25 | 30 min. | 1 min. | white |
| 4 | 25 | 10 min. | 1 min. | black |
| 5 | 25 | 1 min. | 1 min. | slightly dark |
| 6 | 25 | 10 sec. | 1 min. | slightly dark |
| 7 | 25 | None | 2 min. | white |

Hence we see that maintaining all our variable factors constant, by aid of stannous chloride we may obtain a perfect analogy to light action on a bromide plate. A plate after undergoing these steps was fixed and mounted to use as a lantern slide. At the same time another plate was exposed by sections to outdoor light in such a manner that the stages from the initial negative to the final reduced negative would be produced. These two slides were retained in order to show the close analogy. With stannous chloride the various stages were far from being perfect analogies, but the general principle was distinctly evident. The only really imperfect feature is that of the final reduced negative. This is not as dense as that obtained by the action of light for an extremely long period. The second negative produced by the stannous chloride is more of a brown than a black. This is undoubtedly due to some action of the stannous chloride on the gelatine. A better black for the final negative can be obtained by substituting a dilute developer solution for the stannous chloride.

G. A. Perley.

*(To be continued.)*

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Messrs. J. H. Dallmeyer, Ltd., held their annual beanfeast on Saturday, July 8, at Brighton. Fine weather favoured the party, which spent an enjoyable day by the sea.

Ozobrome, Ltd., send us a copy of the following circular letter:—

"Dear Sir,—We beg to inform you that we have made arrangements with Messrs. Thomas Illingworth and Co., Ltd., The Photographic Works, Willesden Junction, London, N.W., who are now making the Ozobrome Pigment Plasters and Ozobrome Transfer Papers, to execute all orders for Ozobrome pigmenting and acid solutions, pigment plasters, bromide and transfer papers, and other materials used in connection with the Ozobrome process.

"Our Mr. Thomas Manly, F.R.P.S., has gone carefully into the subject of manufacture with Messrs. Illingworth and Co., and can confidently recommend their materials to the clients of Ozobrome, Ltd.

"We shall feel greatly obliged if you will therefore send your orders in future to Messrs. Illingworth, who, we are confident, will give you every satisfaction, both with regard to quality of goods and promptness in delivery.—Thanking you for past favours, we are, dear Sir, yours faithfully, "Ozobrome, Ltd."

# Photo-Mechanical Notes.

### Another Photogravure Patent.

A further patent, No. 11,528 of 1910, for "Improvements in or relating to the production of multicolour photogravures," has been granted to C. W. Saalburg, of 188, West Fourth Street, New York, U.S.A. This patent is simply to cover a method of printing three carbon prints for the placing on three different photogravure cylinders on one piece of tissue in order that the stretch or shrinkage may be equal in the three prints. The claim is as follows:—

"1. In the production of multicolour photogravures by separate printing forms produced with the aid of transfer resists, the method of securing congruity of the printing surfaces on the separate forms which consists in preparing equal-sized diapositives, copying all the diapositives at the same time on to a single sheet of sensitised 'carbon' tissue, which has been marked for subsequent division into smaller sheets of equal size, each sheet when transferred to, and developed upon, a metal surface, furnishing an etching resist, dividing the multiple 'carbon' print into separate 'carbon' prints of equal size, and thereafter transferring the same to the separate metal surfaces under temperature conditions which are the same for all the separate 'carbon' prints in the respective separate acts preparatory to, during, and following the actual transferring operations, substantially as herein described.

"2. Process for the production of multicolour photogravures as herein set forth for the purpose specified."

It is difficult to see how the process described could be maintained as not being of "common knowledge." No practical worker would think of making three paper prints intended for subsequent superimposition in register except from one piece of paper cut in the direction of least stretch and carrying out the whole of the operations under equal conditions throughout. In view of the number of petty patents that are being taken out nowadays, it is interesting to remember that the inventor of the modern process of photogravure, and the man who is stated to have been the first to etch a cylinder, Karl Klic, who has just celebrated his seventieth birthday, never took out a patent in his life.

◆

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between July 3 and 8:—

WASHER.—No. 15,429. Apparatus for washing photographic plates, prints, and the like. Gustav Geiger.

CAMERAS.—No. 15,542. Cameras. Bernard Edwin Hobbs and James Elliott Mallinson.

REPRODUCTION PROCESS.—No. 15,723. Process for the reproduction of coloured pictures, portraits, and the like, on transparent bodies. Felix Costales.

COLOUR-SCREENS.—No. 15,775. Process for the production of gapless granular three-colour screens for colour photography. John Bamber.

CINEMATOGRAPHS. — No. 15,794. Electric arc lamps for cinematograph projection and the like. Andrew Cole and Frederick Wilson.

CAMERA STANDS.—No. 15,900. Stands for photographic cameras and like apparatus. Lindsay Ash.

### COMPLETE SPECIFICATIONS ACCEPTED.

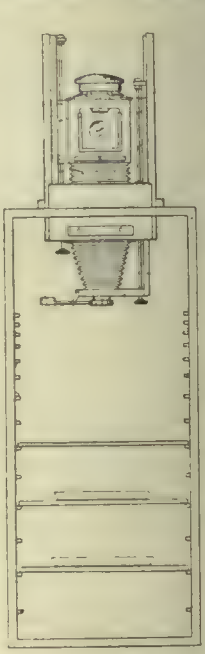
*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

VERTICAL ENLARGERS.—No. 13,724, 1910 (June 7, 1910). The apparatus is constructed with a vertically arranged frame, and the lantern is also so arranged that its light shines downwardly on to the condenser and the negative. Owing to this vertical arrangement very little floor space is taken up, and the parts of the apparatus are so made as to be capable of ready manipulation from one position.

The lantern is carried in such a manner that it can be readily adjusted vertically, whilst the lens is also capable of vertical adjustment. The light may be either direct or reflected.

It is preferable to construct the apparatus with a vertical frame for carrying the easel, this frame being open at two sides and also having an opening at the top, and, at opposite sides of this latter opening, and at right angles to the top of the frame, are arranged two vertical shelves or supports, one of which serves to support the lantern whose light shines downwardly through the opening at the top of the frame and strikes upon the easel, which latter may be fixed in any suitable manner and at any desired point within its frame, the paper to be printed being merely laid upon the easel. The lantern, which may be fitted with inverted incandescent gas, electric, or other suitable light, has the usual air outlet at the top, the air inlets being provided with a light baffle at three sides, the remaining side having a rectangular guide frame made in one with or attached thereto.



This rectangular guide frame is provided with projections which work in suitable guides fixed on to, or made in one with, one of the vertical shelves. A screw spindle, fixed to the top of one of the shelves, engages with a fixed nut provided on the rectangular guide frame carrying the lantern so that, when the spindle is rotated, the nut is raised or lowered, thereby raising or lowering the lantern. If preferred, the lantern may be made to slide on tubes or other guides, and, if desired, it may be provided with a rack and pinion or other raising or lowering gear instead of with the screw and nut arrangement. The lantern is provided, at its lower end, with a frame carrying ground glass, which frame is made removable so that the glass may be readily cleaned.

Connected by bellows, and fixed under the lantern, to the two vertical shelves, is a box divided by a horizontal partition, the top, bottom, and this partition being provided each with a hole or opening so that the light can shine downwardly on to a plano-convex or other suitable condenser carried in, or made in one with the upper portion of the box, the lower portion of the box carrying the usual negative frame. Apparatus for tilting the negative frame may also be fitted in the lower portion of this box. Under this box and connected thereto by means of bellows is a lens-frame, at one end of which and at right angles thereto is attached a slide working on a guide, on the second upright shelf, the lens-frame being raised and lowered by means of a screwed spindle attached to the upper end of the slide, and working in a fixed nut on the box. If preferred, however, the lens-frame may be raised and lowered by a rack and pinion or other suitable gear.

The lens is provided with a yellow cap, to which is attached one end of a lever fulcrumed on the projection of the lens-frame, and whose other end is provided with a balance weight so that the cap can be readily held in either its closed or open position.

The invention may also be applied to the ordinary frame for enlarging apparatus, the frame being placed vertically instead of horizontally, and secured against a wall or partition, or fixed in any suitable manner to the floor or ground. The easel, which is supported by brackets or the like, lies horizontally, and may be fixed at any suitable point on the frame by means of thumb-screws or otherwise. The lantern, condenser box, and lens-frame are carried by means of two vertical shelves which rest on suitable guides provided on a horizontal shelf which projects from the frame. The vertical shelves carrying the lantern, condenser box, and lens-frame may be moved horizontally along the guideways, or by means of screw or other suitable gear, to enable a larger picture to be taken. Edward Broom, 385, Cathcart Road, Govanhill, Glasgow.

Cinematograph "Films" on Paper, Cloth, Etc.—No. 5,025, 1910 (Feb. 28, 1910). The paper, cloth, etc., which is used as a basis for the series of photographic or other pictures, when necessary, is hardened or enamelled on one or both sides by coating the surface or surfaces thereof with a baryta emulsion or a similar preparation.

The paper or cloth thus prepared is coated with a sensitive photographic emulsion or preparation either on one side or on both sides. The treatment for rendering the band transparent, or the enamelling thereof, may, if desired, be carried out after development. The sensitised material may, as an alternative to the band form, be divided into sheets or leaves, and be bound or assembled so as to approximate a book form, the leaves or sheets being caused to successively come into view.

The pictures on the aforesaid paper, cloth, or the like, may be rendered considerably larger than those ordinarily used in cinematograph apparatus. The direct printing of the positive band, by contact from the usual negative band, therefore becomes impracticable, by reason of the disparity in size. Several alternatives present themselves, and circumstances will determine which to adopt.

For projecting or displaying the subject produced on the improved band, the following arrangements are adopted :—

1. Light from suitable sources in recesses, or side-wings, is made to shine obliquely on the front face of the band, and an image of the picture thus illuminated is projected by a lens. Condensers may be used to concentrate the light on to the paper band.

2. The illumination of the band is effected from the front as in the last-mentioned case, but a supplementary rear lighting thereof is used. This method is only serviceable when the band used has a certain degree of translucency or transparency, and it is specially serviceable when colour effects are worked in on the back of the band, or when day and night effects are produced by the adjustments of the two systems of light.

3. The band is illuminated from the back only; this course being only practicable when the band possesses a high degree of transparency, or when night effects are introduced as contrast, by the extinction of the lights in front of the band.

4. When the band is opaque and each side bears a separate subject, both sides may be illuminated by such devices as are indicated in the case of the first arrangement, and there may be a projection lens on each side of the band; this system being especially suited to small pedestal machines in which the display is upon a ground glass or similar screen, or when two such screens are employed. The opaque band, with a subject on each side, is also of service in an ordinary single projector, such as would be used in the case of the first arrangement, or for a single display in a small pedestal machine.

5. A direct and vivid dioramic effect is realised when the band of pictures is illuminated from the front and provided with supplementary illumination at the back, as in the case of the second arrangement, and is directly viewed by the spectators, no projection or viewing lens being required.

The paper images when mounted in book form, or as leaves arranged around a central disc, or carrier, instead of being viewed directly as the leaves fly back, may be furnished with a direct object glass by which the moving pictures are projected and viewed on a screen, the system being conveniently embodied in a pedestal machine, with a small ground glass or similar screen.

Any of the systems of detail or arrangement as exemplified above may be fitted or embodied in the pedestal form of the machine. A direct lens or object glass may be used, or, at convenience, an object glass combined with or furnished with a reflecting prism or a mirror.

The illumination of the improved bands or leaves may be effected by any usual light, as, for example, lime light, electric arc light, or electric incandescent light; but an integral part of the present invention is the combination with the band or leaves of the mercury-tube electric light or any similar light nearly free from red rays. By these means an effect is obtained easily visible in daylight or with ordinary artificial lights. Otto Fulton, 3, Rupert Street, Leicester Square, London, W.C.

Colour Screen Plates.—No. 13,430, 1910 (June 2, 1910).—The invention relates to the production on a transparent medium of a photograph in colours of the kind wherein both a colour screen and the image are mounted on a common support and in optical contact. A regular-pattern colour screen on a transparent support is, for copying purposes, coated with an emulsion, which is itself transparent and slow enough to be exposed safely and visually registered in moderate light, in contact with an image produced with the aid of a corresponding screen by looking through both the image and the screen.

An emulsion possessing the necessary slowness and transparency can be made by mixing the constituents, with or without the aid of heat, in the usual way in making emulsions, but omitting the operation of "cooking" for selected periods and temperatures as employed for imparting the requisite speed to the plate. The addition of a panchromatiser to the emulsion is also omitted.

After registration the exposure should be made in a necessarily strong light and the resulting image developed and fixed.

If the transparent image be a negative and the usual registration be so effected that the image is seen in its complementary colours a positive in the true colours will result upon exposure, or upon exposure and development. If, on the other hand, a positive be copied from, the registration would be effected in the true colours of the original object and the exposure then made.—Oliver Samuel Dawson and Clare Livingstone Finlay, 256, High Holborn, London.

The following complete specification, etc., is open to public inspection before acceptance, under the Patents Act, 1901 :—

Shutters.—No. 14,855. Camera shutters. Brueck and Klein.

## New Trade Names.

Penrose (Device).—No. 332,459. Photographic chemicals, plates, and films, but not including paints, colours, and varnishes, and not including any goods of a like kind to any of these excluded goods. A. W. Penrose and Co., Ltd., 109, Farringdon Road, London, E.C., manufacturers. April 1, 1911.

Penrose (Device).—No. 332,461. Photographic cameras, chemical apparatus (included in Class 8) for use in photographic and photo-mechanical processes, and optical and mathematical instruments, rules, and gauges. A. W. Penrose and Co., Ltd., 109, Farringdon Road, London, E.C., manufacturers. April 1, 1911.

Fixite (Design).—No. 332,845. Cinematographs and cinematograph films (being transparencies for exhibition). The firm trading as Itala Film, 91, Corso Casale, Turin, Italy, manufacturers. April 18, 1911.

Penrose (Device).—No. 332,463. Photographic and stereotype paper, engravings, printing inks, printers' overlays (paper or cardboard), and printers' underlays (paper or cardboard), but not including writing inks and papers and printing. A. W. Penrose and Co., Ltd., 109, Farringdon Road, London, E.C., manufacturers. April 1, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Exposures with Autochromes.

In a letter from Mr. J. Cruwys Richards to "Photography and Focus" for July 18, Mr. W. Partridge is quoted as saying :—"For testing the light (for Autochromes) I use a Wynne actinometer, and expose the plate at $f/11$ for half the time the sensitive paper takes to colour to the dark tint. This exposure is for a *normal* subject, such as a border of flowers on a bright day with the sun obscured. For *special* subjects the exposure must be increased or decreased as follows : Distant landscape, one-third the actinometer time; open glades, three-quarters the actinometer time; flowers in a conservatory, the full actinometer time; studio work, one and a half the full actinometer time; portraits in a well-lighted room, twice the full actinometer time. All these exposures to be made at *f*/11.

"In the meter I have in constant use, and upon which the foregoing exposures are based, the paper is darkened to the full tint in four seconds when exposed to the mid-day sun, and I would suggest that this is taken as a *standard* for other workers to test their meters by. If on trial a meter is found so fast that the dark tint is matched in two seconds in *sunlight*, the exposure for Autochromes by that particular meter will be the full actinometer time for any *normal* subject tested; *i.e.*, supposing the actinometer time to be six seconds, the exposure at *f*/11 will be six seconds. When the dark tint is matched in four seconds in *sunlight* (the standard), the exposure for Autochromes by that meter will be half the actinometer time for any *normal* subject tested; *i.e.*, actinometer time twelve seconds, exposure at *f*/11 six seconds. If the dark tint is matched in six seconds in *sunlight*, the exposure by that meter will be one-third the actinometer time for a *normal* subject; *i.e.*, actinometer time eighteen seconds, exposure six seconds at *f*/11. The exposure by meters showing other variations of speed must be worked out in a similar way."

# New Books.

"Photography." Edited by Henry P. Maskell, and published in the Concise Knowledge Library by Hutchinson and Co., Paternoster Row, London, E.C. Price 5s. net.

This is a handsomely bound and well-printed volume of over 400 pages, in which various contributors have combined in the attempt to cover the whole range of photography. Necessarily, in all such attempts it is difficult to avoid undue compression in some directions and over-expansion in others, and this book is not quite free from these defects, though altogether we can describe it as a remarkably good attempt to produce a concise epitome of the subject of photography. A fair amount of space is devoted to the optics of photography, a subject which always requires space, but can easily be overdone. This part is by C. S. Coombes, and covers most of the facts that it is desirable for the photographer to know. We must, however, take exception to the definition of astigmatism, which is stated to be "caused by the rays passing through the marginal portions of the lens, and only occurs when the lens is used with a fairly large stop." An excellent chapter is the one on "The Chemical Theory of Exposure and Development," by Rupert E. Pigott, in which this abstruse matter is treated in a manner that is very up-to-date and clear to those who have already studied the question, though we fear the subject will be above the comprehension of most readers. E. O. Hoppé writes on portraiture, the laws of pictorial composition are treated by J. Littlejohns, and architectural photography is entrusted to the capable hands of E. A. and G. R. Reeve. In the rest of the forty-six chapters nearly all the practical side of photography is covered in a necessarily brief but generally lucid and very useful fashion. We must, however, point out that while it is a good plan to supplement the somewhat scanty information, which is all that can be given in seven or eight pages, by references to other works on the subject, it is very desirable to make sure that these other works exist. The chapter on enlarging terminates with the advice to study C. Welborne Piper's "Photographic Enlarging," a book which, so far as we know, has no existence. In some cases, also, we think better references could have been given than the ones selected. Illustrations are a prominent feature of the book, many well-known workers, such as Cadby, Coburn, Craig Annan, Dührkoop, Hoppé, Evans and others being well represented. Autochrome and Thames plates are also represented by fairly successful colour reproductions.

"Picture Titles for Painters and Photographers." Chosen from the literature of Great Britain and America by A. Lys Baldry. Published at the offices of the "Studio." Price 1s. net.

This is a carefully compiled and classified book of quotations from the poets that has an obvious value to artists, inasmuch as it teems with suggestions for the man who is at times at a loss for a definite subject. Still, its use is even then limited, for the true artist, as a rule, does not lack ideas—only the means of expressing them clearly. To photographers we fear the book is not of such material value, for poetic and fine sounding titles always strike us as being very much out of keeping with such obviously unpoetic productions as photographs. There are exceptions, but they are very few, and we fear the book may encourage the perpetration of incongruities that will make the critics jeer. Such a title, for example, as "The Heavens are Full of Floating Mysteries" will fit many a "controlled" oil print, but not precisely in the fashion the author wishes it to do. By exercising due caution and care the photographer may chance to find something that can safely be tacked on to his photographs, but if he is wise he will prefer to use the book as we have suggested artists will be likely to use it, that is, as a storehouse of suggestions for future work.

# New Materials, &c.

**Odourless Sepia Toner for Bromide Prints. Made by Johnson and Sons, 23, Cross Street, Finsbury, London, E.C.**

Messrs. Johnson's well-known sepia toner is now obtainable in the very convenient form of powder put up in a bottle containing enough material to make half a gallon of each working solution. The sulphiding compound is contained in a small tube, which will be found buried in the powder which forms the bleaching bath. Each of the powders dissolves readily, and to economise space may be dissolved in one pint instead of half a gallon of water, and be diluted when required. The final result is a warm, pleasing brown. The solutions keep well, and can be used repeatedly, while the claim that the sulphiding bath is odourless is well founded. The familiar smell of sulphide can only just be detected, and so the solution is much more pleasant to work with than the usual soda sulphide bath. A bottle containing powder to make half a gallon of solution costs 1s., while a double-size bottle costs 1s. 9d. As half a gallon of solution goes a long way, the process is very economical.

**Therma P.O.P. Made by Ilford, Limited, Ilford, London, E.**

This is an extra quality, glossy mauve print-out paper, specially prepared for the tropics, and Ilford P.O.P. having already such a high reputation, this special quality is likely to be greatly appreciated. The instructions for use include the use, after the preliminary washing, of a special bath of chrome alum and salt, in which the prints are soaked for ten minutes. This is followed by ten minutes' washing, after which the prints are toned in a gold and sulphocyanide bath, and fixed and washed as usual. A P.O.P. suited to tropical use should be a welcome introduction, but the same qualities which render it serviceable in tropical climates should also be of material advantage in this country, where silver prints do not always keep as well as could be wished.

## CATALOGUES AND TRADE NOTICES.

Mr. Jonathan Fallowfield, of 146, Charing Cross Road, sends us his latest catalogue of modern photographic apparatus, which comprises such a full list of cameras of the most reliable makes that every photographer should make a point of obtaining a copy without delay. It includes cameras, lenses, shutters, and tripod stands, and is probably one of the most complete lists published in regard to cameras. Nine different reflex cameras are listed, including two folding patterns, and the "Studio" Reflector, which is a unique form of studio reflex camera, possessing many obvious advantages. The list of hand cameras is very fully up-to-date, and contains the very latest introductions of both English and foreign manufacturers. Those desirous of acquiring a new outfit should have no difficulty in finding what they want in the pages of this list, which is sent post-free on application.

◆

Royal Appointment.—Messrs. Charles and Russell, 10, Royal Avenue, Belfast, were favoured with a special Royal appointment to photograph their Majesties, King George V. and Queen Mary, at the Viceregal Lodge on July 11.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

SATURDAY, JULY 22.

South Suburban Photographic Society. Excursion to Greenwich and Deptford.
Southport Photographic Society. Excursion to Shirdley and Halsall.
Borough Polytechnic Photographic Society. Outing to St. Albans.
North Middlesex Photographic Society. Outing to Aldenham
Handsworth Photographic Society. Excursion to Colwich for Cannock Chase.

MONDAY, JULY 24.

Bradford Photographic Society. "Hints on Holiday Photography."
Manchester Amateur Photographic Society. Ramble to Rievaulx Abbey.

TUESDAY, JULY 25.

Hackney Photographic Society. Exhibition of Portraits.

WEDNESDAY, JULY 26

Balham Camera Club. Selection of Outing Prints.
Worthing Camera Club. Excursion to Ashington, Thakeham, Warminghurst, and West Chiltington.
Sale Photographic Society. Monthly Meeting.
West Surrey Photographic Society. "Re-Development and Intensification." R. Baskett.
North Middlesex Photographic Society. Affiliation Lantern Slides.

# Commercial & Legal Intelligence.

LEGAL NOTICES.—A receiving order has been made in the case of John Thomas Garbutt, photographic dealer, etc., residing at 52, Hill Crest Avenue, Cowper Street, and carrying on business at 57, Guildford Street, Leeds. The public examination takes place on July 25.

A receiving order has been made in the case of John William Smith (trading under the style of T. Smith and Sons), photographer, 60, High Street, King's Lynn, Norfolk.

FRAUD ON KODAK, LTD.—Theodore Holme, 22, a clerk, of Willes Road, Kentish Town, was charged on remand at the Clerkenwell Police Court, on Thursday last, with stealing, by means of a trick, a complete Kodak photographic outfit, valued £11 15s. 1d., the property of Kodak, Ltd. Detective-sergeant Oxley, E Division, said he saw the prisoner at the offices of the Kodak Co., Clerkenwell, and told him he should arrest him upon the charge. Witness said he showed the prisoner an order purporting to come from Dollond's, and the man said, "That's right. It is a trick. I wrote that myself, and also rung up on the telephone." He then told the officer where he would find all the property, and witness recovered it. The officer added that the man, a German subject, was not employed by Dollond's as he had represented. John Hoffmeister, department manager of the firm, said an order was received by telephone for a "Kodak," with a message that the order would be called for later. In the afternoon a messenger came with a typewritten note on a billhead confirming the order by telephone, and the camera, etc., was handed to the messenger—viz., prisoner—who went away with the goods and invoice, after saying that he was from Dollond's, of Northumberland Avenue. It was discovered that the man had not come from the firm, and, on June 27, the police were communicated with. Frank Berritt, manager of works at Dollond's, said the prisoner was not in the employ of that firm, and the order produced was not genuine. The prisoner had no authority to act for Dollond's. Witness could not account for the prisoner's possession of one of their printed memo. forms. The prisoner pleaded guilty, and was sentenced to three months' imprisonment.

A PHOTOGRAPHER'S BANKRUPTCY.—The adjourned public examination of Andrea Henry Balestra, photographer, lately carrying on business at "Portman Studios," Wigmore Street, W., now residing at "Waltham House," Brondesbury, lately of "Eversholt," Shoot-up Hill, Brondesbury, was held on Wednesday last at the London Bankruptcy Court, before Mr. Registrar Hope. The debtor's statement of affairs disclosed gross liabilities amounting to £1,246 2s., of which £1,046 2s. is expected to rank against the estate for dividend. Assets nil. Mr. E. Leadam Hough, senior Official Receiver, reported that the receiving order was made on the petition of a creditor, the act of bankruptcy being the failure of the debtor to comply with the requirements of a bankruptcy notice duly served upon him. In reply to questions put by the Official Receiver, debtor stated that prior to March, 1908, he was employed by his father, but afterwards he carried on business on his own account as a photographer, under the style of the "Portman Studios," in the same building as his father, 95, Wigmore Street, W., until April 1, 1910. At that date he assigned his business and book debts to his mother in consideration of her having guaranteed the payment of certain debts due from him. She then already held a bill of sale, dated December, 1909, on the furniture and effects. He had since managed the business for her at a remuneration of 10s. per week, and board and lodging for himself, wife, and children. He admitted that at the time he gave the bill of sale he was an insolvent man. He was now only his mother's manager, and signed himself as such on all bills and price lists. There were two other assistants in the shop besides himself, but he had most of the work to do. In May, 1909, an action was brought against him by a former employee, and eventually the case was heard on October 18, 1909, the verdict being against debtor. He did not assign his business in order to defeat the plaintiff in that case, because he did not, at any time, consider the verdict would go against him. He thought that he could work the business up and eventually pay off his other debts. The Official Receiver: The result of it was to place the whole of your assets out of the reach of your creditors; you had nothing left as the result of the action. Was a valuation made at the time of the assignment? The debtor said there were no assets to value, the business was a dead loss all through; except for a few fittings there was absolutely nothing. Even now the business was making a large loss. The business was still being carried on under the name of the "Portman Studios." He had never failed before or made any arrangement with his creditors. Eventually the examination was ordered to be closed.

### NEW COMPANY REGISTERED.

BONDS, LTD.—This company was registered with a capital of £5,350 (5,000 shares of £1 each and 7,000 shares of 1s. each). Objects, to carry on the business of manufacturers of and dealers in photographic apparatus, etc. First directors, P. H. Dyball and W. J. Anderson. Registered office, 138, New Bond Street, W. Private company.

# News and Notes.

PHOTOGRAPHERS AND THE INVESTITURE.—The recent ceremonies at Carnarvon in connection with the Investiture of the Prince of Wales put press photographers on their mettle. The ceremonies began at 2.30 p.m., and did not finish until 4 o'clock, yet the photographs were in the hands of the London newspaper editors at 10 o'clock in the evening. Motors rushed the photographers to Bangor, where a special press train was in waiting, leaving at 4.50. The train being fitted with dark-rooms, all the work of developing and printing was completed by the time of arrival in London, where cars were again in waiting to convey the pressmen to their various offices.

THE NATURE PHOTOGRAPHER.—The third number of this little journal, which is issued quarterly, has just reached us, and contains, amongst other contributions, an article by Oliver G. Pike on the equipment of the bird photographer, a very good illustration of a merlin watching over her young, by Charles Kirk, and also one of Carl Edwards' photographs, "The Oyster of the Woods," which was exhibited at the recent R.P.S. Exhibition. A goodly list of new associates shows that the Nature Photographic Society, of which this paper is the official organ, is progressing rapidly, while the fact that the members contributed no less than ninety-eight of the frames which were hung at the R.P.S. show proves it to be a society of importance, even though quite a young one.

THE ART OF ADVERTISING.—In the July issue of "Sales-Promotion," a monthly journal devoted to practical business-producing methods and ideas, Mr. W. Casey, the advertising manager of Messrs. Raines, Ealing, contributes an article on retail advertising that contains many useful hints. The writer justly points out that careful wording and attractive setting is three-fourths of the secret of how to make advertising pay, and draws attention to the uselessness of crude matter that is both uninteresting and inartistic. He also testifies to the value of the imitation typewriter personal letter, but gives a very necessary warning to the effect that a too American tone does not please the average customer. As he says, the "Do it now" of the breathless Yankee does not favourably impress the average Englishman. Several other useful articles are to be found in this journal, which should be studied by all interested in business methods.

Sale of Solution of Ammonia.—The following order has been gazetted, under which liquid preparations containing more than 5 per cent. by weight of free ammonia require to be labelled "Poisonous,"and with the name and address of the seller:—

At the Court at Buckingham Palace, the 5th day of July, 1911.

Present,

The King's Most Excellent Majesty in Council.

Whereas by Section 5 of the Poisons and Pharmacy Act, 1908, it is enacted that:—

"(1) It shall not be lawful to sell any substance to which this section applies by retail, unless the box, bottle, vessel, wrapper, or cover in which the substance is contained is distinctly labelled with the name of the substance and the word 'Poisonous,' and with the name and address of the seller of the substance, and unless such other regulations as may be prescribed under this section by Order in Council are complied with; and, if any person sells any such substance otherwise than in accordance with the provisions of this section or of any Order in Council made thereunder, he shall, on conviction under the Summary Jurisdiction Acts, be liable for each offence to a fine not exceeding five pounds.

"(2) The substance to which this section applies are sulphuric acid, nitric acid, hydrochloric acid, soluble salts of oxalic acid, and such other substances as may for the time being be prescribed by Order in Council under this section."

And whereas it is expedient that liquid preparations containing more than five per cent. by weight of free ammonia should be prescribed as substances to which the said section shall apply:

Now, therefore, his Majesty is pleased, by and with the advice of his Privy Council, to prescribe, and it is hereby prescribed, that as from the 1st of February, 1912, liquid preparations containing more than five per cent. by weight of free ammonia shall be substances to which Section 5 of the said recited enactment applies.

Almeric FitzRoy.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SEEING BEFORE THE EVENT.

To the Editors.

Gentlemen,—Your correspondent, "B. M.," appears to be combating a theory which has not yet been advanced, viz., that the difference in the velocities of light and sound may account for certain phenomena of high-speed photography. Nothing could be more unlikely. May I remind "B. M." that some of us have not had the pleasure of listening to Dr. Abrahams' lectures? A recital of the chief points would, I think, be of general interest; at any rate, it would enable us to understand what "B. M." is alluding to. When "B. M." has described "all this," instead of deciding the matter for us, we shall be in a position to form our own conclusions as to whether "it squares exactly with 'M. R.'s' experience of the wedge-driving." Wedge-driving is not necessarily connected in any way with high-speed photography, and we shall not arrive at the truth by fitting the phenomenon to the explanation. It seems tolerably certain that the first time "M. R." observed the wedge behaving in an unorthodox manner it struck him as very remarkable, otherwise he would not be likely to mention it as a phenomenon. Well, if he thought it remarkable it evidently was not anticipated, or he would be anticipating something which afterwards astonished him, which is a *reductio ad absurdum*. A normal person should anticipate that the wedge will fall when the hammer hits it, and not before. "B. M." would aid materially by obtaining a wedge, hammer, and block of wood and repeating "M. R.'s" experience under definite conditions.

No faculty is more variable than that of sound-perception. If I strike ten notes on my piano simultaneously, my boy, in another room, can name all the notes unfailingly. Acuity of sound-perception varies from that point (absolute pitch) to absolute deafness. I fail to see how "B. M.'s" experiments "endorse what you yourself have said." What the Editors said was, "We doubt if the average person could notice it at any distance much under twenty yards." "B. M.'s" minimum distance for shrill sounds appears to be sixty-two yards, which would rather tend to suggest that he is not a person of specially acute perception.—Yours very truly,

J. Osborne

Wiveliscombe, July 7, 1911.

## THE COST OF CARRIAGE OF PHOTOGRAPHS BY RAIL.

To the Editors.

Gentlemen,—If Mr. Sutcliffe will look up the Railway Classification Book we think he will find that the details given by him are not quite correct.

Photographs, photo-postcards, plates for photographic use, and similar articles, are charged at Class III. rate, as is usual with those goods not described, unless those responsible for the dispatch of the goods have reason to think that the contents of the package are of a fragile nature.

We certainly consider that most photographic material should be carried at the second-class rate when sent by goods train. It is hardly likely that the gentleman mentioned in the last paragraph will put these matters right, for it would not be to the interest of those connected with railway companies to lower the charges in any way. The matter rests with a body like the P.P.A., and only combined effort is likely to have the least effect of inducing the railway companies to consider any amendment to their existing rates.—Yours truly, The Halifax Photographic Company.

## FAKING AS A FINE ART.

To the Editors.

Gentlemen,—There is a gentleman of my acquaintance who claims to be a master of gelatine, who could take a photograph of two or more persons sitting, and, if you told him you would prefer the group standing, he would, without re-taking the group, carry out your request; if you sent him two photographs, say, of man and woman, in any position, and asked him to convert the photographs into one of riding on horseback, balloon, warship, motor, or if you would like them brought out in an accident, he would do your bidding, and the most remarkable thing of all is that the same clothes and headgear would appear in these negatives or prints, as in the photograph you send him. Changing the position in any way of the original photograph sent him would not alter clothing, etc. He claims this is a secret process, and same he would not on any account publish. I have read many a way of faking negatives or prints, but this seems to beat all I have ever read. Being a constant reader of your valuable journal, I thought I would write and ask you to throw some light on how this faking (if such it could be called) is done, as it would be interesting reading to a good many of your numerous readers. If it is done by the aid of films, where could the same be obtained?—Sincerely yours,

Scotchman.

Ireland, July 15, 1911.

## FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Entries close September 1 (Britain), August 21 (foreign). Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1*s.* 7*d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPH REGISTERED:

J. Cook, 65, King Street, Kilmaruock. *Photograph of the Right Hon. Andrew Fisher, P.C., Australian Premier.*

ARTHUR COLLINGS.—H. Bendixon and Co., 36, Basinghall Street, E.C.

PICTURE-FRAME MANUFACTURERS.—Can you let me know through your correspondence column how I can obtain the addresses of the manufacturers of picture-frame moulding, and oblige? Also, what paper they generally advertise in.—FRAMES.

See our advertisement columns, and also the "B.J. Almanac."

STUDIO WORK.—How can I get the necessary information *re* the working of a studio—manipulation of blinds, etc.?—W. M. JONES.

If you refer to the last year's volume of the "B.J." you will find a valuable series of articles by Mr. Essenhigh Corke on this subject. See issues for March 18, 25, April 1, 8, and 15.

POSTCARD MANUFACTURERS.—I have consulted my "Almanac," pp. 1339-1346, trying to find a firm of sensitive postcard (P.O.P.) makers, whose works are, I believe, at West Drayton. Can you tell me, in your "Answers to Correspondents," of such a firm?—S. Y.

The Rotary Photographic Company, 24, Ropemaker Street, London, E.C.

COPYRIGHT, ETC.—1. Have taken about thirty views of an estate for auctioneers to illustrate their catalogue, 1-1 size. From whom should I get the copyright assigned to me? 2. Please give me some idea as to the usual charge for such work. They are good photographs, and have been well reproduced.—BURTON.

1. From those who gave you the order and paid for the work. Naturally, the copyright is theirs. 2. We cannot advise you as to charges. Fair charges will depend on a variety of conditions that you do not mention.

POSTCARD PROCESS.—Can you inform me in what process the enclosed postcard is produced, and how it is done? Also, if you could tell me where I could get some views produced in the same way, and about what you think the price would be.—POSTCARD.

It appears to be a rather poor specimen of a mauve-tinted print-out collodion postcard, probably with a self-toning emulsion. A border negative was, of course, used. If you want similar cards from your own negatives, your best course is to make them yourself, but any dealer could get them done for you. The cost will only be a few pence each.

REMOVAL OF INTENSIFICATION.—Kindly advise me in your next issue how to remove intensification obtained by chloride of mercury followed by ferrous oxalate, as the most violent chemicals, including cyankali, do not seem to have the slightest effect on it.—A. K.

We can see no reason why such a negative should not be reduced. Try bleaching it in bichromate of potash and hydrochloric acid, using 2 per cent. bichromate and 4 per cent. acid. Afterwards wash well with 4 per cent. acid, then with water, and finally redevelop. This process should remove a good deal of the mercury without affecting the silver.

SOUTH AFRICA.—Things here are being steadily run to death. 12 x 10 enlargements and three cabinets can be had from several photographers (!) for 2s. 6d.; postcards from 1s. 6d. per dozen. Would you kindly give me your opinion as to prospects of a good all-round photographer, age thirty-eight, in Johannesburg, or elsewhere in South Africa, the amount of cash one would require to have on hand on arrival, and any other little bits of information you may be able to give on the matter?—J. ANDERSON.

We cannot speak from definite knowledge, but we should say things out there are very much the same as here. We should not care to make the venture with less than £200 in hand, as time would be required to get started, and the country is not a cheap one to live in.

RELIEF PHOTOGRAPHS.—At the recent United Provinces Exhibition at Allahabad I noticed a photo print on paper in raised figures. I liked it, and wanted to get some photos of mine similarly done, but I could not find out the name of the maker, or the photographer, or the firm dealing with those special sorts of photos. I should feel extremely obliged if you would be kind enough to let me know the name and the address of the gentleman or firm I require, so that I may correspond with him or them on the subject. In the end I ask to be excused for the trouble I am giving you thus.—KUNWAR SARJOO PRASAD NARAIN SINGH.

You are probably referring to the Taber Bas-relief process, worked by Messrs. Alliance, Ltd., 115, Newgate Street, London, E.C.

COLOURS FOR CARBON TISSUE.—I am writing to ask if you can tell me three suitable dyes or pigments that can be used for three-colour carbon tissue, such that can be included in the emulsion and coated on to the support, instead of drying the image afterwards. They would, of course, have to stand hot water treatment, and also must not interfere with the solubility of the gelatine.—J. W. D.

You can procure suitable pigments from Messrs. Reeves and Sons, Ltd., Dalston Junction, N.E., under the name of Trichrome Carbon Tissue Colours. We would, however, warn you that the making of carbon tissue requires a considerable amount of experience. You can buy Trichrome tissues, unsensitised, from the Autotype Co., or the Rotary Co., and we would advise you to make your first trials with these.

RELIEF STAMPING.—We have some dies by us for relief stamping, and should be glad if you can inform us in your next issue which is the best way to proceed to relief-stamp some mounts, and what necessary materials we should require. We have a press for blind blocking. Is this suitable for the work?—RELIEF.

You will require a much more powerful press for this than for ordinary intaglio blocking, if you wish to use thick mounts, although you might manage to do flexible or paper ones. You must make a counterpart of the die by repeatedly embossing a pad of paper till it is quite hard. This serves to force the card into the sunk portion of the die. If you wish to get an impression in colour, you can get the ink, etc., from any printer's material dealer. The ink is rubbed into the indentations, and then the surface of the die wiped perfectly clean on a pad.

STUDIO WORK.—1. I am thinking of building a studio, and would 20 ft. by 15 ft. be a suitable size? 2. What would be the most suitable lens for this studio for general work, viz., from c.d.v. full-lengths to cabinet heads? Not too expensive a one. 3. What height to the top of eaves should the studio be?—FRANK ADAMS.

1. We should recommend you to make your studio more than 20 ft. long if you can find room, although full-lengths can be taken in a studio of this length if a suitable lens be used. 2. This should have a focal length of about 10 ins. It might be of the portrait type, such as a Ross No. 1 cabinet or Dallmeyer 1A patent. If required for occasional outdoor use one of the new *f*/4.5 Homocentrics would be more useful, and nearly as rapid. 3. Eight feet is a convenient height for the eaves, as it permits of a full-sized background being placed close up to the side of the studio.

COMBINED BATH FOR FERROTYPES.—Will you kindly publish a good quick-working combined developing and fixing solution for dry ferrotype work that can be used in automatic ferrotype camera? I believe you gave a formula last year called the Chicago. Will you kindly publish same, and any other reliable formulæ?—J. WEATHERBY.

The following formula was given in our issue of January 21, 1910, by an American correspondent, and probably is the one you are thinking of:—

| | |
|---|---|
| Sodium sulphite (cryst.) | 1 oz. |
| Hypo | 8 oz. |
| Sodium carbonate (cryst.) | 2 drs. |
| Potassium bromide | 2 drs. |
| Hydroquinone | 5 drs. |
| Water | 24 oz. |
| Ammonia, 28 per cent. | 2 drs. |

If result develops too light, add more hypo; if too dark, add ammonia.

CLEARING BATH.—I shall be obliged if you will favour me in an early issue of your valued paper with a formula for clearing fog from negatives. 1. It seems generally to be taken for granted that hypo-ferricyanide fully meets all requirements in this respect, but I have never succeeded in clearing the shadows with it. Some years ago I read an article by Professor Namias advising the addition of acid when clearing only was required. Can you advise this? I think an article on the subject might be of general interest. 2. I have read that a plain hypo bath after reduction is desirable for permanency, but when using excess of ferricyanide for clearing I find the hypo afterwards neutralises the effect.—J. H. WINGRAVE.

1. According to our experience, nothing is so good as hypo and ferricyanide for clearing off fog, but it must be remembered that very bad fog is incurable. The fog you get must be excessive, otherwise the solution would speedily dispose of it. The addition of acid is of no use—detrimental rather than otherwise, but a few drops of ammonia will sometimes help matters. 2. It is as well to dip in hypo after reduction, and we do not understand what you mean by the hypo neutralising the effect of reduction.

STUDIO DESIGN.—I am putting up a studio in yard, and up to now I have decided to build as enclosed sketch. Also, we intend to go in for postcard greeting cards this Christmas. Could you give me the name of most suitable camera, if I am not asking too much? I do not see anything referring to either in "Almanac."—J. H.

We do not like the design of your proposed studio, but if you are bound to this position we do not see how you can do much better. If you could make the new portion a little longer—say, 8 ft. or 9 ft. in all—you could do a good deal of your work, all busts and sitting figures, across the studio. We should recommend you to have rolled or ground glass everywhere, so as to get the light well diffused, and to use a head screen, so as to cut off the top light from the face without decreasing the general illumination too much. If you can get electric light fitted, we should advise you to dispense with daylight, and put in an enclosed arc lamp. You would get much better negatives than you could hope for with daylight, as you would have to use it. We do not understand your query as to camera for postcards. Any good half-plate camera will answer for these.

TRADING IN COUPONS.—I am at present doing a coupon trade, which is sold for 1s. from door to door by my agents, and the remainder payable at the studio. Well, there is another firm selling a similar coupon, and their agent goes about and persuades my customers to have his coupon in exchange for mine, which in some cases he succeeds, and obtains my coupon to his possession. But when he finds that he can't sell his own coupon he offers mine, and sells it for 1s. Now what can I do to prevent this dirty business? Of course, in the first case he spoils my trade at the studio, and in the second, sells my coupons, which he has nothing whatever to do with.—INQUIRER.

We do not see that you can do anything. The people who buy your coupons can do as they like with them, as they are their own property. You might consult a solicitor on the point, but we doubt if it is worth while. With regard to the reselling of your coupons, we do not see why you should object, as presumably the people who buy them will eventually come to you. If you go in for coupon methods of business you must expect this kind of thing, and your only safeguard is to turn out such good work that everyone will know your coupons to be worth more than those issued by the other firm.

STUDIO.—I am thinking of building a photographic studio, and as with previous ones I have been troubled a great deal by the sun shining in, I shall be much obliged if you will kindly inform me, through the "B.J.," if the single slant light advocated by H. P. Robinson in his book has been found to answer satisfactorily, or whether the double slant is preferable. I notice the "Photo-Miniature" seems to infer that it is not well suited for groups, and requires to be very wide in order to avoid harsh lighting. Height of front wall to eaves, 4 ft. 6 in.; glass to slope from this to ridge, 12 ft. or 13 ft. high, making an angle of about 62, the ridge coming into the room about 5 ft.; width of studio, 12 ft. or 15 ft.; 24 ft. to 30 ft. long.—SINGLE SLANT.

This form is not much in favour in this country, but in America it is reckoned to be equal to the ordinary style of studio for all purposes. We have been in single-slant studios in which groups could be perfectly lighted, but the glass portion was nearly the full length of the studio, so that plenty of front light could be admitted. One great advantage is that the dividing beam at the eaves is dispensed with, giving more light where it is must useful; and another is that there is practically no trouble from leaks. We should be inclined to have the light come a little lower than 4 ft. 6 in. from floor; if you expect to have many child sitters another foot of glass would be helpful. Have the studio 15 ft. wide, if possible.

VARIOUS.—Kindly say: 1. When to stop P.O.P. printing from negatives of different densities and one brand of paper. Neither my long experience nor "to print a little darker than the finished picture" effects the desired result. 2. Give a retouching medium or varnish which can be applied locally over and over again without disturbing the pencil work underneath. 3. I am told that for reproduction the interesting part of the negative only should be enlarged, and that the latter must be at least 12 x 10 size. 4. Can this be done without the use of the ordinary enlarger and dark-room, neither of which can be carried to the various scenes of interest by the ubiquitous press photographer? 5. Would a fixed-focus enlarger fulfil the above requirements?—PRESSMAN.

1. Your negatives ought not to be of such different densities as to give this trouble. P.O.P. is a very elastic printing paper, and suits negatives of widely different types, therefore the differences in your negatives must be very excessive. Inspection is the only way to determine when to stop printing. The only advice we can give you is to try and produce more uniform negatives. 2. Such a varnish should not be required. Evidently the one you use will not take enough work. Try the one given on page 750 of the "Almanac." If a varnish is applied twice over the second application is bound to dissolve the first. 3, 4, and 5. We should say that 12 x 10 is excessive, and in any case a direct P.O.P. or bromide print would probably be preferred. An enlargement will be of no use unless it is a good one. A fixed-focus enlarger will certainly serve the purpose, and we would suggest that a whole-plate one would be big enough.

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**The British Journal of Photography.**

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ESTABLISHED 1854. PUBLISHED EVERY FRIDAY. PRICE TWOPENCE.

TERMS OF SUBSCRIPTION, Post Free

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One Year ... ... 10s. 10d. Half Year ... ... 5s. 5d.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2673. Vol. LVIII. FRIDAY, JULY 28, 1911. Price Twopence.

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## SUMMARY.

Some suggestions for running a high-class photographic studio are given in an article by Mr. L. Haweis on page 568.

The Copyright Committee, appointed to look after the interests of photographers, has had an interview with Mr. Askwith at the Board of Trade, and pressed its view of the matter upon him. (P. 582.)

The importance of technical knowledge in the case of salesmen and receptionists is insisted upon in a note on page 560.

The advantages of the electric fan, in studio or workroom, are pointed out in a note on page 565.

The relative advantages of shutters and lens caps for time exposures are discussed in a note on page 566.

In a paper on the half-tone process by Mr. F. E. Ives, read at the Convention of the International Association of Photo-Engravers, which was held at Cincinnati, U.S.A., the author deals with the early history of the process, and describes his own early experiences. (P. 575.)

The paper on night photography, given by Messrs. J. Keane and S. J. Taylor at the Convention, is concluded. (P. 570.)

Some special points in connection with the use of extra small cameras are considered in an article on page 567.

Mr. G. A. Perley's paper on "Experiments in Solarisation" is continued on page 572.

A simple method of reducing silver chloride to pure silver, or silver nitrate, is given on page 565.

Some suggestions with regard to roll film cameras are made in a note on page 566.

Mr. Tennant Woods describes a method of securing clouds and landscape on one plate by attaching a gridiron mask to the back of the lens. See under "Analecta." (P. 579.)

Our patents columns include details of a folding reflex camera and of an exposure calculator. (P. 577.)

An exhibition of prints by M. Demachy is now on view in the club rooms of the Liverpool Amateur Photographic Association. (P. 567.)

The Council of the R.P.S. make an announcement with regard to the reward of the Society's medals at the last exhibition. (P. 576.)

Our Correspondence columns contain letters on the reversal of the image and on Sunday closing, Mr. Rigden replying to some previous correspondents on the latter question. (P. 582.)

## EX CATHEDRA.

**Treatment of Silver Chloride Residues.** The ordinary and most economical method of dealing with silver waste is to collect it in the form of sulphide and of chloride, and send the lot to the refiner. Sometimes, however, attempts are made to effect the refining process at home, with, as a rule, a very limited degree of success. The sulphide is especially difficult to deal with, and is best left alone, but the chloride is not so troublesome, and its reduction is quite a feasible operation for amateur chemists without laboratory appliances. The usual method is to precipitate the chloride with salt from the solution of silver, then, having collected and washed the chloride, it is covered with water acidulated with hydrochloric acid, and a few pieces of zinc are added, stirring the mixture from time to time. This process is unsatisfactory in some respects, as it takes some time for the zinc to reduce the whole of the silver, further than which the result is so impure, owing to the presence of zinc, that the silver obtained is of little use. Nothing is gained by a procedure that gives a product that is of no use except to sell to the refiner, and the only process really worth consideration is one that gives absolutely pure silver that needs no further treatment. Such a process was once described by Dr. W. Gregory, F.R.S.E., many years ago, in the "Philosophical Magazine," and while he used it more especially for the production of pure silver or silver nitrate from coins, it is equally well suited to the refinement of silver chloride residues. The chloride produced by precipitation with salt is well washed, care being taken to break up with a glass rod any lumps or cakes formed, so that the washing may be thorough. The water is then poured off, and the moist chloride is covered to a depth of half an inch with a solution of caustic potash, of a specific gravity of 1.25 at least, and boiled. During the boiling the mixture is well stirred. Now and again a little of the solid residue is taken out and tested with nitric acid, and when such portion proves to be completely soluble, the action is complete. By this process the chloride is converted to silver oxide, which, after thorough washing, may be dissolved in nitric acid to make silver nitrate, or may be converted to metal by heating, or may be dried and kept in the form of oxide.

* * *

**Artificial Breezes.** On sundry hoardings in West London are to be seen alluring posters which depict an ancient skipper luxuriating in a breeze produced, according to the attached legend, by an electric fan which may be hired on reasonable terms from the Borough Council. The hint is one which should not be lost upon photographers, for there can hardly be any place where such a fan can be put to such good use as in the studio or workroom. Its most general function is naturally to cool and ventilate an ordinary room, but it is even more useful in the glass ovens which, in the vast majority of cases, serve as studios. We were in an old-fashioned studio, with glass all round, a few days ago, and remarked upon the heat, which was oppressive in spite of open windows. Our host at once touched a switch, and put a fan into action, with the result of so far freshening the atmosphere that a portrait could be taken without distressing either sitter or operator. As the fan was simply connected by a flexible lead to a wall plug, it was easy to transfer it to the dark-room while developing was going on, after which it was returned to the studio and served to dry rapidly a rack full of negatives. If electric fans could only be hired from Borough Councils their use would be somewhat limited, but fortunately they can now be purchased for quite a moderate number of shillings, while the cost of the current consumed, especially at "power" rate, is insignificant when compared with the benefits derived. In cases where no electric current is available, it would often be possible to fit a small water motor to drive a fan, the waste water serving for print and plate washing after furnishing power. This arrangement would doubtless appeal to many photographers, who feel that they are not getting full value out of the water companies in return for the heavy charge for "trade purposes."

* * *

**Salesmen and Technical Knowledge.** In one of our American contemporaries an article is devoted to the importance of technical knowledge on the part of salesmen and reception-room attendants, it being pointed out that every person who comes in contact with a customer should know all that there is to know about the things sold, so that never, in any circumstances, can the customer have the feeling, "These people know less than I do—I can't get real expert service here." Too often dealers and photographers alike forget the very obvious importance of practical knowledge. Customers as often as not require advice as well as attendance, and if they cannot get the advice, or if they receive advice which their own knowledge tells them is wrong, a very bad impression is created, and confidence is lost. In most cases everything depends on first impressions, and the impression of want of knowledge is as likely to drive away a promising customer as actual rudeness. Many a time we have heard customers say that they would call again when the manager was in, which statement obviously implied that the salesman in attendance did not know enough to satisfy them, and also suggested the extreme likelihood of their never returning at all. It must be remembered that in these days amateurs, who form the majority of dealers' customers, as a class know a great deal more about the technique of photography than they did a few years back. It is never safe to assume that the customer is ignorant or to try and bluff him with information of doubtful accuracy. It is best to at once plead ignorance, and to immediately fetch someone who is better informed. The writer from whom we have quoted above, draws special attention to the importance of knowledge on the part of receptionists who are often called upon to give advice with regard to dress and colours. They should not only be prepared to advise correctly, but also to give convincing reasons for their advice, otherwise customers with ideas of their own on the subject are very likely to ignore the advice.

* * *

**Shutters for Outdoor Work.** Referring to our recent article on studio shutters, one of our most experienced workers said that he only felt really comfortable when using the old-fashioned lens cap for outdoor groups. His attitude was that of the old coachman who said, "if a coach turns over, why there you are, but if you are in a railway accident, why, where are you?" Mishaps can occur with a cap as well as with a shutter, and he preferred to use the simplest means of effecting his exposure, as being the most certain. Curiously enough, he did not use the cap in his studio practice, having the latest and best shutters fitted to his indoor cameras. There is, of course, something to be said in favour of both cap and shutter, although, to our mind, the balance is greatly in favour of the latter. The cap takes little room in packing, and, if properly fitted, is easy to work and not liable to shake the camera. It also serves to warn the sitters when the photographer's hand goes towards it to make the exposure, and it is perfectly plain to be seen whether the lens is covered before withdrawing the slide. On the other hand, movement of the camera often results from attempting to give a very short exposure with a tightly fitting cap, while a loose one has a knack of falling off while the slide is being drawn. The troubles attendant upon the use of a shutter are fewer, the principal one being the loud click given by most of the roller blind shutters when set to time, which is very apt to cause quite involuntary movement of nervous sitters. There is also the necessity for setting before exposure, and the possibility of the setting cord becoming entangled with the tube or other fittings of the shutter, with the result of great over-exposure, if not absolute loss of the plate. The remedy for these troubles lies in the selection of the proper shutter. For ordinary group work and for all subjects where great speed is not required, the Silent Studio or Everset type should be chosen, and, whenever practicable, it should be fitted behind the lens. This allows of diaphragms being easily seen and manipulated, and colour screens changed at will. Either the roller blind or Ideal patterns are very suitable for this work, the slight sound made by the opening of the latter being quite inaudible to the sitter.

* * *

**Wanted—A Lens.** The increasing use of folding roll-film cameras, not only by amateurs, but for a considerable amount of commercial and technical work, necessitates certain modifications in their design which would enable their utility to be considerably increased. One of the severest limitations lies in the restriction of focal length of the lens. When the spool of film is in position it is obviously not possible to remove the lens and replace it by another, yet for a great deal of work the use of any one of two or three foci is a most important consideration. We are aware that there are double extension roll-film cameras on the market, and that with such the front component of the lens may be detached, the back component then giving a focal length of usually almost double that of the complete lens. There are two disadvantages: first, that the difference in focal length is usually too great; and, second, that the aperture is too small for rapid work. What is wanted on a 5 by 4 or a quarter-plate instrument is a series of foci of, say, 3¾, 4¾, or 6 inches, or 4 and 5½ inches. In either case the major portion of the work would be done with the greatest focal length, the shorter foci being reserved for wide angle records. One way of accomplishing this would be to employ a convertible anastigmat, the variation from 4 to 5½ inches focal length being obtained by changing the front component only. There are on the market already several lenses which are capable of modification in this way, and it should not prove an insuperable task for the opticians to vary the design to provide what would be a most useful instrument. The reversing of a Cooke lens in the shutters, thus leaving the extension glass accessible when a film is in position, is one instance that naturally occurs to us. There would also seem an alternative method if the designers of the cameras would provide a safety blind, which might be wound down to cover the spool film while the lens was changed for an entirely different one of wider angle.

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## SOME POINTS WITH REGARD TO EXTRA SMALL CAMERAS.

The extra small pocket camera of so-called vest pocket size is rapidly becoming so popular that its use and peculiarities deserve some special consideration. In several respects it has advantages over the more ordinary type of folding quarter-plate camera, and some of the advantages due to the use of an extra short focus lens of large aperture we have already dealt with. The very material advantage of portability needs little comment, but the extremely compact nature of the instrument leads, incidentally, to the encouragement of the use of changing boxes instead of, or in addition to, dark slides. With the pocket quarter-plate camera the changing box is too bulky an article to be even considered when portability is a matter of moment, but with the vest pocket apparatus the changing box is nearly as portable as the camera, and a couple of boxes can be carried without difficulty in the coat pockets. There are, however, one or two points worth consideration in connection with the use of these boxes.

In the first place, it may be taken as an axiom that no folding camera should ever be closed with an uncovered plate in position. In any case, the act of folding is a prolific cause of pinholes, owing to the disturbance of dust within the camera, while in many types of cameras the folds of the bellows actually come into contact with the plate film, and so produces pressure marks. It is, therefore, essential to close the shutter of the changing box before shutting up the camera. If the changing box has an ordinary pull-out shutter, as is usual in all the larger sizes, there is no difficulty in covering the plate, but the little metal changing boxes supplied with the small cameras often have a different arrangement. When an exposed plate is removed from the front of the box to the back either one of two things may happen, according as we may have "set" the box. Either a new plate will come into position ready for exposure or a flexible shutter will take its place and close the box. If the former setting is in use and we then decide not to expose, we can only close the box at the sacrifice of the unexposed plate already in position, that is to say, we must change it while still unexposed, in order to bring the shutter into action.

There are two ways out of this difficulty, each of which has its own advantages. If subjects are plentiful and the camera is in constant use, we can keep it always extended with a plate always in position, and if working in this way, a sling case that will carry the extended camera with changing box attached is very useful. Though the camera then ceases to be suited to the vest pocket, it is, nevertheless, very compact, and a case measuring about 5 x 4 x 3 inches will carry it readily. The other alternative, which is the one we generally adopt, is to make a habit of so setting the box that the shutter will always replace the plate. If wanted, a new plate can be brought into position in a moment, so that little or no time is wasted. All that is required to work in this way is a little practice with the changing box, when the necessary adjustment will speedily become habitual.

Another feature peculiar to the extra small camera is the extreme thinness of the plates. From the point of view of compactness and lightness this is a great advantage, for a gross of plates has very little weight. The negatives are, however, very fragile and easily broken when we attempt to clean the backs before printing. Care is wanted at this stage, but it is also necessary to exercise a little care in loading the dark slides, if they are of the ordinary variety, loaded from the front. Some load from the back, and these present no difficulties, but with the others it is a very easy matter to cut the finger while pressing the plates down into position. Instead of using the top of the first finger a piece of hard wood or ivory should be used for the purpose. If a little rebate is cut on the end it will serve just as well as the finger, and while a possible cut of a painful nature will be avoided, there will also be no chance of impressing the face of the plate with a finger mark. The same tool will be useful for unloading the slides.

In a recent Ex-Cathedra Note we referred to the extreme rapidity of the short focus large aperture lenses used in these little cameras. One great advantage of this rapidity is the fact that a colour screen can be used for snapshot work. Using a K1 screen, a panchromatic plate of about 90 Watkins, and giving an exposure of 1-10 second, with aperture of *f*/6.3, we have obtained very fully exposed negatives on subjects of "normal" type and in good light. Even 1-25 second was not under-exposed. From these results it is obvious that with fast panchromatics of about 200 Watkins, and an aperture of *f*/4.5, we can cope with much more difficult subjects. We can even use a K2 screen on occasions when the light is good, and thus a range of work is open to the little camera that is impossible with many more ordinary types of apparatus that have not the same advantage in rapidity.

With regard to focussing the depth given by the small lens is so great that it is very seldom necesary to touch the focussing arrangement. Working at *f*/6.3, which is a good aperture for general work, and with the focus set to the hyperfocal distance, or even to infinity, it is very difficult to detect any defect in focus in the case of subjects in which there is no very near object. It is only when the principal subject comes within about 10ft. of the camera that it becomes necessary to focus.

Most of the vest pocket cameras are fitted with finders, but we cannot look upon these adjuncts as very necessary. If the back of the camera is pressed against the forehead and the object is viewed under it, it is almost impossible to aim incorrectly, and a finder appears to us to be as unnecessary as sights upon a gun.

As regards portability, one dozen plates can be carried in the pockets, in either slides or a changing box, with the greatest ease. We have often carried both the box and the slides about all day without ever noticing their weight or bulk, and on an extended trip an extra changing-box that would increase our number of plates to three dozen would hardly be an inconvenience. A sling case to carry the camera and a dozen plates is no larger than a small field-glass case, and so whether we rely on a case or pockets, or on both, portability is a very real feature of these cameras.

One more hint with regard to these cameras. We have before advocated fitting a sling to a camera of this type, an addition that we find by experience to be eminently useful and convenient. Some types are not fitted with lens caps or with any means for covering the lens, but if the camera is to be carried in the pocket, such a cover is absolutely necessary to protect the lens from damage and keep it free from dust. If such protection is not provided, the omission should be rectified without fail.

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A Demachy Exhibition.—On Saturday, July 22, an exhibition of some seventy prints by M. Robert Demachy was opened in the club rooms of the Liverpool Amateur Photographic Association. The prints comprise M. Demachy's latest work, and will be on view until August 5. The exhibition is open daily from 10 to 7, except Saturdays, when the hours are from 10 to 4.

# SOME SUGGESTIONS FOR RUNNING A HIGH-CLASS PHOTOGRAPHIC STUDIO.

As there are more ways than one of killing a cat, so there are more ways than one of running a studio. If "tabby" is your objective, you would hardly adopt the tactics usually associated with the pursuit of "stripes." If you propose to run a stamp and postcard outfit you would hardly go about it in the same way as though you were angling for the cream of society. Even the details of business, with which the general public has no concern, would differ, and differ very widely. In the very cheap trade, the careful numbering and storage of negatives, for instance, is so much waste of time, space, and energy. In business, you cannot afford to do what you are not paid to do any more than you can afford to do what there is no object gained in doing.

The method of running a studio depends upon three conditions: What you can do; How you do it; and Whom you do it for.

### Trade or Profession—According to the Photographer.

The photographic studio is a trade or profession—is, in fact, what you can make it. The less of the personal element that predominates the more of a trade it becomes, and vice versa.

What, in short, is it that you want to do? Are you after the volume of trade, or high prices in particular? Will you cater to the masses, the vast and predominating demand for a reliable map of the human animal dressed as the dolls of social requirement? or, Are you striving to appeal to the nobler instincts, character, and refinements cultivated and fostered by the high exponents of a latter-day civilisation? Given the ability, this question, or something like it, is the first that you will have to decide. And you will decide it by what you can read into the practice of it in the way of modification with reference to your own particular necessities and devotions.

As a recent writer on this subject has remarked, a magazine editor could hardly provide the necessary space for a man who was capable and willing to exhaust the subject. It is therefore necessary to specialise, and I propose here to offer readers a few ideas—or, perhaps, it would be more honest to say—since I can claim no special originality for them—recapitulate a few ideas for running a studio on neither cheap nor even middle-class lines, but rather upon those which lead to the expression of the personal factor, and the comparatively high prices which that expression always commands.

### Personality.

Personality is the most elusive thing in the world, but whatever it is, and whatever it means, that is, how it re-acts upon our fellow-mortals, and to what end, these considerations at any rate may be differentiated for the purposes of this note. We can say, for instance, that the man who attracts us, with whom we feel personally at ease, whom we respect before we know (whether we respect him afterwards or not), who can make us forget ourselves in the interest of his society—that man has personality. I mention these points only in illustration of that phase of personality which lies on the surface, that, like the sparkle of some precious metal in a chunk of dross, attracts and interests from the outset; and, for a client, the moment he enters your studio, to feel interested and attracted by the personality of the photographer is half the battle of the business.

And yet this man may be a cold enough fish when you come to know him better. That points to the fact that personality on the surface only serves one purpose—if a very valuable one; that other, and perhaps "better part," reveals itself only gradually through prolonged intercourse and better acquaintance. Interest must be sustained beyond the reception-room, beyond the sky-light, and beyond the threshold of your business. It must invade the innermost sancta sanctorum of clients themselves: its influence must be felt there, where the surface sparkles cannot reach to illuminate.

### The Money-end—Tact in the Reception-room.

To be poor in either of these qualities, gifts of personality, is to be the worse for it; in the first case, interest will be inspired but not sustained; in the latter, the interest can only operate after the tools of enforced social intercourse have mined and brought it to light.

This, I feel, is the flimsiest statement of fact, and I have only remarked on it since it is an absolute *sine qua non* in every class of service which aspires to the dignity of a profession. Doctors, lawyers, politicians, pastors, artists—all and every one of these know full well that humanity bows before the fetish of personality, be it good or bad. And all photographers at the top of the tree, and many who are still climbing, know it full well also.

The next asset of the photographer, whatever his personality, I put down as Tact. Tact may or may not be a feature of your strong-personality man, but, if it is not, he will suffer grievously in his business relations with clients.

It has been said, and very truly, that the money of a photographic business is made in the reception-room; consequently, if you are wanting in tact and resource, if you are naturally impatient and have difficulty in concealing annoyance, leave the business-end of your establishment in the hands of one perhaps not so gifted as yourself, but who has just that modicum of tact and good manners which in many businesses, and it may be in yours, is worth all the personality of a dozen others like you rolled into one.

The artistic temperament is all very well—it is fine, delicate, discriminating; but it has all the defects of its good qualities. Conceded that you can deliver the goods, it does not follow that you can take the orders for them. If you can, all the better for yourself, at a pinch; but it is just as well, in running a high-class establishment, or any sort for that matter, to keep out of the market-department. Exceptions will occur to everyone, but, on the whole, more dignity is lent to the profession by the absence of barter with the principal. Leave that to your high-priced receptionist. Get away from the money-end. It will cost you cash; but a first-class receptionist is worth her weight in gold anyway. The money-end of the business is a necessary evil, but that is no reason why you should mix yourself up personally with it. If you can avoid it, do so by all means.

### To Some—Talk of Qualities, Not Prices.

After all, your reputation must count for something. People come to you—the heaven-born artist—knowing that you can and will do them justice. They come to you for pictures; take them, and without unnecessary delay. Prices and styles with proofs. That is the ideal way. The discussion of prices with such as I have in mind is the fly in the ointment; for, remember, the best class of client, to whom perhaps you are no whit inferior intellectually, is in its way just as touchy as yourself. A dollar more or less to these people is nothing provided they get what they want. Of course, even the best studios are not visited by exactly the same class of people throughout. That being so, how much better to leave all classes in the hands of your receptionist! Rather than talk prices, let her prove and exhibit to clients the value and virtues of your work. Satisfied with this, the last qualm is dissipated, and they enter the dressing-room fully aware of the satisfaction they will receive at your hands.

### To Others . . .

But there will enter those—strange to the special working of your establishment—who will demand prices and styles before they sit; and there will be times when the proprietor will be quite unable to avoid them without rudeness. In that case, he must do the best he can. Under these circumstances, he would be well advised to have a little conversation ready. Having replied to a number of questions in terms of cash, he may find his opportunity in such wise:—

". . . . but I really dislike discussing prices, especially at this stage. It seems to rob me of my chief pleasure in taking pictures." Thus the personal note is introduced, and, noting the effect of this little speech, he may then confidently continue:—

"You know, what appeals to me is that my clients should feel satisfied from my pictures that I can do them justice. If that should be so in your case, this is what I propose to do. You have told me what you would like," or "I have seen which are the styles you most favour, but I would suggest that I take several different positions in several different sizes. That is my usual custom. It really is more satisfactory than sitting for one particular style and size, as it gives you a choice you would not otherwise have. It also affords me an opportunity of showing what I can do in your own case, and it will cost you nothing but a little extra time. Indeed, I would go so far as to say that, if you have not ample time at your disposal now, I would suggest you make an appointment for some other day when you would be more at leisure. Nearly all my work is by appointment; but my convenience in this matter shall be yours. Then when we have the proofs you can decide which shall be finished off. After all, we can do nothing without the negatives, and you can have them completed in any style and at any price which you may then decide upon. What do you think? Shall we try several positions, including, of course, some of those you fancy?" And you will find that in nine cases out of ten the personal bait will be swallowed—as, indeed, it should be. It sounds good to most people, in my experience; it proves workable, and the principles are sound.

"And if none of the pictures suit, how do you arrange?"

"Well, you can sit for your pictures as often as you like. No charge is made for this. That is the only way I can guarantee my work; and by that means I am sure that none but satisfactory pictures leave this gallery. But I very rarely have any re-sits, owing to the number of positions I take in the first instance. Re-sits are troublesome to clients; but those who desire to re-sit are welcome as often as they care to visit me for that purpose."

This is straight talk: it is more. It is straight dealing: it is more. It serves to emphasise the personal equation for which people will pay.

### Some Maxims in Reception-room Arrangements.

And the third requisite is Taste.

As soon as a client enters your premises, she should find that about her which will move to admiration, or, at least, not incite to antagonism. Everything should be orderly, clean, and in good style—the style of the proprietor—for "style is the man."

If you care to make it so, the reception-room can be "homely," furnished and upholstered much as you might choose for a living-room, not sacrificing anything, of course, in the way of viewing convenience. The lighting of the pictures should be good, just enough and not too much. It is hardly realised, or, at least, it is rarely practised among the fraternity, or even by exhibition committees, that photographs are best seen by reflected light. This is fairly common to find in the case of, say, big-framed portraits; but the principle applies just as much to small work, and given the taste and desire, it should not be impossible so to arrange practically all pictures on show in such a way that they are never seen in direct artificial light. If daylight, it must at least be soft and diffused.

And do not crowd your wall with pictures. Let them be of the best, and appropriately spaced. The best pictures, if crowded, will appear inconsequent. Give them room, and photographs, more than any other class of pictures, want plenty of room owing to their comparative lowness of tone.

And the furniture, too, should be roomy, comforting to see, comfortable to use, not too much of it, not too shiny—shining, that is, with the shine of new varnish. High-power varnish is an abomination anyway. Avoid especially the massing of heavy curtains with meaningless cords and tassels that tie nothing and collect dust. They have their uses—monumental, theatrical—at times, in places; but you do not want them about you always. Too often are they heavy and lugubrious or garish and tawdry of effect.

If good taste is to be a consideration, inasmuch as it is now under consideration, be chary of the gilt on your frames. If you framed every picture on its own merits, you would find very little use for gold at all. The rule is never to put a gold line round a picture when any other colour would serve its purpose as well. And that purpose? Why, to set the picture off to best advantage, to be sure. Gold nearly always attracts, and therefore, distracts the eye. In fact, even the lack of gold distracts—although that, perhaps, is due to other causes. For decoration, it should be used very sparingly, or in great preponderance, for in its very preponderance the eye will be the more apt to lose sight of it. Any intermediate proportion is fatal in the framing of a photograph.

### When to Talk About Prices—

And the less obviously a show-room is a show-room, the better sort of show-room it will be—the more restful, the less distracting. Relegate to an ante-room, if possible, all evidences of business—desks, ledgers, pigeon-holes, and the like. Keep the cash department in the background, as you may find it, as I have found it, more satisfactory to keep the actual discussion of prices until the time you can discuss such matters with the proofs before you. The mere viewing of the proofs tends to distract clients' thoughts from the cash consideration. This does not necessarily mean that you take no deposit, although, in the case of guarantee work and no charge for re-sits, deposits are apt to lose their extrinsic value. It might be your business rule that every client pays a fixed sum before sitting—say, £1—what you will, that is your affair. But with the class of client I have in mind you will probably find you can do without even this business method. If so, all the better. At the least, you can use your discretion. And this is easily done; since your receptionist, in the course of her duties, may mention casually that the same nominal deposit is required of everyone as a matter of form. The best time to arrive at the actual price of the order is with proofs before one. You stand a much better chance then of getting your full price without rebate, and you can, at the same time, best prove your reasons, if required to do so, for charging such a price.

### And How to Justify Prices.

Every picture, you can then explain, is treated on its own merits. Thus, to say that your mounts are designed by yourself and executed under your direct personal supervision on the premises, and not in California, or Montreal, or New York, means that they are exclusive. You do not buy ten thousand cards and retail them with pictures attached. You do things differently. Having made the pictures, you proceed to build the mounts to suit them. This means that you provide a more tasteful picture, regardless of price, than your clients are likely to get elsewhere. This line of talk presents a direct appeal to the client's taste for quality, exclusiveness, and personal attention, which, in most cases, will obliterate any desire to cut price, a thing which you must never do under any circumstances, unless you can see exactly where is the actual tangible return for such concession.

Explain that, under your system, no one style is better than any other. A client may show a preference—that is a matter of taste; you may yourself have a preference—that, again, is a matter of taste; and one style must be worth more than another for reasons which must be apparent. The materials are more expensive, the work is more specialised, the time it takes to complete it, longer, and so on.

Is this business? I believe it to be business of the best sort, since such methods tend to carry the interest of the transaction into the homes of clients, while at the same time it lifts the whole matter above the level of an ordinary business deal.

But this is not to say that, given the clientèle, a business run on such lines is any better than a comparatively middle-class trade, except in so far as the best is better than inferior taste, and that it is better to do that which you like doing rather than that for which you may have no special desire, possibly even a special dislike.

### The Final Aim—To Make Each Sitter Advertise You.

The subject is but scratched anyway; from beginning to end the photographer must realise he must cater to his clientèle. What people want, that they will have. When a client says she does not like her pictures, she is always right; but when she begins giving her reasons for her dislike, in seven cases in ten she is wrong. This only goes to prove that people generally know a good thing, but do not always recognise a bad thing when they see it. A few good reasons and short tactful explanations thrown in, as a matter of course, will put most of them right. Why bother? Because if you don't or can't put them right, someone is sure to trot along some day and do the work you left undone, and that is not usually such a long day off, and it won't be done half so considerately, either.

It is a law, or a foible, whichever you will, of human nature to treat oneself a shade better than you can expect to be treated. Therefore, I say, deal considerately, sympathetically, intelligently, courteously, and not too mercenarily with your sitter "whiles you are in the way with him," for only by so doing can a photographer ever expect to retain his client's interest in his favour; encourage him to sing his praises as an artist and an honest man, and return to him for pictures—the liveliest test of his opinion of him, that!—with the persistence of a recurring decimal.

And if this is not good advertising, I don't know what is, that's a fact.

L. Haweis.

# NIGHT PHOTOGRAPHY AND HOW IT IS DONE.

(Conclusion of a paper by Messrs. J. Keane and S. J. Taylor, read at the Photographic Convention on July 14.)

## II.

A swing front or swing back is of great utility in enabling us to get foreground and distance sharp at full aperture; if the light is insufficient to enable us to judge the effect of this movement, a friend must be invoked, to burn fuses at suitable points in the foreground. It is important to remember, when the next exposure comes along, that the back or the front *has* been swung out of parallel, as otherwise we may find bad definition in some part of the plate where it was not expected.

The coarse ground glass sometimes fitted in focussing-screens should be replaced by one of the micro-grain screens now obtainable, and as an additional aid to accuracy, it may be wiped over with a little olive oil to render it more translucent. We may add in this connection that the square top screen of a reflex is not always easy to use at night, the cross-lines marking the boundaries of the vertical and horizontal view being often invisible; a screen automatically masked by the revolving back, as on the Adams' Minex, overcomes this objection; but usually it is just as easy to use the back screen instead, when there can be no doubt as to what is and what is not on the plate.

The box-form camera, with scale focussing, may, of course, be employed, and in this case it would be well to carry a pocket electric lamp for reading the scale, since one is often obliged to work in dark corners; the same little accessory is useful for reading the numbers of dark-slides, and at all times it may be employed for making notes of exposures for future guidance.

The most important part of the camera is, however, the lens, and although, as we have said, an ordinary R.R. may be quite serviceable, still, there is no branch of photographic work in which great rapidity is of more value than in making night exposures. By daylight, the difference between a quarter and half a second causes no inconvenience; by night, the doubling of a 15-minute exposure to half an hour may mean all the difference between a slight cold and an attack of pneumonia. Poor definition, again, may be of small consequence when we can correct matters by stopping down to $f/11$ or $f/16$; at night, we require perfect definition at full aperture. Mr. Harry Wild, to whose work we have already referred, states that it is quite practicable to increase the rapidity of a lens by fitting a supplementary wide-angle planiscope, so as to shorten the focus; but we should imagine that, if the reduction of focus is sufficient to alter the speed appreciably, the definition would be very poor, and to stop down with a view to correcting this would deprive us of any advantage obtained. Mr. Wild says that the Aldis anastigmats stand the addition of a supplementary lens better than most; on an anastigmat of our own we found it out of the range of possibility.

As to exposures, we cannot lay down any hard and fast rules, or do more than state what has been successful in our own experiments. The old dictum for daylight work, to expose for the shadows and let the high-lights take care of themselves, applies with added force to night work, since it is in the rendering of the shadows that the success of most of our pictures will lie. It is easy enough to expose a plate for a few seconds and secure a sort of star-map of lights on an inky background, but we must get more than these if we want any element of the spirit of night in the subsequent print. We must expose the plate so that the shadows, and especially the shadow *values*, are impressed upon the plate as well as the high-lights, since no amount of careful development will bring out detail where there has been insufficient light-action. In a sense, every night picture must be under-exposed, since we do not want more detail than the eye could see; and if we overdo the exposure we escape Scylla only to be wrecked on Charybdis; our result, instead of suggesting night, will suggest daylight. There are some subjects with which this effect need not be feared; as that eminent authority, the Walrus, has remarked, "A summer night is all too short to secure nice soft detail on the shadow side of a tarred fence," but when the scene is well lighted the risk of over-exposure is very real. We must always remember that the effect of light on a plate is cumulative; it has been said that a photographic plate will make a record of anything if you give it time; and we all know that it is possible, by long exposure, to secure photographs of stars which the eye can never see. We may digress here to mention a funny howler recently noted in the "Daily Ahem!" which gravely stated that the plate recorded invisible stars because it might be exposed for six hours or more, whilst the eye could not be kept at the telescope for longer than an hour and a half. The inference being that, if you watched long enough, you would see more stars—and perhaps you would.

It follows then, since the light-action on the plate is cumulative, that we may secure more shadow detail in the negative than we could actually see at the time; and the converse equally holds good, that shadow detail which was visible in the original scene may be wanting from the negative if the exposure has been short. In practice, one soon learns to judge the necessary exposure from the view on the screen, and although we have occasionally been led astray by the desire to secure startling effects, our percentage of failures through under-exposure has been small.

We were showing some of our results to a photographic friend a while ago, who remarked, "It seems to make very little difference whether you give a quarter of a second or five minutes." The explanation, of course, lies in the very wide variations of lighting we have had to deal with; our exposures have ranged between the figures mentioned; but the subjects have sometimes been illuminated by half-a-dozen arc-lamps, and sometimes by a single incandescent burner. These things must be reckoned with.

Malcolm Arbuthnot has recently stated that with a Dallmeyer 2B Patent Portrait Lens, working at *f*/3, fitted to a Shew ¼-plate Reflex, with a focal-plane shutter working at the slow and invaluable speed of one-tenth of a second (as all Reflex shutters should), he has taken a successful snapshot at 8 p.m., about the end of April, when it was dark to all intents and purposes. He points out incidentally that such a lens possesses little depth of field, and as the most accurate focussing is necessary a Reflex is almost essential; but that provided there are no near objects in the foreground there should be no difficulty in scuring sharp negatives.

We may add that with a 7-inch lens at *f*/4.5 we have usually been able to secure good general definition, although in some cases the distance has had to be sacrificed somewhat for the sake of the nearer detail.

The focal length of the lens will make some difference to the permissible length of exposure when the view includes moving objects; a short focus means that distant objects will have little apparent motion. It may sometimes be possible to include slowly-moving figures with an exposure as slow as one second, or even longer, but this only applies to those travelling directly towards or away from the camera.

The condition of the atmosphere counts for a great deal; a light mist and wet pavements facilitate work considerably, and in the case of the latter, foreground detail becomes visible, which on a dry night would make no impression at all. Wet pavements also throw up figures and vehicles into relief and produce interesting reflections in what might otherwise develop up as a mere faint grey fog.

Moonlight, despite its comparatively feeble actinicity, is a useful auxiliary to the night worker; it is possible to take photographs by moonlight alone, but the results obtained are disappointing pictorially, there being nothing to distinguish them from daylight views. We have seen some specimens in the possession of Messrs. Elliott and Sons, makers of the Barnet plates, which, taken at *f*/6.8, with an exposure of ten minutes, had all the appearance of scenes in bright sunlight; and although the detail and reflected lights were very surprising, there was in them nothing to suggest moonlight. If, however, we utilise the moon to illuminate our skies somewhat, we shall find that roofs and trees show up very nicely; and without committing ourselves to any definite statement on the point, we should estimate that the exposure may be reduced almost one-half by enlisting the services of the full moon.

Snow and frost, of course, produce beautiful night effects, and the presence of either shortens exposures, so that a combination of snow and moonlight gives us the most favourable conditions for quick work; we should hazard a guess that one minute at *f*/4.5 would be sufficient to secure good rendering of a snow-covered moonlit landscape.

Now as to development; if it is true that we may spoil our results by over-exposure, it is equally true that we may easily do so by over-development. A night negative will often consist largely of almost clear glass, and there is a great temptation for those who develop by sight to prolong the process in the hope of forcing up detail where there is no detail to force up. Development should not, therefore, continue much longer than the normal time, although we may make exceptions in certain cases. A street scene in which there is much light mist may stand prolonged development, because there will be no specially dark objects in it, and we are not likely to obtain excess of vigour. Where the contrasts are great, as they often are, a thin negative should be aimed at, and should the result be too weak, intensification will probably give printing value without blocking the high-lights. Every worker, however, will have his own ideas as to the extent to which development should be carried, and will probably do well to use his favourite developer. Mr. Wild uses the Imperial pyro-metol formula, one part of No. 1 to two of No. 2, and employs it at a temperature of about 75 degrees, adding water at discretion. If there be any magic in developers, we think it is in this one; for if the bromide is omitted (and bromide is quite unnecessary in our experience), pyro-metol will bring out everything that is to be brought out, and the non-actinic colour of the deposit will give maximum printing value.

Stand development has its advocates, and glycin, rodinal, or azol may be used. Whatever developer is employed, we do not recommend ready-made powders or solutions, as these, being prepared for the special use of beginners, are often generously loaded with pot. bromide, which certainly prevents fog, but unnecessarily restrains the weak shadow parts which we want to develop up. For the same reason, the developer must not be overworked, since the products of development will exercise the same restraining effect on those exposures which are developed last.

It is perhaps needless to say that a warm developer calls for the use of a warm fixing bath, so that the plate may be let down gradually, as it were, and frilling troubles obviated. We may also be pardoned for observing that the utmost care should be taken of the wet negative, for, bearing in mind the awkward things which sometimes happen to the best negatives, even of experienced workers, we must see that no finger marks impress themselves on the plate, as, especially where the deposit is thin, they are sure to print out prominently.

We may now consider some of the troubles and difficulties incidental to night work which do not greatly concern the daylight photographer. The most obvious of these are the weird ghosts, flares, and halations which occasionally trouble every night worker.

Halation, we fear, cannot be avoided when direct lights are included in the view; nor is it desirable to eliminate it altogether. A certain amount of glare is natural, and often a well-backed plate will show no more than was apparent to the eye. We may, however, get rid of it after development by the process known as rehalogenisation. We can bleach the image in a suitable bath until it becomes soluble in hypo; we then re-develop it in a weak developer, stopping before the halation, as seen at the back of the plate, has darkened, and immediately fixing it out, leaving the thinner parts unaltered, where the second development has taken place. This process calls for a certain amount of judgment, but it is much more reasonable than attempting to rub down the film from the top surface. The usual plan is to do this with alcohol and a rag, but we must remember that halation begins from the glass side of the plate and strikes upward, so that in working down to it from the top we may remove the image which we want to preserve before we reach the halation which we want to get rid of. The rehalogenisation method attacks the trouble at its source, and if properly carried out should not affect the image at all.

The best plan, of course, is to arrange the picture, if possible, so that some opaque object comes between the lens and the light, when the halation difficulty will most likely disappear.

Ghosts and flare-spots are more difficult to dodge, for the reason that they are often not noticed on the focussing-screen. A ghost is a duplicate image of the light, usually seen in an inverted position somewhere about opposite to the original. If it is surrounded by a circle of light we call it a flare. The cause is supposed to be reflections from the internal surfaces of the lens; but it by no means follows that a lens with many open surfaces will necessarily be subject to flare, nor that a cemented combination will be free from it. We have seen flares produced by a Zeiss Protar, a cemented lens of unimpeachable good quality, and a Zeiss Tessar and a Voigtlander Heliar, each with six open surfaces, appear almost free from the fault. Again, a Steinheil Unofocal, with eight surfaces, produced flare, but a Beck Isostigmar, with the large number of ten, we are told by its owner, gives no trouble.

Flares and ghosts, then, are not necessarily a matter of the number of glasses in the lens, and a complicated system need not be assumed to be unsuitable for night work. Theoretically, all lenses produce flare, but it is disguised by being scattered over the whole field of illumination, and it is only under very adverse circumstances that we find it located in one particular spot. It is the price we pay for rapidity. There are cemented combinations working at *f*/4.8, such as the Watson Holostigmat, but, as a rule, the maximum aperture attained with this construction appears to be about *f*/6.8, which is hardly appreciably faster than *f*/8. We do not advise the night worker to follow the tip recently given in a photographic journal and use the single back half of a Rectilinear with a view to avoiding flares. The back half of an R.R. works at approximately *f*/16, and simple arithmetic shows that if the exposure at *f*/8 is ten minutes, not at all an inordinately long one, that for *f*/16 will be forty. A single lens working at *f*/11 might be used; and such are not expensive. We have also been told that Messrs. Zeiss have made a single lens working at *f*/3 or thereabouts, but we guess this would be a somewhat expensive luxury.

A deep hood is of great service in preventing trouble from stray lights striking the front glass obliquely and being scattered inside the camera, and as it also keeps off the wet, should certainly be fitted.

Flares are of less consequence when it is intended to make a paper print from the negative than when a lantern-slide is wanted. In the former case they may be exercised with a pencil and retouching, but in the latter they are usually there to stay.

Another curious phenomenon sometimes met with is the reversal of a light. If we expose a plate to a bright light for a long time we may find that the image of the light develops up as a positive instead of a negative. This can fortunately be remedied without difficulty by retouching, for nobody expects a light to be anything but white paper, and a spot of ink will effectually blot it out on the negative. The use of a multiple-coated plate is a safeguard; the Sandell plate, for instance, had two or three layers or coatings of emulsion, of different speeds, and could accommodate itself to a very great range of light and shade; but the ordinary single-coated plate of commerce will not stand this sort of thing.

J. Keane.
S. J. Taylor.

# EXPERIMENTS ON SOLARISATION.—II.

(A Paper in the "Journal of Physical Chemistry.")

II.

In order to verify this analogy the study of the action of sodium arsenite upon an unexposed bromide plate was taken up. A solution of ten grams of sodium arsenite in a hundred grams of water was made. In the absence of light, unexposed bromide plates were treated in a similar manner to those in Table V. The data are given in Table VI.:—

Table VI.

| No. | Grams sodium arsenite in 100 cc. water. | Immersion. | After development. | Type. |
|---|---|---|---|---|
| 1 | 10 | 8 hours | 1 min. | black |
| 2 | 10 | 30 min. | 1 min. | white |
| 3 | 10 | 5 min. | 1 min. | dark |
| 4 | 10 | 1 min, | 1 min. | slightly dark |
| 5 | None | None | 1 min. | white |

The gradations obtained in Table VI. were decidedly better than those obtained with stannous chloride. The second negative was black rather than brown, as in the case with stannous chloride.

In the data of Table VI., No. 1 gives the time required to obtain a dense negative. Darkening really begins very rapidly after passing through the white stage of No. 2. This white stage, for the concentration used, existed only for a short interval. It was very interesting to note that in both cases the change from the first negative through the solarisation zone to the final reduced negative is much more abrupt than that produced by light. Then densities of the initial negatives were nowhere near as deep as those produced by light action. This was deceptive in the first work, and the complete stages were not obtained. By careful regulation of the time of immersion the whole thing comes out splendidly, especially with sodium arsenite.

### Effects of Weak Developers.

In order to increase the range of chemical solarisers the ferrous oxalate developer was next taken up. At first sight it seemed possible to gain any gradation desired by utilising the proper mixture of ferrous and ferric oxalates. The oxalate developer as given by Eder was employed and the ferric oxalate solution was made in the same ratio.

| Solution A. | Solution B. |
|---|---|
| Neutral potassium oxalate 100 grams<br>Water 300 grams | Ferrous sulphate 100 grams<br>Water 300 grams<br>Sulphuric acid 5 drops |

With these solutions the results as given in Table VII. were obtained with an after development of 1 minute and then fixing:—

TABLE VII.

| No. | Ferrous oxalate solution cc. | Ferric oxalate solution cc. | Water cc. | Immersion hrs. | Immersion min. | Immersion sec. | Gradation. |
|---|---|---|---|---|---|---|---|
| 1 | 20 | 0 | 60 | 1½ | 30 | 1 | dark to slightly lighter |
| 2 | 20 | 2 | 58 | 1½ | 30 | 1 | dark to slightly lighter |
| 3 | 20 | 5 | 55 | 1½ | 30 | 1 | dark to slightly lighter |
| 4 | 20 | 10 | 50 | 1½ | 30 | 1 | dark to slightly lighter |
| 5 | 20 | 15 | 45 | 1½ | 30 | 1 | slightly dark |
| 6 | 20 | 20 | 40 | 1½ | 30 | 1 | slightly dark |

Separate plates were immersed in each of the above solutions for variable times; the first portion of the plate was in the solution 1½ hours, the next 30 minutes, and the next one minute. Under these conditions only a slight gradation from dark to light was perceptible. As far as verifying the previous analogies was concerned the whole was very unsatisfactory. By much work it should be possible to control this method. As better results might be obtained with fewer variables, only the regular ferrous oxalate developer was used, and the strength varied by diluting. In this method the time of immersion is the only variable, and it makes the matter of manipulation much easier to control. Table VIII. represents the results obtained under such conditions:—

TABLE VIII.

| No. | Ferrous oxalate solution. | Water. | Immersion. | After development. | Type. |
|---|---|---|---|---|---|
| 1 | 40 cc. | 60 cc. | 1 hour | 1 min. | black |
| 2 | 40 cc. | 60 cc. | 30 min. | 1 min. | black |
| 3 | 40 cc. | 60 cc. | 5 min. | 1 min. | black |
| 4 | 40 cc. | 60 cc. | 1 min. | 1 min. | black |
| 5 | 40 cc. | 60 cc. | 15 sec. | 1 min. | white |
| 6 | 40 cc. | 60 cc. | 2 sec. | 1 min. | black |
| 7 | None | None | None | 1 min. | white |

In the work as represented in Tables VII. and VIII. the final development was with the regular hydroquinone developer after washing the oxalate out thoroughly. The changes in gradation here were very abrupt, but could be seen with perfect ease. The final black was especially good, while the initial negative was of a medium density as compared with the final. The detail was much poorer than was obtained in the case of the sodium arsenite, yet the analogy is the same. We have the same thing occurring with different coloured lights and those of different intensities; the blue rays yielding a final reduced negative much more rapidly than the green, and the steps in the gradations are much more difficult to control.

The action of stand developers is well known, and the fact that negatives are always the resultant led us to expect that we were dealing with a phenomenon similar to the above weak reducing agents rather than with one depending on rate of development.

A stand developer[3] was made up of the following composition:—

| | |
|---|---|
| Metol | 5 gms. |
| Citric acid | 0.5 gms. |
| Pyrogallol | 4 gms. |
| Acetone | 16 ccs. |
| Soda sulphite anhydrous | 20 gms. |
| Water | 4,800 gms. |

Exposed plates of the same emulsion were immersed in the same amounts of the above developer for varying degrees of time. The plates were then removed and developed with the usual stock developer. If there was a continual pushing over of the image, as would necessarily follow from our first assumption, we should expect during some stage of the various immersions to be able to develop partial negatives and positives. Table IX. gives the condensed results of many trials:—

TABLE IX.

| No. | Stand developer. | Immersion. | After development. | Type. |
|---|---|---|---|---|
| 1 | 50 cc. | 1½ hours | None | negative |
| 2 | 50 cc. | 1 hour | 1 min. | negative |
| 3 | 50 cc. | 40 min. | 1 min. | flat negative |
| 4 | 50 cc. | 20 min. | 1 min. | flat negative |
| 5 | 50 cc. | 10 min. | 1 min. | flat negative |
| 6 | 50 cc. | 5 min. | 1 min. | negative |
| 7 | 50 cc. | 3 min. | 1 min. | negative |
| 8 | 50 cc. | 1 min. | 1 min. | negative |
| 9 | 50 cc. | 30 sec. | 1 min. | negative |
| 10 | 50 cc. | 5 sec. | 1 min. | negative |

In no case could there be detected the formation of a positive or any signs of a jumble effect. It follows then that the stand developer at that specific concentration acts upon an exposed bromide plate simply as a slow developer, and that the resultant negative is the first negative, and not the second. Farther verification of this was shown by exposing a plate for varying degrees of time to external light, such that a negative, positive and final negative effect were obtained on various sections of the same plate. One-half of the plate was developed in the regular stock developer, while the other half was allowed to remain in the stand developer. Upon comparing the final relative densities no marked pushing over could be detected with the stand developer. Both portions of the plate seemed to maintain consistent gradations.

The above facts then suggested the question within what limits a developer acted analogous to light, and where the action was one of rapid reduction. Accordingly solutions of the above Eder stand developer were made containing 25 ccs. of the developer and 75 ccs. of water. Unexposed plates were immersed in the solution for varying intervals of time. The method was the same as that adopted for the stannous chloride and sodium arsenite experiments. In Table X. are given some of the results obtained:—

TABLE X.

| No. | Stand developer. | Water. | Immersion. | After development. | Type. |
|---|---|---|---|---|---|
| 1 | 25 cc. | 75 cc. | 5 hours | 1 min. | Faint black |
| 2 | 25 cc. | 75 cc. | 3 hours | 1 min. | Faint black |
| 3 | 25 cc. | 75 cc. | 1 hour | 1 min. | White |
| 4 | 25 cc. | 75 cc. | 20 min. | 1 min. | Dark |
| 5 | 25 cc. | | 5 min. | 1 min. | Faint black |
| 6 | None | None | None | 1 min. | White |

The gradations in Table X. were not of the best type, and far inferior to any of the previous solutions. The results would not always check. The possibility of an error arising through the different rates of diffusion of this and the substances previously used gave us a new clue as to the failure. If the developer diffused very slowly there would only be a surface effect, and this would prevent the complete stages appearing on final development. Accordingly, the stand developer was divided into two portions as the following:—

| Solution A. | | Solution B. | |
|---|---|---|---|
| Acetone | 16 cc. | Metol | 5 grams |
| Soda sulphite anhydrous | 20 grams | Citric acid | 0·5 gram |
| Water | 2,400 grams | Pyrogallol | 4 grams |
| | | Water | 2,400 grams |

After many trials the data as given in Table XI. yielded perfectly satisfactory results. A plate was completely immersed in Solution B for a long time, and then for a certain time to one depth in Solution A. The plate was pushed down farther and farther into the solution, and kept there for varying lengths of time. The final development was accomplished with the regular stock developer after the plate had been washed thoroughly:—

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[3] Eder: "Eder's Jahrbuch der Photographie," 21, 475 (1907).

TABLE XI.

| No. | Developer. | | | | Immersion in Sol. A. | After development. | Type. |
|---|---|---|---|---|---|---|---|
| | A. | Water. | B. | Water. | | | |
| 1 | 40 cc. | 40 cc. | 50 cc. | 50 cc. | 18 hours | 1 min. | dark |
| 2 | 40 cc. | 40 cc. | 50 cc. | 50 cc. | 9 hours | 1 min. | faint dark |
| 3 | 40 cc. | 40 cc. | 50 cc. | 50 cc. | 2 hours | 1 min. | white |
| 4 | 40 cc. | 40 cc. | 50 cc. | 50 cc. | 30 mins. | 1 min. | dark |
| 5 | 40 cc. | 40 cc. | 50 cc. | 50 cc. | 5 mins. | 1 min. | faint dark |

Hence we see that the stand developer at a proper dilution duplicates the action of light, but for the usual work this dilution is not practical, and is never used.

A case of the above was called to the writer's attention quite recently. Mr. V. Skillman, of Cornell, had taken several photographs, using a film pack. In accordance with the exposure given a very dilute developer was employed and this required a long time for development. The consequence was that all the films turned out as partial positives and with mongrel effects. The real explanation of this is that, due to the very low concentration of the developer, it has aided in pushing the negative over close to the solarising point, and the action was perfectly analogous to all the previous experiments. Still more recently the writer has received two plates that were partially solarised under the same conditions with a very old developer.

There is one suggestion in connection with all experiments on this particular line of work which might prove an aid to persons unfamiliar with such. When dealing with ordinary white light our density-time curve in its stage towards the point of solarisation evidently has a very gradual slope. From merely qualitative observations the curves with most of the weak reducing agents employed are very abrupt, as would be the case if only violet rays were used in the light exposure. Accordingly, unless sufficient care is exercised the point of solarisation may easily be passed without any knowledge of it. By slow steps there will be no danger of falling into this error.

### Effect of Hypophosphate.

In a previous article[4] the work of Carey Lea had been discussed and the errors of the work explained. Since that time our attention has been called to the fact that with certain grades of sodium hypophosphite there was no evident solvent action on silver bromide. Accordingly the previous experiments were repeated, and the same grade of hypophosphite was used as in the previous case. The results checked perfectly. In order to be absolutely certain of such results the sodium hypophosphite was analysed qualitatively for impurities. Barium chloride gave a decided white precipitate, which upon treatment with hydrochloric acid gave a white precipitate of sulphur. This seemed to show the presence of sodium thiosulphate. Of course, the presence of this substance would explain the solvent action as previously observed. The particular brand of hypophosphite was obtained from the chemical stock room from a bottle labelled C.P. and placed on the American market by a reputable firm. At present we are unable to say whether sodium thiosulphate occurs as a common impurity, but it is easy to see how such might be the case. Of course, the material might have been contaminated by accident. Our previous explanations as regards the action of Carey Lea's solution apply, provided his specific brand of hypophosphite contained the same impurities as those used in our first experiments, and such explanations account for all the observed facts. Pure sodium hypophosphite was prepared by the action of phosphorus on hot caustic, and then by recrystallisation. The pure hypophosphite solution had no apparent solvent action on silver bromide.

It then seemed advisable to try the action of this pure hypophosphite on a bromide plate. A solution of 50 grams in 100 ccs. of water was prepared, and the plate was immersed in it for varying intervals of time. After washing thoroughly and developing with the stock developer the results given in Table XII. were obtained:—

TABLE XII.

| No. | Grams hypophosphite in 100 cc. water. | Immersion. | After development. | Type. |
|---|---|---|---|---|
| 1 | 50 | 48 hours | 1 min. | black |
| 2 | 50 | 25 hours | 1 min. | black |
| 3 | [illegible] | 2½ hours | 1 min. | lighter |
| 4 | [illegible] | 2 hours | 1 min. | medium dark |
| 5 | 50 | 30 min. | 1 min. | less dark |
| 6 | 50 | 5 min. | 1 min. | light |

Thus by dipping a plate by degrees into a nearly saturated solution of hypophosphite the final development yields a plate quite analogous to that produced by the action of light.

A closer observation of the results obtained by Carey Lea showed that "marking a bromide paper with a concentrated hypophosphite solution and then *throwing* it into a developer yielded a negative, but by continually weakening the hypophosphite a point is reached where the marks appear reversely, or lighter marks on a dark background." He leaves the matter at this point without explanation. It was noticed that marks were made on the bromide with hypophosphite solution, so his experiments were duplicated exactly. Strange to say, in the knowledge of our previous experiments, the results checked beautifully. A plate was then marked with clear water and placed in the developer, and here also we obtained light marks on a dark background, provided the plate was not extremely overdeveloped. In the light of this, all of Lea's results become perfectly clear, even though a pure hypophosphite was used. With high concentrations of hypophosphite and throwing into the developer he has at his marking points an extremely concentrated developer. As he dilutes he comes to a point where the reducing action of the aqueous hypophosphite and developer is just the same as that of the developer on the dry section of the plate. For still increased dilution the action of the developer on the marked section is diluted in respect to that on the dry portion. This section of the plate is then entirely different from the dry portion, hence white marks on a dark background. It could not be otherwise. Another curious feature is that Carey Lea cites the action of time as often producing the same effect as dilution. He observed that a paper yielding in twenty-four hours a negative, after that time gave a positive (the dilution was not specified), but that the effect was uncertain. Our last results show a method of making this a certainty, and show that Lea's results on this are in perfect harmony with our present theory. In case the hypophosphite contained impurities our first explanation likewise accounts for the facts, but the effect of time as mentioned by Lea seems to favour the second explanation.

### Methods of Experimenting.

Former work[5] on the presence of a depolariser in the film during an exposure had presented many undesirable complications. With a knowledge of the many factors which could influence the previous results a more systematic outline was followed. Using a standard lantern slide plate, contact printing was resorted to. An arc lamp was used as the source of illumination. In order to eliminate any light differences an automatic shutter, in principle like that of a camera shutter, was placed in front of the arc lantern lens. By aid of this, exposures to a fifth of a second could be controlled. The light was emitted from the lens through a ¼ in. aperture. As these few pencils of rays were too active for the distance available, a rotating sector was placed in front of the aperture. By aid of this the light was cut down to one twenty-fifth of its original intensity. With such a device the quality of light remains constant, while the intensity can be varied by changing the distance of the plate from the source of light or by altering the time of exposure. In all the experiments the plates were exposed at a distance of nine yards from the source of light. As a type of hydroquinone developer the stock one was used with A 10 parts, B 10 parts, and water 200 parts. The metol and oxalate developers were used in the ratio of 1 : 10 : 10 : 200 (metol : sulphate : potash : water).

Plates were immersed in the above developers before exposure.

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[4] Perley: "Jour. Phys. Chem.," 13, 648 (1909).

[5] Perley: "Jour. Phys. Chem.," 13, 643 (1909).

Check plates were likewise immersed in water for the same length of time. All plates were then exposed to the same light at a constant distance from the arc, and then developed immediately. The check plate and the plate containing the developer were always developed together in the same developer for the same time. The data according to Table XIII. show the results:—

TABLE XIII.

| No. | Developer in film. | Exposure. | Resulting density. |
|---|---|---|---|
| 1 | Hydroquinone | 5 sec. | decidedly dark |
| 2 | Water | 5 sec. | faint image |
| 3 | Metol | 5 sec. | medium dark |
| 4 | Water | 5 sec. | faint image |
| 5 | Ferrous oxalate | 5 sec. | faint image |
| 6 | Water | 5 sec. | faint image |

The above plates were developed with the regular stock developer (the oxalate excepted), and development continued until the plate containing developer began to fog. The hydroquinone plate was much more dense than the water check plate. The metol plate was not as dense as the corresponding hydroquinone plate; but there was a decided difference between the metol and its check water plate. The difference between the metol and hydroquinone could be explained as due to the relative rates of diffusion of the two substances into the plate. However, the amazing feature of the above work came with the presence of ferrous oxalate in the film during exposure. As this solution has a high rate of diffusion we should obtain the most dense plate of the three, other conditions being equal. As a matter of fact, the density was less than that of the check water plate. Of course, this plate was given an after development in the regular ferrous oxalate developer. When the absorption spectrum of a very thin layer of this developer was examined it was seen that a greater portion of the blue and all the violet were cut out. Accordingly a very thin tube of the oxalate developer was placed in front of the water check plate during the exposure, while a tube of water of corresponding thickness was placed in front of the plate containing the oxalate developer. Under these conditions the oxalate plate yielded a more dense image than its check plate. Thus we see that such a detail as light absorption introduces decided errors in this case.

G. A. PERLEY.

(*To be continued.*)

# MR. F. E. IVES ON THE EARLY HISTORY OF THE HALF-TONE PROCESS.

THE following is an abstract of a report appearing in the "Inland Printer" of a lecture delivered by Mr. F. E. Ives on June 27 before the members of the Convention held by the International Association of Photo-engravers at Cincinnati, U.S.A. Mr. Ives began as follows:—

I am afraid that neither the history nor the science of half-tone have ever held very much interest for the majority of photo-engravers, who have been content to know practically the best methods of arriving at the successful results. I know that when I suggested to the author of a pretentious text-book of photography, himself a photo-engraver, that it was useful to know that the successful employment of the half-tone process screen was based upon a recognition of the fact that, when correctly used, it afforded an optical substitute for the V-shaped tool of the hand engraver, he assured me that such theoretical considerations were of little practical interest to justify him in giving up space to them. Nevertheless, the cross-line half-tone screen process owes its origin and perfection to exactly such theoretical considerations, and was full born and perfected as a mental conception before the first sealed cross-line screen was produced. Not only so, but I unhesitatingly say that there has been no essential improvement in the process itself in nearly twenty-five years.

Mr. Ives here told the story of his early trials with printers, who would insist on using plate paper and soft tympan in proving his first plates, and continued:—

The half-tone plate as we know it to-day, with black cross-lines in the shadows and white cross-lines in the lighter shades, and the surface of the lines and dots flat and on one plane, also the three-colour half-tone process, were really invented by me while I was in charge of the photographic section of Cornell University in 1878. In a talk to some of the students at that time I confidently predicted that within ten years photo-mechanical engraving would generally replace wood engraving, and that three-colour process printing would replace chromolithography in books and magazines.

I already saw how it might be all accomplished, but made the mistake of under-estimating the conservatism of established methods. It will seem less surprising that a mere youth foresaw all this when I tell you that I was probably the only person in the world who was at the same time a practical printer, a photographic operator, an amateur wood engraver, and a competent inventor, so that my special knowledge and experience converged with my natural inclination to just such a focus that I attacked the problem with a perfectly clear understanding of the requirements, and half-tone was with me just as definite and scientific an invention as the phonograph was with Edison or the telephone with Graham Bell.

It did not, as many have supposed, grow out of the obvious fact that the line screen in contact with a photograph must cut the photographic image up into lines, but out of recognition of the fact that for this purpose body shades must be translated into shading by graduated lines, as in wood-engraving, and this was brought about first by the actual use of a V-shaped tool in its relation to a graduated photographic relief plate, and then by logical process of evolution to practical simplicity, by the substitution of an optically produced V line.

Meanwhile, approximations to the required results were arrived at by others by experiments carried on without a distinct recognition of the true principle involved.

So far as I know, no method or detail of method which remains in practice to-day was evolved by others in advance of my own consistent development from my original conception of the true principle involved in translating body shades into graduated lines. My great mistake, as it turned out, was, that I did not save others the trouble of going over the same ground by prompt publication of my own methods and progress. I know now that I could not have lost anything by doing it.

Apologetically, Mr. Ives then related the history of his youth and how he came up to the half-tone process.

I was born on a small farm four miles from Litchfield, Conn. Not only my father, but all my relatives were farmers. I was drilled into farm work as early as possible, and even kept out of school in summer to help on the farm. I was scolded a good deal because I would not do as much heavy work as some of the neighbours' boys. And when my father once caught me drawing a picture he snatched away the pencil and sent me out to distribute fertiliser, telling me at the same time never to waste my time in that way again.

When I was nine years old my father became a country storekeeper, but he died two years later of consumption. I clerked for a while in a country store, but was discharged partly because I was not strong enough, though chiefly on account of my habit of stealing into the back room to work out inventions. After a term in school I bought a very small printing press, on which I printed envelopes, etc., for the storekeepers. This led to an apprenticeship in the "Litchfield Enquirer" printing office, when I was thirteen.

There I was doing most of the job printing in a little while, and also, on my own time, nights and Sundays, printed and published an amateur paper. I did a mail order business in printing visiting cards, taught myself photography by the old wet plate method, and tried to teach myself wood engraving.

I worked as a journeyman printer at Ithaca, N.Y., for a year after finishing my apprenticeship, took up view and portrait photography, and at nineteen took charge of the photographic laboratory at Cornell University. There I worked out a most successful method of swelled gelatine relief photo-engraving, by which I made, before I gave it up, thousands of printing plates.

I could only reproduce definite line and stipple, and tried to think of a way to translate the body shades of photographs into line and stipple, so that I might reproduce them. I finally decided that it might be accomplished by utilising in some way the relation of a V-shaped engraver's tool to a graduated photographic relief, like the Woodburytype gelatine relief. Just how to go about it was not clear to me when, after several hours' thought about it, I went to bed one night tired out. Awakening in the morning, I saw instantly, apparently materialised in the air before my eyes, the whole mechanism of the process. I got up, dressed, wrote out a specification, and had it signed by witnesses, and in two or three days had specimens to show.

Soon after I got a position to work my line photo-engraving process, first in Baltimore and later with Crosscup and West, wood engravers, in Philadelphia. This firm did not have money enough to buy a photographic outfit, so I purchased one, and a small printing press, on my own credit. They paid me $15 a week for one year. With no help I made negatives, swelled gelatine reliefs, wax casts, stereotype moulds, finished the plates, and made the proofs on the printing press. Crosscup and West cleared a little over $1.00 on my work that year.

The second year I had the same wages, but with the addition of a $3 a week helper I did better. I also modified and reduced to practice my half-tone process, and commenced to turn out a few plates commercially in February, 1881.

It was a beautiful but complicated process, scientifically perfect but not very commercial, even if it had been adequately appreciated. I made various improvements from time to time, but was limited to the use of the swelled gelatine relief process, as there were no successful etchers in this country at that time. Later, some of the best work was done with the photo-electrotype process, but the negatives had to be sent to New York for that purpose.

I soon realised the theoretical possibility of using a screen for negative making in such a manner as to obtain an optical substitute for my mechanical V line, and so get the results much more directly and cheaply, and I prepared a patent specification which was the first statement of the optical V-line principle; but the necessity for absolutely sharply defined lines and dots in the negatives used to make swelled-gelatine relief plates, and the fact that a man who has to support a family on $18 a week finds even the taking out of patents a serious tax, prevented me from putting the application in the Patent Office.

This was all before the Meisenbach screen process had been heard of. Meisenbach made negatives so "fuzzy" that they would have been perfectly useless for the swelled-gelatine photo-engraving process, but he saved the situation by making etched relief plates, and defects in the gradation which were inherent in his method of using a screen were compensated for as much as proved practicable by elaborate processes of burnishing, rouletting, etc. Even with all his "faking," he did not get nearly as accurate reproduction as I was getting by pure process, but his process was cheaper and better adapted for handling large sizes.

I knew I could beat Meisenbach to death with my own ideal screen process if I could have an etching process to make the plates. When we got an etcher he commenced with zinc, but with my help developed the first enamel copper process, while I perfected the screen process in accordance with my original conception of an optical V line, which worked out in cross-line to be more conveniently described as the pinhole image process.

My first sealed cross-line screen, practically identical with those used to-day, was made in the winter of 1885-6, and though I first used it in a copying camera with glass positives, and used it only on a selected portion of my work, it was not many months before I had it in operation exactly as it is used to-day.

I did not patent, as I might have done, the principle of the formation of the optical V cross-line, the shaded pinhole image of lens diaphragm, special shaped and multiple stops, intensifying and clearing to sharpen the lines, etc., as successfully worked out in my screen process, because Crosscup and West were afraid to have it published, urging me that it was safer to keep it a secret. It proved that they were quite mistaken about this, and I suffered irreparably by following their advice. We did, however, teach it as a secret process, and for a small nominal sum, to parties in New York, Boston, and Buffalo, who could testify, if they cared to do so, as to the originality of the process and the full exposition by me at that time of the principle now generally recognised.

I do not wish to minimise the good work done by others. Some of the work which I did was done independently by others, who were not informed of my methods, owing to the unfortunate attempt to hold them as secrets. But the significant fact is that because I started out with a perfect knowledge of the requirements, and recognised the fundamental principle involved, I not only made the first half-tone plates meeting the technical requirements, but by consistent process of evolution arrived twenty-five years ago at a process so practical and efficient that nobody has been able to make any material improvement on it to this day.

I have patented about fifty inventions. Many of them, like the three-colour half-tone process, were made many years before the conditions were right for successfully exploiting them. When I made the first specimen of three-colour half-tone printing, in 1881, nobody was apparently in the least impressed with the possibilities of such a method. My specimen hung framed on Crosscup and West's office wall for years. I first succeeded in getting it mentioned in a technical journal in 1884, exhibited it at the Novelties Exhibition, Phila., in 1885, and the process was patented as a new invention by three different men in different countries ten or twelve years after my first specimen was made.

At the conclusion of the lecture, Mr. Gustav Zeese, of Zeese-Wilkinson, New York, presented Mr. Ives with a costly watch and chain, as a reminder that the photo-engravers did not forget the debt they still owed to Mr. Ives.

Mr. S. H. Horgan, editor of "Process Engraving" notes in the "Inland Printer," related how he called on Mr. Ives at Crosscup and West's place on February 5, 1882. They compared proofs of half-tones they had made, and Mr. Ives said that it was seeing the half-tones Mr. Horgan was making in the "New York Daily Graphic," in the late 70's, that first attracted Mr. Ives' attention to half-tone. In 1892, when Mr. Horgan was art manager of the "New York Herald," Mr. Max Levy asked him where he got the half-tone screens he was using fifteen years before that time, which screens were made, in all sizes, by the Leggo Bros., in Montreal, prior to 1873. Mr. Horgan told of the work of General Frederick W. Von Egloffstein, who had Sartain, of Philadelphia, rule half-tone screens for him in 1861, and who in 1868 had a large establishment in New York, engaged in engraving half-tones intaglio, all of which dates he thought should go into the record they were then making of the early history of half-tone.

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## FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Entries close September 1 (Britain), August 21 (foreign). Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.

November 6 to 11.—Southampton Camera Club. Sec., C. M. Cooper, 203, Shirley Road, Southampton.

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THE R.P.S. MEDAL FOR STEREOSCOPIC SLIDES. — The following notice appears in the current issue of the Journal of the Royal Photographic Society :—

It has been brought to the knowledge of the Council that some dissatisfaction exists amongst the exhibitors at the recent exhibition who entered stereoscopic slides, particularly as to the number of slides entered by some workers.

While the Council regret any irregularity in connection with the acceptance of Dr. Rodman's entry, they are satisfied that no injustice has been done, and they endorse the award of the medal.

It was agreed that the presentation of the medals take place at the ordinary meeting, to be held on Tuesday, October 10.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between July 10 and 15 :—

Photo-Micrography.—No. 15,931. Form of photo-micrographic apparatus. Stanley Shankster.

Camera.—No. 15,944. Photographic magazine camera with ground glass and plate-changing mechanism. Jens Peter Hansen.

Colour Projection.—No. 16,201. Process of preparing transparent plates for the projection of colour-pictures. Carlos Courmont.

Reflectors.—No. 16,271. Light transforming reflectors. Peter Cooper Hewitt.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Folding Reflex Camera.—No. 16,924, 1910 (July 15, 1910). The camera consists of a body, or back part 1, which may contain a focal-plane shutter 2, and the usual fittings 3, for holding the dark slide. To the front face of this body or back part 1, and near its top edge, is hinged the mirror 5, for example by securing arms attached to a frame on which the mirror is secured to a spindle 4, capable of turning in bearings in the body or back part 1. Above this hinge is hinged, at 6, the rear lower edge 7 of a bottomless, or practically bottomless, box 8, of a size such as to allow the focussing screen 9 to form the top or cover of the box 8. To the front 10 of the lower edge of this box 8 is hinged, at 11, a straight plate 12, which constitutes the front of the camera, to which the setting 13 containing the lens is secured. The bottom end of the front 12 is supported, when the camera is opened out, by struts 14, hinged, at 15, to the camera body or back part 1, which struts 14 are swung down and fastened to the camera front 12 by any suitable means, such as a spring clip.

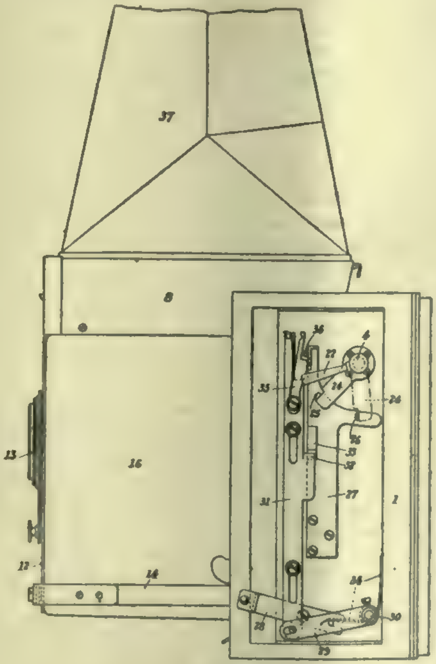

Fig. 1.

The bellows 16 are constituted by a strip of flexible material, such as leather, which is clamped, at its rear sides and bottom, by means of a U-shaped plate 17, to the camera body or back part 1, and at its front sides, top, and bottom to the camera front 12 by means of a frame 18, and its upper edges to the under edges of the box 8 by means of a frame 19.

The lens setting 13 is secured to the camera front 12, so that there are no high projections standing out from the front face, the lens setting being extended back into the camera, so that, in closing the camera, after unfastening the struts 14 from the front 12, the front (with the lens and lens setting attached) can be swung backwards and folded up flat against the box 8, the lens and lens setting extending up into the box and the back of the lens setting 13, coming near to the focussing screen 9, situated at the top of box 8, as shown in Fig. 3. The box 8 is made somewhat longer at the front than is necessary for reflecting the image on to the screen 9 in order that the lens setting 13 can be swung therein, and the bottom of this part of the box 8 is normally closed by a flap, or hinged piece, 20, adapted to exclude light, and which, when the camera is closed, will be turned up, against the action of a spring, by the lens setting bearing upon a piece 21, depending from the flap 20, as shown in Figs. 3 and 4.

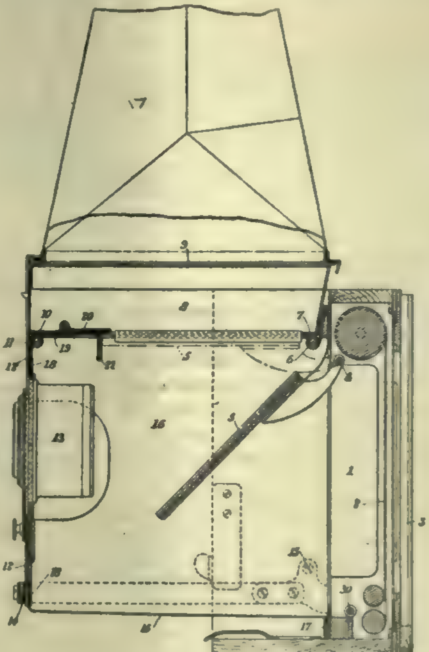

Fig. 2.

The box 8, with the lens contained within it, can now be swung down from the horizontal position, shown in Fig. 3, into the vertical position, as shown in Fig. 4, the face of the front 12 coming near to the front face of the camera body, or back part 1, the folded-up bellows 16 being between. The front 12, box 8, focussing screen 9, and camera body or back part 1, are all parallel, or approximately parallel, with each other when the camera is closed. The lens setting 13 is inside the box 8, and is in a horizontal position but reversed, the front cell being towards the back of the camera. The bottom corners of the front 12 are rounded, and in folding up the camera the flexible bellows 16 first rolls up inside itself at the bottom, commencing at the corners, and finally, after straightening itself out, takes a vertical, or approximately vertical, position against, or in proximity to, the front face of the camera body or back part 1. The sides of the bellows 16 simultaneously roll outwards as the front is swung back, and then become straightened out, creasing along definite lines, and finally, as the box 8 is swung down, fold down on the top of the bottom part of the bellows, which has already come to rest. The complete bellows 16 thus occupies a place between the front face of the camera body or back part 1, and the camera front 12, the box 8 having been folded down vertically over all. In closing the camera, the mirror 5 is first turned down into the body 1, as shown in Fig. 3.

For use in viewing the image, the mirror 5 is held in an inclined position, as shown in full lines in Fig. 2, and, when an exposure is to be made, is lifted up into a horizontal position against the edges of the box 8, as shown in dot and dash lines in Fig. 2. The means employed for lifting the mirror 5 into the horizontal position preferably effects, when the mirror has been completely lifted, the release of the shutter 2 for exposure. This is effected as follows :—

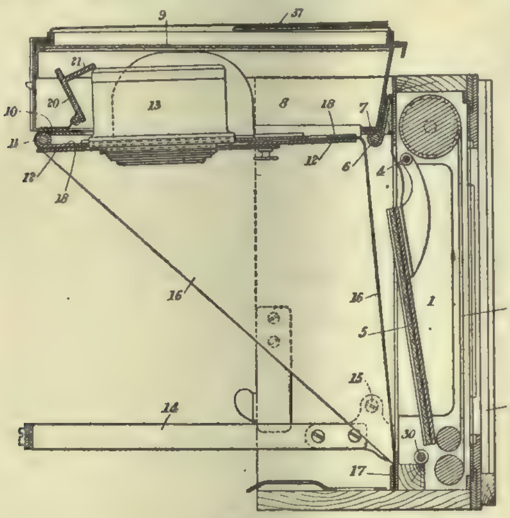

Fig. 3.

The spindle 4, carrying the mirror 5, has secured to its outer end a hand-lever 22 for turning the mirror (in opposition to the action of a spring 23) from the horizontal to the inclined position, or from the inclined to the vertical, or approximately vertical position, or completely from the horizontal to the vertical, or approximately vertical, position. The action of the spring 23 tends always to lift the mirror 5 into the horizontal position, but the mirror is held in the incline, and the vertical, or approximately vertical, positions, respectively, by an arm 24, secured to the spindle 4 engaging with one or the other of two inclined projections 25 and 26, provided on a blade-spring 27, secured to the body or back part 1, which blade-spring 27 when depressed disengages the inclined projection 25 or 26 from the arm 24, and permits the mirror 5 to be lifted by the spring 23. When the mirror 5 is turned in the opposite direction the arm 24 acts on the inclines on the projections to depress the blade-spring 27, until the arm 24 has passed one, or both, of the projections 25 and 26, according to the position required, the blade-spring 27, then returning to its normal position and holding the mirror in position. The blade-spring 27 is depressed as follows :—A hand-lever 28, pivoted to the camera body or back part 1, actuates, through a pin and slot connection, a lever 29, secured, at one end, to the spindle 30, connected with the shutter releasing mechanism, and the other end of this lever 29 is connected, by a pin and slot connection, to a slider 31, so that, when the hand-lever 28 is operated, the lever 29 pushes the slider 31 upwards, whereby a part 32 thereof is caused to act upon an inclined projection 33 on the blade-spring 27, and thereby depress it. Upon the release of the hand-lever 28 a spring 34 returns the hand-lever 28, the lever 29 and the slider 31 to their normal position. The shutter releasing mechanism (not shown) is operated by the spindle 30, when the slider 31 is fully raised, there being lost motion between the spindle 30 and the releasing mechanism, so that the shutter will not be released before the mirror 5 has reached its horizontal position. To ensure this an arm 35 is pivoted on the slider 31, which arm, when the slider is moved upwards a distance sufficiently to act upon and depress the blade-spring 27, to release the mirror, engages with a stop 36 on the camera body or back part 1, so that further upward movement of the slider is prevented. When the mirror 5 is brought to its horizontal position the arm 24 engages with the arm 35 and pushes it, in opposition to the action of a spring, out of engagement with the stop or projection 36, so that the slider 31 is free to continue its upward movement, and the shutter is released.

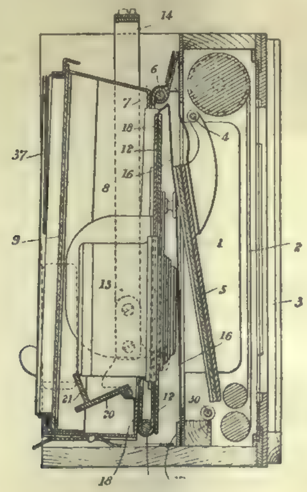

Fig. 4.

Springs may be fitted to the hinges connecting the camera body 1, and the front 12, to the box 8, and the hinges be so constructed that when the camera is opened out the front 12 and the camera body 1 are maintained rigidly in position parallel with each other.

For the purpose of excluding extraneous light, when viewing the image on the screen, a hood 37 can be fitted over the focussing screen at the top of the box 8. Ross, Ltd., 3, North Side, Clapham Common, and Frank Philip Whitehead, 34, Pickets Street, Balham.

Exposure Calculators.—No. 14,929, 1910 (June 21, 1910).—The invention relates to improvements in exposure meters, and may be constructed for use as a pocket meter, or as an attachment to the body of the camera, or to be applied to lenses with or without "between lens" shutters.

The object is to so construct a meter that by a simple adjustment of parts to suit the conditions under which the photograph is to be taken, the correct time for exposure is readily ascertained, or if the exposure be known the stop or aperture to be used is ascertained.

The device comprises two circular plates or rings, connected together so as to be frictionally revoluble, and upon one of which either one or two segmental plates can slide.

One of the two circular plates (the base plate) is divided at or near its outer edge into 28 equal divisions, 9 of which are marked to signify apertures from *f*/4 to *f*/64, two divisions being left blank and the remaining seventeen marked with exposure seconds from 1-1,000th of a second to 64 seconds, the gradations for the exposure scale being so arranged that each succeeding graduation is double the value of the preceding one. The other circular plate (the upper plate) is of smaller diameter than the base plate and is surrounded by the aforesaid scales. This upper plate is provided near a portion of its outer edge with a subject scale as "sea and sky," "seacoast," "landscape," "trees at 100 feet," "trees at 30 feet," "objects at 15 feet," "objects at 6 feet," "copy (made in open)," and "light interior," the ratio of exposure for these subjects being 1, 2, 4, 8, 16, 32, 64, 128, and 256 respectively.

The upper plate is formed with two concentric slots at different distances from the centre, and stiffly slidable in each slot are pins on segmental plates, there being two such plates. The segmental plates are formed so that one is, for (say) half its length, nearly double the width of the other half.

The other plate is of about the same width as the narrow part of the first mentioned plate, and adapted to slide under the wider portion of this plate, which is made thinner at that part for this purpose.

The smaller of these two segmental plates is marked on its inner edge with speed numbers of a suitable system, say 0 to 600 of the H. and D. system, while the other plate is provided with two distinct scales : a narrow portion of this plate, which is adapted to overlap and register with the inner edge of the speed plate, is marked near its outer edge with a scale of actinic ratios from say 1 to 8 taken from any table. The main or larger portion of the plate has marked thereon near its outer scale of lighting as influenced by the weather and running from say sunshine or value 1 to gloomy or value 16 that is $\frac{1}{16}$ the actinic strength of clear sunshine.

A suitable construction of the device for use as a pocket meter or one to be attached to the body of the camera consists in forming an upper circular plate, somewhat concave, on its under surface, this plate being held in frictional contact with the base plate by means of a central, preferably hollow rivet upon which the upper plate can be turned while holding the base plate stationary. The concentric slots in which the pins or projections on the segmental plates move are, as before stated, formed at different distances from the centre of the upper plate, the segmental plate (marked with the speed scale) being guided in the outer slot by its pins or projections engaging therewith, while the plate marked with the actinic ratios and lighting scales is similarly guided by the inner slot.

When constructed for lenses with an "iris" diaphragm the upper and base plates are formed of flat rings on which the scales as before described are marked. The ring marked at or near its inner edge with the aperture and exposure scales (the outer ring) is formed with a peripheral flange parallel with its axis, forming a means for distancing the ring from another ring to which it is secured : which latter ring is fixed to a central sleeve held firmly preferably by spring pressure upon the tube of the lens. Rotatably supported by the sleeve is a collar which carries (so as to be capable of being rotated thereon) a flat ring (the inner ring) corresponding to the upper plate before described and marked for a portion of its diameter at or near its outer edge with the subject scale and so arranged in respect to the outer ring that the subject scale thereon registers with the exposure scale on the outer ring. The collar is provided with a pin which engages one end of a short link, the other end of which latter has a pin projecting from each side thereof. The ring which is secured to the sleeve surrounding the lens tube and carrying the outer ring has formed therein a slot of somewhat sickle shape in which the pin projecting from one side of the link is arranged to run and be guided in its movement towards and away from the centre of the lens, while the pin projecting from the other side of the link engages a radial slot formed in a lever carried upon and moving concentrically with the central sleeve, the outer end of this lever being connected to the knob by which the aperture of the "iris" diaphragm is regulated.

It will thus be seen that by moving the knob of the diaphragm to the desired aperture the lever connected thereto will also be moved and through the link the collar carrying the inner ring will also be moved round, and it is by the combined action of the radial slot in the lever, and the curved slot in the stationary plate upon the connecting link that the non-uniform movement of the diaphragm knob for different apertures is converted into the necessary uniform movement of the inner ring for the proper working of the meter.

Segmental plates marked respectively with the speed and actinic ratio and lighting scales are carried by the inner ring in the same manner as described with reference to the pocket meter.

In order to use the pocket meter to find exposure seconds the segmental plate having the actinic ratio and lighting scales thereon is slid round until the actinic ratio figure which is known registers with the speed of the plate in use, marked on the other segmental plate, which latter, it is to be noted, is movable slightly in its slot, in order that if the exposure tends to be a little too much or too little, this may be rectified by moving the plate one way or the other. Having properly adjusted the segmental plate upon the upper plate, this latter is rotated upon the base plate until the weather indication, say sunshine or value 1 on the segmental plate, registers with the known aperture indication on the base plate. The meter is now set and by looking at the subject scale on the upper plate the particular subject being photographed (say, "landscape") will be found opposite the required exposure time marked on the base plate. Should it be desired to ascertain the aperture required for an exposure already fixed on, the segmental plates are set as before and the upper plate is rotated upon the base plate until the particular subject, being photographed as shewn on the scale on the upper plate is opposite the exposure time known : then by looking at the weather scale it will be found that the particular indication thereon (say, "sunshine") will be opposite the correct aperture indication.

The action of the meter when applied to a lens fitted with an "iris" diaphragm, is the same as that just described.

By slight modifications the meter herein described can be applied to a lens fitted with "between lens" shutters such as the "Unicum," the main difficulty arising being that, with Volute shutters, the rule of double the light for twice the diaphragm opening does not hold good. This, however, can readily be rectified by modifying the graduations on the meter.

An important point in setting out the scales for this meter to get correct indications, is to be sure that when the subject on the inner ring or base plate is set at 1-1000th of a second "sunshine" opposite *f*/5.6 the actinic ratio indication 1 will stand at 2-5 on the speed indicator plate marked according to Hurter and Driffield's system. H. R. Hart, Carmelite House, Tallis Street, London, for G. Aubrey Gow, Lebong Soelit, Benkoelen, Sumatra.

## New Trade Names.

MIMOSA.—No. 333,970. Sensitised photographic papers. Rheinische Emulsions Papier Fabrik Actiengesellschaft, 3, Gasanstaltstrasse, Dresden, A, Germany, manufacturers. May 29, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Clouds and Landscapes on One Plate.

THE art of printing in clouds (writes Mr. L. Tennant-Woods in the "Amateur Photographer and Photographic News" for July 24) is said to have been invented by Valentine Blanchard in the year 1863. Previous to that date, Carey Lea and Thomas Sutton suggested a method with which I have lately been working with success. It consists of an arrangement of strips of paper fixed to the back of the lens in a sort of gridiron form. Gummed stamp paper serves admirably, and the strips must not be too broad or too great in number. I find that four horizontal pieces and one vertical piece are enough. The strips should be on the lower half of the lens, and they should not reach quite all the way across to the edges. The strips may cover a little more than half of the back lens, if preferred, but I prefer to place them half way, and the shadow they cast upon the screen may be raised or lowered by means of the rising front on the camera. The exact width of the strips can only be found by trial, and their influence can easily be seen when the image is focussed on the ground glass. The definition of the clouds is not interfered with if the strips are of the right width and properly separated. When viewed upon the ground glass the sky appears to be dulled because of the strips stopping some of the light from the sky. As large a stop as possible must be used, as very small stops tend to define the gridiron arrangement upon the plate, whereas large stops diffuse the pattern.

In testing the worth of the idea—which, by the way, I have modified slightly—I used a stereoscopic camera, one of the lenses being decorated with stamp paper, and the other used in its proper state, and I was surprised at the result. On one stereoscopic half the delicate clouds developed rapidly, and became lost in the density, whereas on the other half the sky portion was very much thinner and quite printable.

# New Apparatus, &c.

**The Leto Exposure Indicator. Supplied by the Leto Photo Materials Company, 1, Crutched Friars, London, E.C.**

In this indicator five tables are given, one devoted to time, one to light, one to subject, one to stop, and the last one to plate speed. In each table various conditions are enumerated, and opposite each an indicator number is given. On picking out the various conditions one after another, and adding up the respective indicator numbers, we arrive at a total indicator number opposite which, in a sixth table, the exposure can be found. The system is very simple and rapid, and tests under known conditions suggest that the results are very accurate. The indicator being simply a folded card can readily be carried in the pocket, and should be very useful. While in theory it would appear that exposure tables of this kind should be much less reliable than meters which actually test the light, yet practice proves this is not so, and many who prefer tables to meters will find this new indicator one of a very convenient form.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

SATURDAY, JULY 29.

The United Stereoscopic Society. Outing to Waltham Abbey.
Chelsea and District Photographic Society. Outing to Leatherhead.
Halifax Camera Club. Ramble to Hardcastle Craggs.
Balham Camera Club. River Trip to Greenwich.
Hackney Photographic Society. Excursion to Eynsford.

MONDAY, JULY 31.

Southampton Camera Club. Judging of the Open Print Competition.

TUESDAY, AUGUST 1.

Bradford Photographic Society. Excursion to "Shipley Glen."
Hackney Photographic Society. Questions and Answers.

WEDNESDAY, AUGUST 2.

North Middlesex Photographic Society. Lantern Slide and Print Competitions.

# Commercial & Legal Intelligence.

LEGAL NOTICES.—Notice of intended dividend is given in the bankrupt estate of Albert Edward Seaman, photographer, 3, Hady Lane, near Chesterfield, in the parish of Hasland, Derbyshire, and carrying on business at 13, High Street, Chesterfield, and lately residing and carrying on business at 75, King's Road, Brighton. All proofs must be lodged on or before August 2, with Mr. E. W. Humphreys, 5, Victoria Buildings, London Road, Derby.

LIQUIDATION.—In regard to the Films Distributors, Ltd., Parliament Mansions, Victoria Street, Westminster, S.W., the Official Receiver in the High Court of Justice has now issued particulars under this liquidation, from which it appears that a statement of affairs has been filed disclosing gross liabilities as regards creditors amounting to £1,742 9s. 1d., of which £1,734 9s. 1d. is expected to rank against the estate for dividend. The assets are returned at £944 0s. 2d. net., thus disclosing a deficiency as regards creditors of £790 8s. 11d. With regard to contributories, the paid-up capital of the company is £100, to which has to be added the above deficiency of £790 8s. 11d., making a total deficiency as regards contributories of £890 8s. 11d.

A DEALER'S BANKRUPTCY.—The statutory first meeting of creditors in the failure of John Thomas Garbutt, photographic dealer, etc., carrying on business at 57, Guildford Street, Leeds, was held at the London Bankruptcy Court on July 19, the Leeds Official Receiver presiding. The meeting was held in London presumably because the majority of the creditors reside in the metropolis, but only one gentleman attended the meeting, he being a representative of Messrs. Corfield and Cripwell, chartered accountants, of London and Birmingham, who have been appointed as trustees to manage the estate in the interests of creditors. This appointment was confirmed by the Official Receiver, and the debtor's affairs will remain in the hands of Messrs. Corfield and Cripwell, who are to be assisted by a committee of inspection, composed of Mr. E. Chawler (W. Butcher and Sons, Ltd.), Mr. Sydney G. Compton (Leto Photograph Company), and Mr. Arthur Taylor (Messrs. Houghtons, Ltd.). Debtor's statement of affairs disclosed a deficiency of £119 on gross liabilities, amounting to £514, of which £470 5s. 5d. was due to sixty-four unsecured creditors. The assets, including some surplus from secured creditors, were estimated to produce £351. The principal asset was the stock-in-trade, which cost £401, and was estimated to realise £320. Particulars of debtor's trading history disclosed that he commenced business in 1892 as an assistant to his father, who was an optician and lantern manufacturer, and on his father's death assisted his mother up to 1895, when he became manager of the photographic department of the business. In 1904 debtor started business for himself at 57, Guildford Street, Leeds, as a photographic dealer and lantern and cinematograph supplier. He had only about £50 capital, borrowed from his wife, and not yet repaid. Debtor estimated his turnover at £1,700 a year up to the end of 1907, when it fell off to about £1,000, in consequence of competition. With this turnover he never made more than bare living expenses. In February, 1910, several creditors were pressing him, and in March following judgment was obtained against him for £37, payable at the rate of £1 per week. After paying £6 debtor was unable to keep up the instalments, and filed his petition. At the date of the receiving order the sheriff was in possession in respect of the balance of this debt. Debtor states, however, that he does not consider himself insolvent, as his assets, if properly realised, will, in his opinion, cover all liabilities. As indicated, only the trustees were represented at the meeting, and the Official Receiver, noticing that several reporters were present, said the London press seemed to take a great interest in these matters, and asked if there was a recognised trade journal reporting photographic failures. The representative of Messrs. Corfield and Cripwell: "The British Journal of Photography."

A BARREN JUDGMENT.—At the Scarborough County Court, on July 20, before his Honour Judge Dodd, K.C., Sarony and Co., Ltd., Scarborough, sued Henry Swindells, Sunnyside, Marlborough Road, Buxton, Derbyshire, for £2 2s., goods sold and work done. A payment of £1 1s. had been made.

Mr. J. Whitfield, for the plaintiffs, said defendant was staying in Scarborough at different times during the year 1909, and both he and his wife made frequent visits to Messrs. Sarony's studio, and from time to time both had photographs taken. In all, his wife had twelve negatives taken and a similar number of defendant. Rough proofs were supplied, and ultimately, at defendant's request, mounted photographs complete were supplied. It was with the idea that a considerable order would be given that all these sittings were given. No order was actually given, but eleven finished photographs were supplied. The work done would be inadequately paid for by the amount claimed.

Mr. S. W. Fisher, J.P., managing director of Sarony and Co., said if no order was given the firm charged a guinea for the sitting.

Defendant's point was that he gave an order on a certain negative, but it was never complied with.

His Honour said the guinea paid into court was sufficient, and he found judgment for plaintiffs for one guinea, with costs up to payment of the guinea. The costs of the trial would have to be paid by the plaintiffs.

FIRE CLAIM: SERIOUS ALLEGATIONS.—In the King's Bench Division on July 21 and 24, before Mr. Justice Hamilton and a special jury, an action, Arbus v. Heath, was heard, in which the plaintiff, a photographer at Reading, sued the defendant, an underwriter, to recover, under two policies of insurance, the amount of loss caused by fire.

The defence set up was that the plaintiff intentionally caused the fire in order to defraud the insurers. The defendant further alleged that the policies were void by reason of concealment of material facts.

The subject matter of one of the policies sued on consisted of over 37,000 photographic negatives, which had been insured upon the basis that each was of the value of one shilling. According to the defendant that value was excessive; but for the plaintiff it was said that in a photographer's business the plates had a considerable value for repeat orders, and also when the goodwill of the business came to be sold. Further, the value of 1s. for each plate was arrived at after discussion with the brokers through whom the policy was effected.

The second policy sued on was taken out in respect of a large oil painting of a lady. That was valued at £300. Its production actually cost the plaintiff about £100; there was in addition the frame, which cost about £15; it was used by the plaintiff for the purpose of advertising the kind of work he undertook, and it was said for the plaintiff that £300 was not in these circumstances an over-valuation.

Mr. Bailhache, K.C., and Mr. Farleigh, appeared for the plaintiff; and Mr. Gill, K.C., and Mr. Chaytor, for the defendant.

The plaintiff was examined and denied that he had fraudulently over-valued the negatives and oil painting, and he also denied that he set fire to the premises.

In cross-examination by Mr. Gill, the plaintiff said his brother, who had had a photographic business at Richmond, had a fire on his premises, but he could not say whether his brother had stated that all his negatives were burnt. His brother was now in Russia. His brother and he had helped one Franc to get into premises at Westbourne Grove; they guaranteed the rent. He did not know that Franc had absconded. He knew, however, that Franc was now in Russia. While at Southampton, where he was in business for some time, he was not in trouble with the police. He was before the magistrates on one occasion. He was prosecuted for acting as a dentist when he was not qualified, and he was convicted. It was not the case that he was prosecuted for stealing £2. At that time his name was Solomon Arbus; he now called himself Sala Arbus. His bank told him to close his account. He had asked them to collect money on a prize lottery ticket, which he said his brother had found. After the bank had correspondence with people abroad about it they closed the account. The insurance on the negatives was £1,800, on one painting £150, on another £300, and on the stock-in-trade, etc., apart from the negatives, £1,150.

There was a quantity of used blotting-paper in the room where the negatives were kept. He did not remember being told a few days before the fire by one of his assistants that it was in the way, and that he said it should remain where it was for some time longer. He could not say how the fire occurred in that room. He was last on the premises, and he had the only key. Everything was all right when he left. He did not tell the captain of the Fire Brigade that it was one of the lady assistants who was last on the premises, and that they were safe then. Next day he did not telegraph to his brother in Russia about the fire.

A representative from the Post Office here produced a telegram which had been sent by the witness to his brother in Russia on January 13, which contained the words, "Business well sold."

The witness said that the telegram did not refer to his own business but to his brother's.

Miss Jones, an assistant of the plaintiff, examined by Mr. Farleigh, said that on the night of the fire she and the plaintiff were the last two persons on the premises. When she left, about twenty minutes to eight o'clock, the plaintiff was in the reception-room on the ground floor, writing a postcard. After she left the premises she glanced round and saw the plaintiff at the door locking up. The oil painting was in the studio that evening. All the old negatives were kept in boxes in one room, and there were a large number of boxes. The stove was in that room, and was alight on the day of the fire. She saw nothing suspicious about the room.

Cross-examined: She had seen a paraffin can in the negative-room. It was there a month or three weeks before the fire.

The plaintiff was recalled and further cross-examined as to the portrait of the lady in question.

In re-examination, he said that the telegram of January 13 which he sent to his brother in Russia related solely to the sale of a business which that brother and himself had carried on.

Miss Payne, the plaintiff's book-keeper, said that there had been no appreciable falling off in the turnover of the business.

Mr. Gill having opened the case for the defendant, Mr. Hahne, an analytical chemist, was called, and said that on February 1 he examined the negative-room. He could not tell where the fire had started. The floor was covered with débris. Over the fireplace there had been a special concentration of fire, like a blast. He concluded that there had not been a general fire in the room.

Mr. Adams, an architect, said he had inspected the premises in question after the fire, and from what he saw he said the fire was quite abnormal. He agreed with the last witness as to the concentration of intense heat being localised over the fireplace. He did not think the fire could originate from a cinder from the stove.

Cross-examined: He could not say where the fire originated. In his view there had been something like an explosion or blast, but he could not say what had caused it.

Mr. Pontin, Chief Officer of the Reading Fire Brigade, stated that he had a conversation with the plaintiff on the night of the fire, and had asked who was last on the premises. To that question the plaintiff replied that one of his lady assistants was last on the premises, and that they were then all right.

Cross-examined: He did not ask the plaintiff who was last in the negative-room, but who was last on the premises.

Mr. Jeffrey, House Fire Superintendent to the Northern Insurance Company, examined by Mr. Gill, said that at the time the insurance was effected the plaintiff told him that he intended selling the business and leaving the country, that the insurance had hitherto been included in an insurance with the Commercial Union Company, that he intended insuring the picture for £300, which also had hitherto been included in the Commercial Union policy, that he intended increasing the insurance with the Commercial Union from £850 to £1,150, and other statements, which had a most material effect on the witness's mind.

Cross-examined by Mr. Bailhache: When insurance proposals were submitted in respect of negatives, facts relating to the insurance of other things were not material.

Mr. G. N. Rowse, an underwriter at Lloyd's, said the fact that the plaintiff was retiring from business and leaving the country would have influenced him in regard to a proposal. It would make no difference to the risk, but would put the insurer upon inquiry as to the surrounding circumstances.

Other evidence of a similar character was given.

Mr. Parker, a salvage officer, said the ravages of the fire were in excess of what he would have expected in such premises. He had found a large empty oil-can on the floor in a recess.

Mrs. Moore, examined by Mr. Gill, said she had worked from time to time in the negative-room, and remembered a large can of oil being brought into the room at some date in November. Prior to that there had been a small tin there. The plaintiff had told witness to keep all the blotting-paper, whether dirty or not, as it could be disposed of, and two big piles of blotting-paper were accumulated.

The learned Judge summed up the case, and the jury, after an absence of nearly two hours, announced that they were unable to agree upon a verdict, and were discharged.

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## NEW COMPANIES REGISTERED.

**Cranbourn Studios, Ltd.**—This company was registered with a capital of £1,000, in £1 shares. Objects: To carry on the business of manufacturers of and dealers in photographic material and apparatus, photographers, engravers, art publishers, etc. First managing director, A. H. Davis. Qualification, £5. Registered by Hyman, Isaacs, and Lewis, 31-4, Basinghall Street, E.C. Private company.

**Newspaper Illustrations, Ltd.**—This company was registered with a capital of £1,000, in £1 shares. Objects: To carry on the business of photographers of topical and other events, and vendors of photographs to the press of the world as Newspaper Illustrations, Ltd. Qualification of first directors, who are to be appointed by the signatories, £50. Registered office, St. Mary's Chambers, 161a, Strand, W.C.

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**Where to Stay and What to See.**—Under this title, Mr. Walter Hill, of 67-69, Southampton Row, London, W.C., publishes a very useful volume containing the official guides of six of the principal English railway companies, which guides include voluminous lists of hotels, boarding-houses, and lodgings, in addition to illustrated descriptions of the various places mentioned. The intending holiday-maker who is uncertain as to where to go for the summer holidays cannot do better than consult this book, which is priced at the modest sum of 1s., or 1s. 6d. post free.

# News and Notes.

The Copyright Bill.—It is announced in the Photographic Journal that the Copyright Committee has sent letters to members of the Grand Committee, and other Members of Parliament, protesting against the invidious manner in which photographic copyright was dealt with in the proposed Act. The Committee has had an interview with Mr. G. R. Askwith at the Board of Trade, and pressed its view of the matter upon him.

The camera fiend is not always as black as he appears to be. We read in the "Daily Graphic" that one morning at a sunny Southern town, an alert young fellow, whose pale cheek the sun had begun to tint, was levelling a Kodak at a family party in the water round a bathing machine, when a peppery old gentleman came on the scene flourishing a walking-stick and doing his utmost to drive the lad away. How dared he photograph ladies bathing? "Mother," shouted the wrongdoer, "have you any objection?"

Photographic Survey of Surrey.—From the annual report of the Council of the Photographic Survey and Record of Surrey for 1910, we learn that during the past year 482 photographs have been received and recorded, this being a decrease of 108 on 1909. The photographs received are classified as follows:—Architecture, 177; art and literature, 235; anthropology and antiquities, 11; geology, 1; natural history, 1; topography and passing events, 57; total, 482. Total brought forward from last report, 4,293. Grand total, 4,775. Thanks are tendered to Messrs. J. Russell and Sons for presenting the survey with prints, also to Alderman H. Keatley Moore, Mr. J. O. Pelton, Messrs. Roffey and Clark, and the Holmesdale Press, Ltd., for a loan of valuable negatives for printing from. Surrey members have contributed 428 prints; non-members, 51 prints; professional, three prints. The following societies are represented among the contributors of prints:—The Croydon Camera Club, the Waddon Camera Club, the Bletchingly and Nutfield Camera Club, the Geologists Association, the Sutton Photographic Society, the Croydon Natural History and Scientific Society, and the South Norwood Photographic Society.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## REVERSAL OF THE IMAGE.

To the Editors.

Gentlemen,—Re the paper by Mr. Arthur W. Clayden, M.A., last week, several weeks ago I tried an experiment with a negative, a very thin one, and instead of a positive print as before, the result was a negative print. On retracing or returning to the starting point, I had a positive again. Is this of any scientific or commercial interest; if so, I shall be pleased to forward prints?—Yours faithfully,

Sydney A. Driver.

Ardleigh, near Colchester.
July 24, 1911.

[We should be very glad to see the prints, and also fuller details of the experiment referred to, the nature of which we do not quite understand from the above letter.—Eds. "B.J."]

## SUNDAY CLOSING AND THE SHOPS BILL.

To the Editors.

Gentlemen,—I have read the various letters in the "B.J." from your different correspondents. Some seem to be afraid that they might lose a little business, whilst others are content at the loss (if any). Personally, I think it about time that compulsion was brought to bear upon us all as photographers, and make us close our businesses, for what I can see we shall never do it without, and I am anxiously awaiting the time when the Bill becomes law. I have a business where there are several of us, and we all open on Sundays (mine not for choice), but when one knows that his customers go elsewhere on Sundays he is compelled to work; but I am not quite so greedy as my neighbours, for I close very early; but I notice the others are open till 9 and 10 o'clock. There was a time when we did not all open, when we could afford to close, but our profession (?) is not a profession now. It has got to what I call a refuge for out-of-work amateurs. I know of many near me, amateurs who were out of work and were kidded by their friends that they did such very good work that they enter this very profitable line. And what is the result? Cut, cut, cut prices, work that is not fit for the waste-paper basket, and we who take the trouble to turn out decent work have to compete with the likes of these. It is about time that something was done, for the game is not worth a "tinker's cuss" now. I am longing for the Bill to pass and become law, and so compel us to do six days a week instead of seven.—Apologising for trespassing upon your valuable space, I am,

Disgusted.

To the Editors.

Gentlemen,—As I was responsible for the introduction of this subject at the Congress may I be allowed to reply to some of the views put forward in the correspondence columns of your journal week by week since?

I have already expressed my surprise at the enthusiasm displayed in favour of Sunday closing at the Congress, and now I would draw attention to the very meagre opposition which the correspondence has evoked. Seeing that a good many would undoubtedly be hard hit for a time by compulsory closing, one would have expected to see shoals of letters putting forward the case for the Sunday opener.

Mr. McMahon gives as his main argument that Sunday trade is good because it increases consumption of photographic material, and falls back on the "kill-joy" sneer. Is not the boot on the other foot?

Mr. Cohen, another Dublin correspondent, challenges the Congress' resolution, but I reply that, until the contrary is proved, it is entitled to stand as the organised expression of opinion of the profession. In his second letter, Mr. Cohen admits that he is fortunate in being able to close his studio except for strict appointments!

The letter of "Only an Assistant" is pathetic. He is content to do his work on Sunday, lest there be no work in the week for him to do. Further evidence of the extent of the evil.

"Scottie," though writing in favour of Sunday closing, objects to the introduction (in my letter of June 2) of a suggestion as to extra overtime in certain cases. In reply, I was only endeavouring to show how objections to the Shops Bill could be met.

The live-and-let-live" argument can be urged with greater effect by those who wish for compulsory Sunday closing in that Sunday as a day of rest is an Englishman's right, and those who do business on that day are acting illegally, and are taking an unfair advantage of their competitors who conform to the law and custom of the land.

I admit, however, that the custom and law-breaking, having been allowed to grow up gradually, should, if possible, be dealt with tenderly; and would suggest that a time limit might be fixed, or a small but progressive tax imposed for a number of years, after which Sunday trading should be prohibited.

Now, what is the position politically? Parliament is about to legislate in the direction of enforcing cessation of trading on Sunday. Exemptions are allowed in certain cases where it is thought that public convenience demands it. Has there been any evidence produced to the Government or to the House of Commons that the public need to photograph, or to be photographed on Sunday? On the contrary, the photographers of Scotland are to be expressly included under the Bill, as they have shown that they wish to be. Why not England?

Surely an exception to the general law should only be made if strong representations are made in favour of it, and urgent necessity shown. The evidence is mostly the other way.

I would invite photographers to point this out to their M.P.s, who will have an opportunity on the report stage of the Bill to express that opinion.

I thank you, Gentlemen, for the extensive use you have allowed me to make of your columns. H. J. Rigden.

Bowes Park, N.
July 22, 1911.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

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T. C. Leaman, 7, Corridor, Bath, Somerset. *Two Photographs, one of Emily Calley, and one of Thomas Charles Pleydell Calley, C.B., M.V.O.*

Harold Ethelbert Quinn, 1, Rydal Mount, Irlam Road, Flixton, Lancs. *Three Photographs of views in Irlam Road, Flixton, Lancs.*

Two-Coats.—Mr. J. T. Sandell died on December 29, 1906.

Kenilworth.—They are quite distinct and unrelated persons; the former died some years ago.

T. R. Thakar. — We cannot give the addresses of contributors without their permission, but if you like to address the letter to the care of the "British Journal of Photography," we will see that it is forwarded.

Bringing Up Shadows in Bromides.—What is the best medium to use to bring up the shadows on bromide enlargements when finishing them in B. and W. and water-colour, so as to make them appear like wet bromides?—Constant Reader.

Several special preparations are on the market for this purpose—Lustralene is the name of one of them. An alternative is to wax the print by rubbing paraffin wax over it and then warming. A waxing solution consisting of beeswax dissolved in benzole can also be used.

Gilding Material.—Having bought a short time since some gold dust and spirit for gilding pictures, I have some of the gold left, and want to make use of it. Can you tell me what will mix with it? The oilman I bought it from cannot do so.—John C. Moran.

We would suggest that you write to Winsor and Newton, or some other one of the artists' colourmen, for the right material. Failing this, we should try a little gold size, diluted with turpentine. Possibly celluloid varnish would also serve.

Cost of Half-Tone Plant.—Would you kindly inform me through the medium of your "Answers to Correspondents," the approximate cost of the plant for turning out half-tone blocks?—Press.

In our issue of March 18, 1910, there was an article on "The Possibility of Starting as a Photo-engraver at Small Outlay," which gave details of minimum cost. We should advise you to consult the supply houses, who will be pleased to furnish estimates. The approximate cost depends entirely upon the quantity of work and the speed at which it must be done.

Making Chloroplatinite.—We have a small stock of chloride of platinum. Would you kindly inform us whether this can be converted into chloroplatinite, and how to proceed to do same?—Norman May and Co.

Heat 50 parts of the bichloride dissolved in 100 parts of water to 100 deg. C., and pass through it a stream of washed sulphurous anhydride (sulphurous acid gas) till the solution turns deep red and gives no precipitate with ammonium chloride. Then allow to cool, and add 25 parts of potassium chloride in 50 parts of water, and allow to crystallise. Wash and dry the crystals. This work is best suited to the laboratory, and if you do not care to attempt it you had better sell the chloride and buy the chloroplatinite.

Colour Photographs.—1. How to obtain a celluloid facing on miniature photographs after they have been coloured. 2. Whose colours would you recommend for same? 3. Perhaps you can name a suitable book in which I shall be able to learn to colour the midgets.—A Constant Reader.

1. We should advise you not to attempt the facing yourself, but to entrust it to a firm that makes a speciality of work of the kind. You might try Messrs. Dorrett and Martin, Electric Photo. Works, Bellevue Road, Upper Tooting, S.W. 2. Either aniline dyes or water-colours. You can obtain materials from Fallowfields, or The Vanguard Company, or Winsor and Newton. 3. "How to Colour Photographs," by Richard Penlake, published by Dawbarn and Ward, and also No. 44 of "The Photo Miniature." The first book costs 1s., and the other 6d.

Background Paint.—Would you kindly publish in your next issue of "B.J." what to use or mix up for painting photo backgrounds? Now, as I understand, the paint used is of a new composition, being more adaptable for backgrounds than either oil or distemper. It has all the good qualities of oil, without its disadvantages, and is superior to any background paint composition ever used.—Thomas Scott.

The usual materials are powdered pigments as sold by colourmen, mixed first with water to form a paste, and then with sufficient melted size to form a tremulous jelly. This is applied in the jellied state to well-sized sheeting. This, of course, is a distemper method, oil methods being usually ordinary oil paint with gold size added. The method you refer to is probably a special preparation, such as the one sold by the Vanguard Company, and we cannot tell its composition.

Matt Varnish.—Can you give me a formula for a matt varnish that can be easily applied, also easily rubbed away from the back of the negative when not required?—Varnish.

Take some ordinary shellac varnish and add to it a saturated solution of borax in water. Add the borax solution drop by drop, and shake well. A little precipitate will be formed at each addition which will disappear on shaking until a sufficiency of borax has been used. When the precipitate just fails to dissolve the varnish is ready for use. Apply it cold to the back of the negative and it will dry into a soft, cheesy white film, which can be wiped away when not required. The plate must be handled carefully to avoid damaging the varnish. This is a very suitable varnish when only one print, and that the best possible, is required from each of a number of negatives, but of course it is not a permanent one, and it cannot be pencilled on. For permanent work you cannot do better than use the varnish given in the "Almanac," page 750.

Copyright.—I should be glad if you will give me your opinion about the following in this week's issue of "B.J." I had this day a 1-1 photograph given to me to copy, of a gentleman, a mayor who attended the Coronation, and, when up in London, was photographed at some hotel, along with the others. It is this photograph which he wanted me to copy, but it has stamped on the back the name of the firm and also says it is copyright of the said firm, although this gentleman is paying for the photographs. How do I stand? Can they put copyright to a photograph which is not copyright, and could I find out if the photograph is copyright or not? I should be glad if you could explain to me this week. I may say it is a photograph of the gentleman alone, not in a group.—Copyright Law.

We should advise you to refuse the order. If taken under the conditions you mention the photograph is almost certainly a copyright one. Further than this it is not likely to be marked copyright without justification. You had better ask your customer if the original was taken to his order and paid for, or by invitation. In the latter case it is copyright.

Various.—1. Will you please give me the formula, that is, the strength of soda caustic, etc., in article on toning, page 576, of this year's "Almanac"? 2. Can you also tell me how I can remove every particle of silver from a chloride or bromide print except the image itself? I don't know if you will understand my query, but it seems to me that hypo does not remove it entirely. —Ean Easter.

1. If you refer to the original article in the "B.J." for September 9, 1910, you will see that the authors simply mention dissolving the various sulphides to saturation in a concentrated aqueous solution of caustic soda to a strength equal to 1 per cent. of the caustic soda employed, the result being diluted for use. So long as you saturate the caustic soda solution with the sulphide the exact strength of the soda will not matter. You might try a 25 per cent. solution. 2. As you anticipate, we do not quite understand this question. A print properly fixed should contain no silver in the whites. It is simply a matter of complete fixing, followed by thorough washing. In answer to your remaining question we think that Messrs. Burroughs and Welcome's sepia toner will meet your requirements.

Soda Sulphite.—We have a large quantity of sodium sulphite (cryst.) which we have proved to be not pure, although when ordering we asked for pure. It is distinctly alkaline, and when tested with red litmus paper, turned the same blue in a very short time. We should esteem it a favour if you will inform us as to what acid, and quantity, will neutralise this, and put it right. The purpose we use it for is making a diamidophenol developer for bromide paper.—F. J. H.

The fact that your sample is alkaline to litmus does not show it to be abnormally impure. All sulphite that we have tested is alike in this respect, as it contains a certain amount of carbonate, which is the natural consequence of the method of manufacture. The quantity varies from 1½ to 5 per cent. as a rule. To get rid of it you can adopt either of two methods. Add a drop of phenolphthalein solution. This will turn the sulphite solution bright pink. Then add a very dilute solution of sulphuric acid (about .1 per cent.) until the pink disappears. This turns the carbonate into bicarbonate, which is practically inert. Do not use litmus, as this is not a suitable indicator for sulphite solutions. An alternative which we strongly recommend for a diamidophenol developer is to add to the solution potassium metabisulphite in quantity equal to one-eighth the weight of sulphite. Dissolve the sulphite first and add the metabisulphite after. This solution will keep a long time, which is a material advantage.

Spots on Negatives.—What is the cause of the holes in enclosed negatives? My days are spent in spotting. Is there anything I can do to prevent it? I dust my negatives before developing; I rinse before putting in hypo; I clean with cotton wool after washing; but, of course, the damage is done before then. I generally develop about fifty negatives when I go in the dark-room. All the water here is pump-water, but I filter it through muslin before mixing developer. The dish I develop in is an old enamel one, which I have used for years; it has got quite brown inside. Would that be the cause; but if so, why not every plate?—J. M. E.

The spots appear to us to be nothing but air-bells formed in the developer. These may be due to using water full of air or to carelessness in pouring developer over plate. Let your stock developing solutions stand some time before use, and then if you use dishes, be careful to pour developer on steadily, without splashing. If you use a tank, shake well at the start to shift any bells that may form. Also be careful to lower the plates steadily into the developer. Do not let them just drop in. If you put the plates in first, and then fill up with developer, pour in latter quickly in a big steady stream, without any splashing. There should be no need to dust negatives before developing. A sharp rap of the edge of the plate on the table is all that is necessary. A new dish would be very advisable if the enamel is chipped or cracked.

Flashlight.—Will you kindly state the quantity of flash powder required to illuminate a fleet of some twenty decorated and illuminated boats on river at night, boats unanchored, but grouped. The boats would be likely to swing about with the tide. Give best means of securing an unblurred effect; best means of ignition, and about how high up for flash, and how long before an exposure is it advisable to expose the powder to night air?—Flashlight.

We fear we cannot give you any very definite answer. A very powerful light would be required, and such lights burn for about twenty seconds, which means that you would get movement in the result. Several pounds of flash powder would have to be used, but the distance of the boats would affect the amount. You might consult "Magnesium Light Photography," by F. J. Mortimer, one of the shilling handbooks published by Dawbarn and Ward. You will find in this book some references to out-of-door flashlight work, and also some formulæ for exceptionally powerful lights. We would suggest that if the boats are illuminated, you would probably get a better result without a flash as regards sharpness of definition. Electric ignition would probably be best, and the powder should not be exposed to night air a moment longer than is necessary. Your only safe course would be to experiment beforehand to find out the best method of working, and the amount of powder required, seeing that the conditions appear to be somewhat unusual.

Value of Business.—I am thinking of shortly taking a photographic business, and should be much obliged for your help upon the following points:—1. Can you give me some general idea how to arrive at the value of a business (independently of stock); for instance, so many years' profits give the selling price? 2. In arriving at the profits of a business, in a case in point, the owner is managing and operating in the business, ought he not to deduct a proper salary for himself from the takings in arriving at the profits? 3. One studio I have in view is 22 feet long by 20 feet wide, N. light. Do you consider this sufficiently large for good work to be done?—Archie G. Bamford.

1. As we have already pointed out many times, it is impossible to estimate the value of the goodwill of a photographic business from either the gross turnover or net profits. The personal element enters so largely into the matter that it is impossible to guarantee keeping a connection together after the man who has made it has departed, and the better the class of business the more difficult it is to ensure the continuance. Where cheap work is done, the business is more or less attached to the premises, but in the case of a high-class connection, it is mainly kept together by the individuality of the photographer. 2. In reckoning the "profits" of a business, the wages of an operator should certainly be added to the expenses, but we are afraid that most small businesses would show very small profits if any of this were generally done. 3. You can manage very well with a length of 22 feet if you do not lumber up the ends with backgrounds and accessories. You will only find a little discomfort when taking full lengths.

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THE BRITISH

# JOURNAL OF PHOTOGRAPHY.

No. 2674. Vol. LVIII. FRIDAY, AUGUST 4, 1911. Price Twopence.

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## SUMMARY.

The first of two articles on professional outdoor photography, by Mr. R. C. Platt, appears on page 592.

Studio blinds are dealt with in an article on page 586.

The special advantages of panchromatic plates in the photography of furniture are pointed out by Mr. W. F. Brigham on page 588.

The effect of heat on toned P.O.P. prints is discussed in an article by Mr. A. W. H. Weston, and the process of heating is recommended for the purpose of improving badly toned prints. (P. 587.)

We describe two methods of making very highly concentrated one-solution metol-hydroquinone developers, and a new formula by Mr. Mackie is also given. (P. 586.)

The use of the "Sunic" and other intensifying screens in X-ray work is considered by Mr. J. I. Pigg in an article on page 594.

Mr. J. W. Dodgson, of University College, Reading, has investigated the effects of ammonium persulphate, and proves that it acts upon the gelatine as well as upon the silver. (P. 593.)

The paper on "Experiments on Solarisation" by Mr. G. A. Perley is concluded. (P. 590.)

"Photo-Mechanical Notes," amongst other matters, deal with the production of grey borders in half-tone work. (P. 594.)

Under "Patent News" will be found descriptions of light-tight developing dishes, developing apparatus, a duplex stripping photographic paper, and of a new colour screen-plate. (P. 595.)

An L.C.C. report suggests that new regulations with regard to the storage of cinematograph films may be expected. (P. 600.)

### "Colour Photography" Supplement.

Some suggested methods of direct colour photography are discussed in an article by Mr. E. Klein, which we reprint on page 49.

Dr. Kurt Gebhard considers the general principles of the bleach-out process in an article abstracted on page 50.

A simple method of making simple stereoscopic anaglyphs with the aid of Autochrome plates is discussed in a note by M. Leon Gimpel. (P. 51.)

Sir W. Herschel writes with regard to a peculiar frilling effect that has given him trouble of late, the trouble being apparently confined to certain colours. This letter, with illustration, appears on page 52.

A professional Autochrome studio, recently opened in Paris by M. Gervais Courtellement, is described on page 51.

## EX CATHEDRA.

**Relative Rapidity of Lenses.** Several times of late we have made reference to the apparent extra rapidity of very short focus lenses, and have attributed the effect to the relative thinness of the glasses and the diminished loss of light by absorption. Within the last few days we have been asked a somewhat curious question that indirectly bears on the same matter. The question was: Why do large negatives require longer exposure than small ones, lenses of the same aperture being used in both cases? It appeared that this question originated from various professional photographers, who had arrived at the fact as the result of long practical experience, and we have been given to understand that there is a general idea to the effect that large negatives actually do require extra long exposure. At first sight the obvious answer to the query appears to be a denial of the fact stated, but consideration shows that, after all, big negatives which are commonly produced with very long focus large lenses should require longer exposure than small negatives produced with small, short-focus lenses, for the latter lenses should be faster on account of the lesser absorption of light. The same conditions apply as in the case of very short focus lenses of three inches, or thereabouts, and if a lens of five inches focus were to be accurately compared with a twenty inch lens of the same aperture, it is quite possible that the difference would be found to be very considerable.

* * *

**Practice versus Theory.** The above note reminds us of the very important fact that practical knowledge is often a useful corrective to theory. According to the orthodox theory of a few years ago, the idea that lenses of the same aperture were necessarily of the same rapidity, was looked upon very much as a law of the Medes and Persians. So also was the other idea that lenses of the same focal length and aperture necessarily gave the same depth of field. Practical users of lenses, however, held quite contrary opinions for many years, and in consequence were laughed at by the theorists though their contentions are now admittedly true. Experience tends to prove that when a number of practical men are agreed on a matter which is disputed by theorists, in nine cases out of ten the latter are in the wrong. As a rule, the theory on which they rely is imperfect, not necessarily wrong altogether, and the knowledge of the incomplete nature of nearly all theories relating to photography should serve to render scientific photographers cautious. In the course of scientific investigation the most valuable assistance can sometimes be obtained from practical workers, who, in the course of a long experience, have observed facts that the scientist has most probably never had placed before him.

**Concentrated Metol Hydroquinone Developers.** The advantages of highly concentrated developers are fairly evident, and that they are appreciated is shown by the popularity of rodinal, azol, and other similarly concentrated special solutions that are upon the market. For travelling they are, of course, highly convenient, but their usefulness can equally well be appreciated by any workers who have to deal with large numbers of negatives, and naturally grudge the time spent in making developers. The trouble in making up solutions that are eight or ten times the concentration of the developer required for use lies, of course, in the difficulty of getting all the materials into solution. One method of achieving this is to be found on page 542 of the 'B.J. Almanac' for 1911, where a formula by Mr. R. L. Boyd is given, which formula, we hear, has met with much appreciation from those who have tried it. In this case the method of mixing is as follows:—The metol and hydroquinone are first dissolved in warm water, and then the sulphite, crushed fine, is added. The result of this addition is a white, pasty mass, but on the addition of the required weight of sodium hydrate, followed by a good shaking, the mixture changes to a clear solution. For the complete formula the Almanac can be consulted. We thus can get a solution of eight times normal strength, which means that we mix the developer by taking one dram of the concentrated stock solution and dilute to one ounce to get one ounce of developer. We may say that this is a fairly strong developer, and some workers would no doubt prefer even greater dilution. When carbonate is used instead of caustic soda we cannot proceed in quite the same way, but with the help of a little alcohol we can get over all difficulties. A developer, such as the Wratten formula for bathed plates, can be made up in ten times strength as follows:—First weigh out the metol and the hydroquinone, and shake them up well in a quantity of alcohol equivalent to one-tenth the total bulk of concentrated solution required. The two will not dissolve completely, and a large residue of metol will remain. Then take distilled water equal to half the total bulk of developer. Warm it up to about 130 degrees F., or thereabouts, and add the sulphite, which will rapidly dissolve. When dissolved continue the heating process until the solution is very near boiling, in the meantime adding the carbonate, which will dissolve rapidly. Finally, pour this hot solution into the alcoholic mixture containing the metol and hydroquinone, and a clear solution is at once produced. This requires a little dilution to make it up to the right quantity, and while still hot it can be filtered into the stock bottle. The advantage of compressing, say, ten litres of solution into a one-litre bottle, or, in the case of an eight times strength solution, one gallon into a pint bottle, is very obvious, and needs no comment. By adopting one or other of the two methods described, any other M.Q. formula can be similarly compressed into a small bulk of solution. The extra cost of the alcohol method can very well be ignored in view of the very material saving in time and trouble which is effected.

* * *

**A New Concentrated Formula.** The following is a new metol hydroquinone formula which has been sent to us by Mr. Alexander Mackie with a strong recommendation. The method of mixing is the same as that given by Mr. Boyd, but the proportions are varied so as to give a rather weaker developer. Take

| | |
|---|---|
| Metol | 30 grains |
| Hydroquinone | 120 grains |

Dissolve in about 5 or 6 ounces of hot water, and then add

| | |
|---|---|
| Soda sulphite | 2 ounces |

This gives, as in the other case, a thick solution, which is cleared by adding, dissolved in a little water,

| | |
|---|---|
| Soda hydrate | 80 grains |

Finally, dilute up to 8 ounces, and for use take one dram to make each ounce of developer. If the quantities given are multiplied by 5, a quart of solution will be produced, which will make 2 gallons of developer when diluted for use.

◆

## STUDIO BLINDS.

Hardly a week passes without our receiving queries as to the best materials and methods of fitting for blinds in the studio, showing that considerable uncertainty upon this very important point exists in the minds of many photographers. We do not purpose to go into the question of artistic lighting, but we believe it will be of service to many of our readers if we outline some of the most practical methods of controlling daylight to such an extent that any desired effect may be obtained, subject to the unavoidable limitations caused by surrounding buildings or the orientation of the studio itself. The actual size of the studio is an important consideration when designing a set of blinds, for an arrangement which will give perfect control in a small studio will be quite ineffective in a large one, owing to the greater distance between the glass and the sitter.

What may be considered as the orthodox type of studio blind is that made of glazed holland and fitted upon a spring roller. Two complete sets, usually composed of dark blue and white fabrics respectively, are provided for both top and side lights, the former pulling downwards from the ridge to the eaves, and the latter pulling upwards to meet them. The roof blinds of both sets must run upon tightly strained wire guides, sufficient clearage being allowed to prevent fouling in running up and down. The blinds should not be more than forty-five inches wide, including the overlap, as otherwise the weight speedily overtaxes the strength of the spring, which will then only cause the blind to close half-way. Wide blinds, moreover, often prevent the light from being regulated to the desired extent, one blind being raised, giving too much top light, while being lowered it throws the sitter too far into shadow. When new, these blinds have a good appearance, but, unfortunately, they soon become stained and dingy, and are frequently allowed to remain so even in well-ordered studios, on account of the annoyance and delay which are caused by the necessary removal for cleaning or renewal, at least a week being necessary for taking down the rollers, washing and calendering the material and refixing, after which operation they are much more likely to run askew and to crease than they were when new. The expense of cleaning and refitting is also a considerable item.

The other plan—and one which we strongly recommend—is to have "festoon" curtains made of soft material, say dark-green sateen for the dark ones, and nainsook muslin for the light ones, running upon wires stretched from end to end of the roof. For a moderate-sized roof two rows, each half the width of the light, with a good overlap, will suffice; for a larger one three rows will be required. Some authorities recommend two complete sets of light and dark curtains running upon independent wires, but this is really not necessary. In practice, one set of wires carrying enough dark blinds to cover all the glass when fully extended, and enough white ones to cover half the glass, placed in the middle, will enable the lighting to be worked with ease from either end of the studio. The side blinds are also made in two rows, the upper one extending from the eaves to, say, five feet from the floor, and the lower one covering all the glass below this, allowing a five-inch lap. The fittings required for this system are simple and inexpensive. They comprise a few strong screw eyes or brackets for holding each end, and a straining bolt for each wire; the wire itself should be galvanised with a smooth surface, and be about 1-16th of an inch in diameter. Small brass rings, which may be bought with safety-pins attached, serve to fix the blinds, and allow them to be changed and washing without any sewing. In practice it is convenient to have two sets of the white blinds, so that a clean set is always ready to put up, an operation of only a few minutes' duration. When the dark blinds get shabby they can be renewed for a very few shillings, and the old ones will serve for dusters.

A very useful, but much neglected, aid to lighting in studios troubled with sunshine during part of the day is the use of outside louvres, which are simply light frames covered with sailcloth and hinged along the sash-bars of the roof. They should be placed at such an angle that from the position of the sitter only the edge is visible, and in order to use either end of the studio they should be attached to a long bar, so that they may be swung over so as to illuminate whichever end is in use. Such louvres are sometimes fitted inside the studio, but are apt to interfere with the working of the ordinary blinds. Besides shutting out unwanted sunshine, the outside louvres naturally tend to keep the studio cooler by keeping the direct rays from striking the glass.

# RE-TONING BY HEAT.

The exact physical or chemical change that a toned P.O.P. print undergoes when subjected to intense heat would doubtless prove a very interesting matter for investigation. It is my purpose here, however, to deal only with the visible effect upon the tone of the print and the conditions which seem to govern the change. These notes are the result of numerous experiments undertaken with a wide variety of papers, tones, and conditions of heat—with the object of finding the relation of one to the other in re-toning.

## Toning by Dry Heat.

On my first drawing attention to the process about six or seven years ago it was suggested that the change was due to damp heat, but this theory seems to be disproved by more recent experiments. The presence of damp may be helpful in a way, and some very pleasant tones may be produced by treating the print with steam, but quite a distinct tone is obtained by toning the print dry, and whether the print is backed with damp paper or thoroughly dried and then thoroughly excluded from moisture, there is no distinct difference in the resulting tone or in the time taken to re-tone; which seems to prove that moisture is not necessary for the change.

The best way of applying dry heat was found to be by using a good fire or gas-stove and placing the print in a printing frame, face to a glass, first gradually heating the glass to prevent it cracking. The frame is held by the back and moved about as close as convenient to the fire, and toning proceeds very rapidly.

To prove that moisture is not necessary the print was thoroughly dried, and another glass, also thoroughly dried, was placed on top of the print. This, of course, was only done as an experiment, and the second glass making no difference may always be omitted.

The glass in front was necessary properly to diffuse the heat, and when it was omitted the print toned very unevenly. Altogether an ordinary printing-frame used as described seems the best thing to use for the purpose. The glass is likely to crack very often, but it can easily be replaced (old negatives are plentiful), and if anything else is used the progress of re-toning cannot be watched so well.

## Best for Gelatine Prints.

In testing prints made by different processes it was found that gelatino-chloride prints were the most susceptible to the change. With self-toning prints or those toned with gold or combined gold and lead, the results were much the same. Toned with lead, these prints were still subject to re-toning, though not so quickly, but when toned with platinum no change could be produced in the tone whatever.

Collodion P.O.P. prints were also tested, both self-toning and toned with platinum, but very intense heat was necessary to produce any result at all, and then it was uncertain. It was found that even if the collodion was not melted or fused into a honey-combed mass by the intense heat, the paper was very much scorched, and on the other hand steam does not seem to affect the tone at all. Although such papers may be re-toned it is not practicable to do so. Ensyna prints were subject to the test and re-toned to a light-brown colour, thus adding another variety to the wide range possible with this paper. Very great heat was required, however.

Sulphide-toned bromide prints refused to re-tone either by steam or dry heat.

## Effects of Long and Short Toning on the Re-tone.

In a wide series of experiments with gelatine P.O.P. some interesting results were recorded. By treating a series of strips it was found that the range of tones produced by re-toning was quite different from that produced in the first place by ordinary toning with gold, that is to say, two prints toned to different degrees cannot be matched by re-toning.

Then, again, two portions of a print which were toned at different speeds, one very slowly, the other quickly, re-toned at the same speed, but the original tones differed: the final result of re-toning was also different.

In re-toning a wide variety of brands and different original tones, it was found that those prints re-toned quickly and to a warmer colour which had had a short toning originally, such as prints with flat weak image or prints lightly toned.

Very strong prints well toned or very much over-toned prints took much longer to re-tone, and the result was always more of a purple.

It was found that with prolonged re-toning the backs of the prints became scorched, although this was not visible on the front, and, although slow and quick, re-toning produced the same tone finally, *the scorching seemed most noticeable with the slow re-toning*, gelatine P.O.P. will also retone very readily with steam—generally more readily even than with dry heat, and the remarks made on re-toning by dry heat also apply to prints treated with steam, except that the tones produced are always warmer in colour.

The operation is very easily effected by placing the print in a printing-frame of suitable size without a glass, and moving it about in a good jet of steam issuing from a kettle. Toning takes place very quickly, but care must be taken or the steam will melt the gelatine surface.

I have found that treating prints with formaline makes no difference to the progress of re-toning, and it does much to prevent the film melting under these very trying conditions.

The tones produced both by dry heat and steam are very pretty and quite unique in their range, and as the operation is so simple there is no reason why many a badly-toned print should not be improved by its application.

That the practical scope of the process may be more widely known is I trust sufficient excuse for publishing the results of these experiments. A. W. H. Weston.

# THE PRACTICAL "PANCHROMATIC."

In spite of text-book eulogies and the ever-present advertisements dealing with the advantages of orthochromatic plates, it is doubtful if many photographers see any cash advantage in their use. This all-important point is not particularly obvious in the case of the yellow-and-green sensitive plates, although these do possess advantages, and have no particular disadvantages, since they will do all the ordinary plate will do, and for landscapes a great deal in addition. Development in no way differs from the usual practice if a tested safe-light is used.

Plates sensitive to red in addition to yellow and green, such as the "Panchromatic," are on an entirely different basis. Apart from their superior rendering of all subjects over the ordinary and orthochromatic varieties, their application to certain subjects for which they alone are suitable gives them a practical money value. By their use not only can new ground be broken, but the striking results possible will assist the photographer in his endeavour to prove the superiority of his general commercial work.

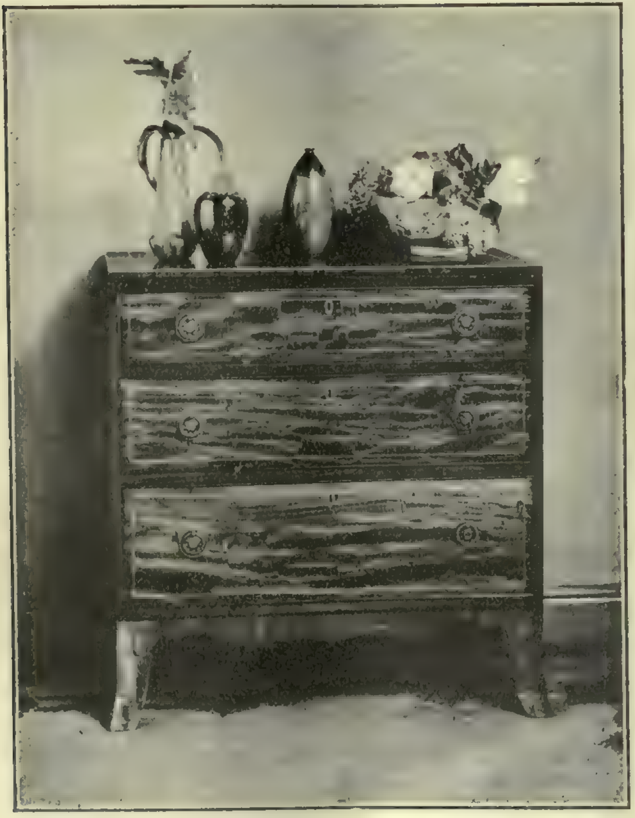

Fig. 1.

The chief commercial advantages of these plates are for photographing furniture and copying pictures. For the latter purpose red-sensitiveness is essential. By the use of such a plate for the former, one can obtain improvements over the old methods that are nothing short of marvellous. For furniture photography a screen must be used on the lens, and, to gain the full advantages of the sensitising, it should be one tested for the plate. A Wratten K 3 screen will give excellent rendering of grain and figure, but for the most striking and saleable results a special red screen should be used.

It cannot be too urgently impressed on the photographer that these red-sensitive plates must be handled in absolute darkness, or by a special safe-light which is but little better. This is but a slight handicap that is quite unnoticed before the first box is finished.

When arranging the objects to be photographed, get the light as even as possible. If a small source of light must be used, get as far from it as is practicable. With the red-screen the exposures are extremely long, so that focussing must be carefully done to allow of the use of a comparatively large stop.

The factor for the red screen is stated to be 15, but in practice for work under ordinary conditions, in studio or room, we find this very much understated. Our usual method is to place a Wynne actinometer facing the light, but at the farthest point from the source of light that will be included in the picture. The time the paper takes to match the standard tint is noted and, if using *f*/11, multiplied by 6, which gives the exposure necessary, which is frequently well over an hour. This is rather awkward, especially if one has to work in a show-room. In this case very early in the morning is usually a satisfactory time.

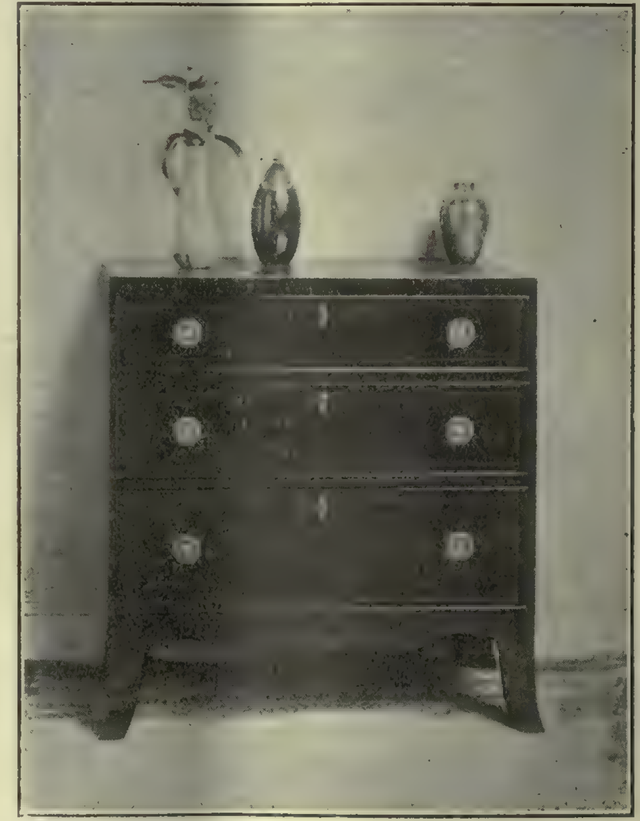

Fig. 1A.

Development in total darkness may appear to offer difficulties, but by the help of a thermometer and the time-chart supplied with the plates, the only difficulties are purely manipulative ones, easily overcome by practice and a little forethought. So reliable do we find the timing method, and superior in every way to the old one in which the personal factor entered so largely, that we now develop portraits and everything by temperature and time. The Wratten chart is divided into various times for portraits, architecture and landscapes. For furniture work, including all interiors, it is advisable to dilute the developer with an equal volume of water and to double developing time. The water should not be taken from the tap, but from a storage bottle, say a Winchester, that is kept in the dark-room. Tap water would be some degrees lower than the developer, and complicate the timing. Single pieces of furniture with even lighting should be developed for the time given under architecture. For set pieces, such as Fig. 3, or single pieces, with concentrated lighting, develop as for portraits.

One can know when to stop development either by counting or by using a clock. The best means we know of for the former is to count one-little-second, two-little-second, three-little-second, etc., putting a match or some small object where it can be easily felt for each minute. A little practice will make this method perfectly accurate up to several minutes; it is, however, so very monotonous that after a little while a few shillings will be invested in a clock of one of the patterns on the market.

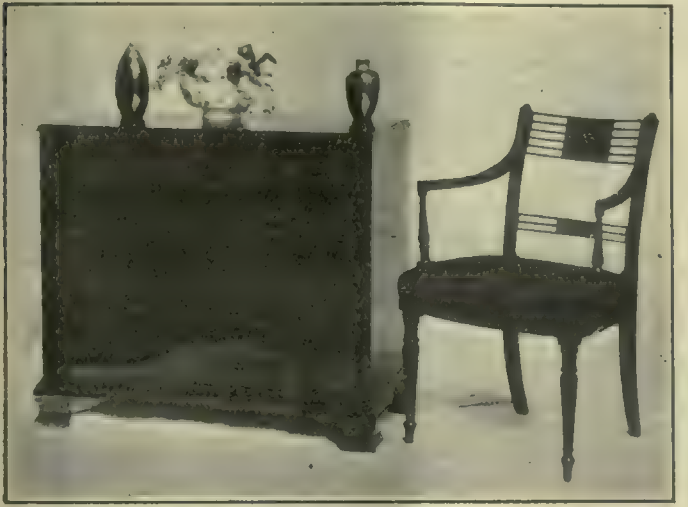

Fig. 2.

Wrattens supply an alarm device that is simple and strong enough to stand any amount of rough usage. It is excellent with the reservation that the dial has a most inconvenient marking, being stamped out into twenty second divisions, which in itself is quite all right, but the denoting numerals are 5, 10, 15, etc., so that it is difficult to work out the number of minutes. To overcome this, it is advisable to scratch one's own minute marks, which necessitates setting the clock in the light, or, better still, to drive some small panel pins in the correct position round the dial when it becomes quite easy to set the hand by feel.

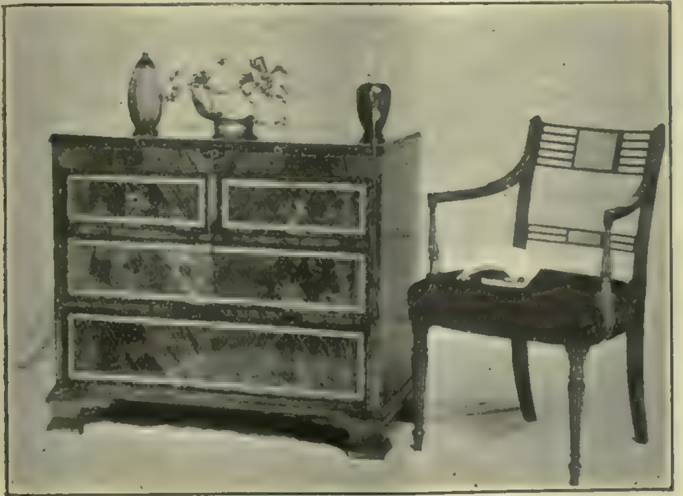

Fig. 2a.

Be careful not to over-time development; the red screen appears to exaggerate contrasts in a marked fashion, pieces nearer to the light being much denser than those only a yard farther away. No amount of over-exposure or development-juggling quite overcomes this, so that some printing method capable of easy control should be used.

Glossy P.O.P. or bromide should, we think, always be used, whether for half-tones or not, to get the full value of the details brought out in so striking a fashion. In Fig. 3 the centre portion was exposed at one foot from a No. 5 Bray for 10 seconds on bromide. The statuette on pedestal, part of screen and small table that were facing source of light, received 40 seconds.

The only expense one need incur in order to be thoroughly equipped for this work is that for the plates themselves and for the screen. It is advisable to get the latter large enough for the biggest diameter lens you are likely to use, and to make or have made screen holders which will fit on the other lenses, all taking this one-sized screen.

Many trades require these photographs, and will use yours if you show the difference between the ordinary and the special plate. Many furnishing houses prefer to distribute actual photographs which they get returned in preference to scattering illustrated catalogues broadcast. For one thing, the public begin to understand that a half-tone may be very different from the reality. Antique dealers take a few prints, but they want them quickly, usually to clinch a bargain with a visitor who has already seen the goods and left the town. An enthusiastic collector would prove a small gold mine.

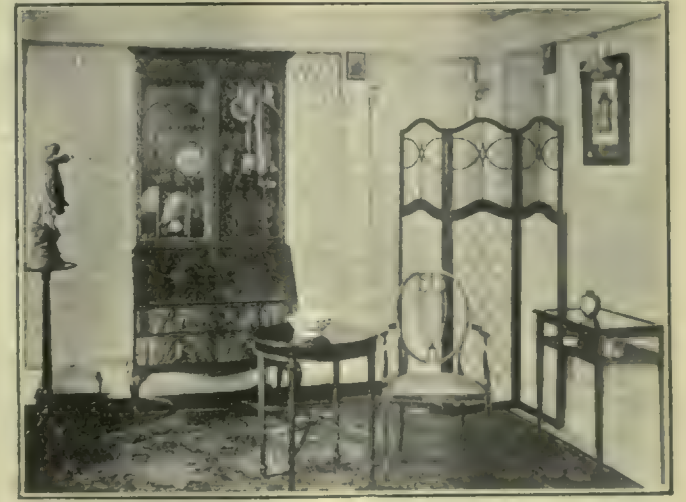

Fig. 3

To submit a print from an ordinary plate to a retail furniture house is suicidal, for all the furniture manufacturers now use panchromatic plates with the red screen, and distribute hundreds of prints to these people, so that you risk a damning comparison. Even if you have no users for this work, a few prints of the same furniture shown on ordinary and special plates form a very valuable first means of impressing prospective clients with your skill, your up-to-dateness in acquiring new methods and ideas. We have found that in every instance where we have shown comparative furniture prints, pointing out that no pains, no trouble or expense are spared to keep ourselves in the forefront of progress, we have immediately secured orders or promise of them. The comparative prints shown herewith are by no means fake illustrations. Every effort was made to secure the best results the ordinary plate was capable of, slow plates very fully exposed and fully developed being used.

It is extremely difficult by means of half-tones printed on thin unprepared paper to give an adequate idea of the wonderfully fine detail of the figuring and grain of the wood secured by the "Panchromatic" and red screen; but we think the improvement in appearance as "selling value" is sufficiently obvious.

W. Foster Brigham.

# EXPERIMENTS ON SOLARISATION.—II.

(A Paper in the "Journal of Physical Chemistry.")

III.

### Errors due to Light Absorption.

ANOTHER particular case of the above absorption error was noticed when a two weeks old metol developer was used to check up some of the previous work. It was observed that the developer had assumed a brown colour. Nevertheless, but little attention was given this, since it developed a plate perfectly. With such a developer in the film, the first results could not be checked. Upon examining the absorption spectrum of even a very thin film of this developer a decided absorption in the violet was evident. Thus the greater portion of the really active rays of light were taken away, causing an extremely large error. This would occur very infrequently with a metol developer, as it is usually made up fresh; but the error with the oxalate must always be a great factor.

Another striking example of the effect of absorption is given in connection with Lüppo-Cramer's[6] work on the theory of sensitisers. He found that precipitated silver chloride blackened less rapidly when immersed in a 5 per cent. solution of sodium nitrite than when in water. On the other hand, a sensitising action was obtained when a silver chloride plate was bathed in a nitrite solution and then dried. However, a retarding action does not occur when the plates are merely moistened with the nitrite solution. Lüppo-Cramer considers the difference as due to the relative amounts of nitrite present. As this seemed rather unsatisfactory, the absorption spectrum of a nitrite solution was examined. There is a decided absorption in the blue with even a dilute solution of nitrite. Accordingly experiments with silver chloride were undertaken in order to show the effect of this absorption. A precipitated silver chloride was placed in two glass tubes, which allowed light to enter at one point. The silver chloride in both tubes was covered with equal layers of a 5 per cent. solution. In one tube above the mixture of silver chloride and nitrite solution was placed a separate tube of a 5 per cent. nitrite, while over the other was placed a separate tube containing an equal height of water. Only the rays of light which passed through the tubes of nitrite and water were incident upon the silver chloride. Exposures were then made in duplicate to sunlight for the same length of time. The silver chloride, in the tube permitting light to enter through the water, blackened many times more rapidly than that in the tube where light entered through the nitrite solution.

The silver chloride blackened more slowly in the nitrite solution than in water in the experiments as conducted by Lüppo-Cramer, but as absorption of light by the nitrite readily takes place, these experiments are faulty.

In order to determine whether the nitrite solution had any sensitising action on the silver chloride, two glass tubes similar to the above were employed. In one was placed silver chloride immersed in a thin layer of a 5 per cent. nitrite solution. Light was allowed to enter this tube through a separate tube containing water. In the other was placed silver chloride immersed in a layer of water of the same height as that in the first tube. Light was allowed to enter this tube through a separate tube containing a nitrite solution equivalent to that in the first. The two tubes were exposed to the same source of light for the same length of time. Under such conditions the silver chloride immersed in the nitrite solution darkened more rapidly than the silver chloride immersed in water.

These experiments only increase the number where absorption of light by various solutions has caused erroneous conclusions.

Previous to the above experiments much labour had been expended in an attempt to use daylight as the source of light. An interior of a lecture room with very constant outside illumination had been selected, and many plates were exposed to the same object at the same distance, but consistent results could never be obtained. One hour of the day would yield a much brighter light than the next, with the consequence that we could never vouch for the exactness of our results. With the apparatus employed such a variable factor was eliminated. All differences in density were of such a nature that they could be judged qualitatively. Especially with hydroquinone the plate seemed at least two times as fast as the check water plate, and under the best conditions all were twice as good where they contained the developer. Of course, such estimates are not exact, but great differences from the water check plate were easy to observe provided error due to absorption was eliminated.

These results are at great variance to those obtained by Lüppo-Cramer,[7] who found the sensitiveness in most cases to be decreased by presence of a depolariser in the film during exposure. It seems probable that the source or quality of light, as well as absorption, must have altered the results, for our experience showed already that no reliance could be placed upon outdoor exposures. Accordingly the methods were improved in order to eliminate the many variable factors in other experiments.

### Effect of Light of Various Colours.

With the above concentrations of hydroquinone in the film the problem of quality or effect of various coloured rays was undertaken. In order to obtain definite colours, various solutions of brilliant green, acid rhodamine dyes, fluoresceine, and permanganate of definite absorption factors established by aid of the spectroscope were made. Table XIV. gives a good generalisation of the effect of quality of light under these conditions:—

TABLE XIV.

| No. | Colour of light. | Exposures. | After development. | Relative types. |
|---|---|---|---|---|
| 1 | yellow | 3 min. | 1 min. | faint dark, badly fogged. |
| 2 | water | 3 min. | 1 min. | lighter |
| 3 | yellow-green | 2 min. | 1 min. | faint dark, badly fogged |
| 4 | water | 2 min. | 1 min. | lighter |
| 5 | green-blue | 30 sec. | 1 min. | medium dark |
| 6 | water | 30 sec. | 1 min. | lighter |
| 7 | blue | 5 sec. | 1 min. | dark |
| 8 | water | 5 sec. | 1 min. | much lighter |

In the case of the rays from the yellow to the green an exposure sufficient to cause final development yielded a badly fogged plate. This disturbing feature tends to obscure the real outlines. This is undoubtedly due to the very slow action of the rays of low actinic value. In consequence there is a tendency for a gradual development over the whole surface, and, accordingly, a lack of contrast. For all the rays that do not cause a uniform fogging (or a long exposure) the effect of the presence of a depolariser in the film was, not to decrease the sensitiveness, but to increase it as compared with the water check plate. In the experimental work all other factors were maintained constant as in the previous case. The little ray filter was placed in front of the lens, and the distance of the plates was maintained constant, while the times of exposures were varied.

We have considered the major portion of the field of solarisation, and have brought the discordant facts into a general system. From the action of several of our reducing agents it is perfectly evident that the latent image is a reduction product of silver bromide. In other words, the ratio of bromine to silver is less than in the normal silver bromide.

There are still one or two minor details to be straightened out. One of these is the antagonistic effect of different lights, or the Herschel effect. Abney[8] has given us only the major details as to his method of showing the effect of red light upon a plate exposed at the same time to a source of white light, and as Lüppo-Cramer[9] denies the existence of the phenomena observed by Abney, it seemed advisable to duplicate exactly the former work in order to give a full explanation.

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[6] "Jour. Phys. Chem.," 14, 149 (1910).

[7] Bancroft: "Jour. Phys Chem.," 14. 134 (1910).

[8] "Phot. Jour.," 32, 318 (1908).

[9] "Phot. Korrespondenz," 39, 134 (1902); 43, 432 (1906); 46, 344 (1909).

An apparatus was so arranged that the light from an incandescent lamp might fall on the whole surface of a bromide plate. From another source a small bundle of brilliant red rays were allowed to fall upon a section of the already illuminated plate. With such the data in Table XV. were obtained :—

TABLE XV.—EXPOSURE TO WHITE LIGHT ALWAYS CONSTANT.

| No. | Exposure to red. | Development. | Type of red spot portions. |
|---|---|---|---|
| 1 | 10 sec. | 1 min. | Darker than surrounding plate |
| 2 | 30 sec. | 1 min. | Much darker than surrounding plate |
| 3 | 1 min. | 1 min. | All of plate same intensity |
| 4 | 2 min. | 1 min. | Little lighter than surrounding |
| 5 | 5 min. | 1 min. | White surrounded by black |

The plates were developed with the regular stock developer, and the results hardly need explanation. What actually occurred when Abney found that red light destroyed the action of white light upon a bromide plate was that the red light was undoubtedly very intense. Very possibly it was not composed solely of pure red rays, but may have contained a few more powerful actinic rays. When an exposure was made under these conditions the portion where the red was incident was much more strongly illuminated. The result was a solarisation phenomenon at this point. When obtaining the data of Table XV. only a very intense pure red light was employed. The filter was made of acid rhodamine (dye). By continued exposure we have the negative first, and next the positive formed. All this is due only to the excessive exposure received at this particular point. Thus we see that the so-called antagonistic effect of various lights on the photographic plate is only one type of solarisation. If Abney had given more specific details as regards his source of light, or if we could have learned more in detail as regards Lüppo-Cramer's methods wherein he failed to confirm Abney's results, the whole matter could have been interpreted without experimental corroboration.

In the Clayden effect a very short exposure to an intense light followed by a short exposure to diffused light, yields a reversal, but if the original exposure is too long, only a negative results. The mechanical strain theory, as well as the other theories advanced to explain this phenomenon, have been given[10] rather completely, and accordingly will not be repeated. The fact of the reversals seems perfectly logical, and can be explained simply as a solarisation phenomenon. In order to verify this statement, a medium induction coil was employed. Thin sparks of about four inches in length were photographed. Under such conditions only negatives were obtained when the plate was developed in the regular stock developer. By aid of condensers a very dense and brilliant spark was produced. Exposures to such yielded three classes of images; the initial negative, the positive and the second negative, when the spark was least bright, of medium illumination or most intense, respectively. Several photographs of the uncondensed sparks were taken. By fogging these plates for a short time positives were readily produced. Thus we see that with varying intensities of the sparks negatives or positives may be obtained. If the spark is not sufficiently intense a positive may be produced by merely fogging with diffused light (this is simply one method of producing positives from would-be negatives). There seems to be nothing exceptional about this so soon as one follows out the different stages. When flashes of lightning are photographed, almost any type may result. When the lightning is distant and not intense, the usual negative is obtained, but if the flash is quite intense a positive would result. When the lightning is extremely bright and in close proximity it would be possible to obtain the second negative. The stages are merely those observed when the ordinary action of light on a silver bromide plate is studied. The explanations for the latter apply to the same extent as to the former.

In all this work Seed's lantern slide plates were used. However, it seemed advisable to try the effect of a solarising exposure on several grades of plates. It was found that Seed, Cramer, and Lumière plates solarised with the proper exposure. The rapid "Sigma" Lumière plate was the easiest to control in the production of direct positives. Lüppo-Cramer[11] states that the silver bromide gelatine plates with an extraordinarily fine grain, such as the Lippmann plates, show no normal solarisation at all. This seemed interesting if true, and accordingly experiments were made with Lumière's "Red Label" plates. These plates are supposed to be unsurpassed for fineness of grain. Using a constant source of light, plates were exposed under a lantern slide plate by contact for varying degrees of time. The first experiments yielded no solarising effect, even under conditions which produced beautiful results with the Sigma plate. A more careful study was made, and very slow stages were employed as the variable factor was altered. For a given distance from the source of light an exposure was then found which yielded positives consistently. Under these conditions the plate assumed an appreciable fog. When too long an exposure was given, the final reduced silver masked everything. Previous failure to obtain positives with very fine-grained bromide plates is due to the fact that the change from that portion of the degree of exposure-density curve where solarisation occurs to the final reduced silver is very abrupt. Under such circumstances the solarising portion of the curve is easily passed, and only the initial or final negatives are obtained. By very moderate steps in varying the degree of exposure the phenomenon of solarisation becomes perfectly evident in the finest of bromide plates.

Another method of producing positives from the fine grained "Red Label" plate is by exposure during development to a green-blue light. This yielded far better results than the previous method, as the uniform fog is not so troublesome. By this method failure to obtain positives from even a very fine grained bromide plate should never result.

## Summary of Results.

A general summary of our results show that the two assumptions made by Professor Bancroft account for all the facts and bring many theories into one general system. The assumptions were based on the theory of Grotthuss, and on the experimental facts that silver bromide which had been slightly decomposed by light is reduced faster by a developer than either unexposed or completely exposed silver bromide.

(1*a*) The action of light on a silver halide compound corresponds to that of a direct current or of a fairly weak reducing agent. It causes the silver halide to pass through all the possible stages.

(1*b*) A fairly strong reducing agent (a developer) does not cause the silver halide to pass through all the possible stages, and does reduce certain silver halogen solid solutions or sub-halides faster than others which contain less halogen.

(2) Oxidising agents do not increase the tendency towards solarisation, but retard the formation of the weak normal image with a better positive resulting.

(3) Reducing agents do not retard solarisation, but tend to mask it by excessive reduction.

(4) In the production of positives splendid control of Nipher's method may be obtained by aid of green-blue rays; positives may be obtained by slow reduction, using a weak developer, but this requires a very long time; positives may be obtained by aid of a weak depolariser in the film for a much shorter exposure than is otherwise demanded. This wet process is very impracticable, and is very messy to handle.

(5) The Waterhouse reversal is due to a sensitising action of the thiocarbamide. Better control is obtained by a preliminary sensitising in the thiocarbamide solution, and the development with the usual developer. For under exposures this is the ideal manner in which to produce a fine dense positive.

(6) In Kogelmann's work, negatives could only have been obtained after treatment of over-exposed plates with thiocarbamide by use of a too dilute or old developer, or by too short a development.

(7) Carey Lea's reversals were due undoubtedly to the difference in the action of the developer on the surrounding dry film instead of a wetted film. The dry film developed first in cases of low concentration of hypophosphite. Pure hypophosphite acts like a weak developer.

(8) By the use of chemical reducing agents as stannous chloride, sodium arsenite, or very weak developers, it has been shown that the

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[10] Bancroft: "Jour. Phys. Chem.," 13, 269 (1909).

[11] "Photographische Probleme," 138 (1907).

latent image is a reduction product, or that the ratio of bromide to silver is less than in the normal silver bromide. By such agents we find a verification of the second assumption.

(9) A chemical which dissolves silver from the latent image will check solarisation, while any which dissolves silver bromide will increase the tendency to solarise.

(10) In Homolka's indoxyl development the excess silver masked the positives. The stannous chloride acted analogous to light and caused the excessive reduction.

(11) The presence of depolarisers in a film during exposure increases the sensitiveness.

(12) The stand developer acts as a slow developer rather than as a weak reducing agent.

(13) The antagonistic action of light on a photographic plate is due only to the effect of excess exposure, and is only a phenomenon of solarisation.

(14) The disintegrating action of light as brought forth by Lüppo-Cramer is not necessary for the explanation of the Clayden effect. The effect is produced by the normal action of light of high intensity. It is only another instance of solarisation.

(15) Extremely fine-grained plates will solarise provided the proper precautions are observed.

This work was suggested by Professor Bancroft, and the writer desires to express the greatest gratitude for the interest and many suggestions always at hand in this work.

G. A. Perley.

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# PROFESSIONAL OUTDOOR PHOTOGRAPHY.

## I.

It has occurred to me that, having attained my semi-jubilee as a professional photographer in an industrial and thickly populated district—and that with a fair proportion of success—it may be within my power to give some hints to others as to the best principles and methods of founding and conducting a successful photographic practice. In endeavouring to impart to others such information, I propose to do so more by definite instructions as to "what to do and how to do it," than by multiplying confusing instances of "what not to do"; in short, to explain clearly and in detail how difficulties, chiefly in outdoor work, may best be overcome.

Provincial and country photographers are often called upon at short notice to undertake the production of good results from a very wide range of subjects—animals, groups, views, architecture, machinery, at-home photographs, evening parties, with "etceteras" —under all conceivable conditions of light or want of light, and it is my aim to aid the young and enterprising professional to negotiate successfully the most difficult commissions.

### The Camera.

Most, if not all, of the outdoor cameras advertised are suitable, the indispensable points being rigidity, reversing, and swing back, and rising and falling front. It is desirable to have considerable extension; the front, or lens board, should move backwards on the baseboard, and the back should move forwards for use with short focus lens. There should also be a moderate amount of side swing.

The tripod must be rigid when fixed. And here allow me to impress on my readers one important point in the use of photographic apparatus. It is this. Every brass screw should be periodically lubricated by a minute drop of the finest machine oil, as used for a sewing machine. The rebates of the sliding doors of the dark slides should also be kept in sweet working order by vigorous rubbing with a soft cloth, a small part of which carries a solution of beeswax or turpentine, or they may be lubricated with dry blacklead. Either method is effective in avoiding wear and tear, and effectually prevents the unseemly rugging and tugging to which a careless operator has been known to subject his camera. It will also be found, on some occasions, impossible to avoid both operator and camera getting wet when working in the open air. Neither possibly can be effectually dried till their return to the studio, when the operator may take measures to restore his own comfort, but must take instant steps to prevent permanent damage to his apparatus. This must be unpacked (it is presumed that after operating and before repacking, most of the moisture has been carefully removed by wiping the bellows and woodwork with a cloth), the camera opened up to its fullest extent, all traces of damp completely removed, and left for a sufficient time in a perfectly dry atmosphere, but not too near a stove or fire, as a very moderate amount of heat might produce a tendency to warping, sufficient to destroy or impair the smooth working of such finely fitted apparatus. The tripod must also receive the same attention, and, with an occasional application of a very little boiled linseed oil rubbed on with a piece of warm flannel, the camera and stand may be maintained in new condition for an indefinite period, while a very slight exertion is sufficient to fix the screws firmly with a minimum of friction and wearing of the threads.

The lens is the important consideration. When purchasing this it is well to remember that a really first-class lens places your work one long step in front of most of your rivals. On starting business, a 12 x 10 camera was the largest I possessed. I soon found, however, the necessity of purchasing a 15 x 12 apparatus. For this I received on trial two lenses—a Ross "R.S." lens of 20in. focus, and a T.-T. and H. "E.R.R." lens of 24in. focal length. Both, on trial, proved perfectly satisfactory, but each had its own special merits, and as I was unable to decide between them I ended in retaining both, and this I have never regretted, and I find it advantageous in most cases where there is sufficient space between camera and subject to use a lens of longer focus than the ordinary R.R. lens. Since that time opticians have placed on the market a much more varied selection, and the aspiring professional will assuredly reap the greater benefit by selecting the best lens his means will afford. Economy in this matter is prejudicial to success.

The shutter most generally useful in outdoor work is of the roller-blind, time and instantaneous variety, actuated either by pneumatic or Antinous release. My personal preference is for the former. In cases of long exposure, such as may be required for interiors or subjects in unusually dingy conditions of lighting, it is better, of course, to discard the shutter and expose by removing the lens cap in the old-fashioned way.

### Plates.

I have often seen plates of "Ordinary" rapidity recommended for most classes of outdoor work; but, personally, I have on most occasions found it to be of the greatest advantage to be armed with plates of considerable sensitiveness, while I cannot recall a single instance in which a plate of extreme rapidity has proved to be detrimental to the result. Those I have used for a very long time now—in fact, ever since these ultra-rapid plates have been available—are labelled 350 to 400 H. and D. As it is only rarely that the use of colour-sensitive plates happens to be a decided advantage, and the operator is usually informed in advance of the nature of such subjects, I have invariably found that the non-colour-sensitive plates were equal to all ordinary requirements. Moreover, the latter admit of a fair quantity of the proper quality of light in developing, and thus enable you to estimate your results with greater confidence.

### Developer.

For outdoor subjects, a moderately slow-working developer is usually advisable. For more than twenty years I have employed hydroquinone as the developing agent. (If I remember aright it is, or was, known as Thomas's formula.) In cold weather I put the solution into an enamelled tin vessel, and heat gently over a bunsen gas burner till slightly warmer than it would be safe to use. I then pour it into the developing tray, and allow to stand for a minute or so, till the chill has left the tray. Pour back into the enamelled tin, then in the usual safe developing light put the plate or plates in the tray and develop as usual. I have no difficulty in getting the same quality of negative that any other developer will yield. I have used pyro-ammonia, pyro-soda, amidol, rodinal, ortol, eikonogen, edinol, etc., and have found them all capable of producing perfect negatives, but have never found any sufficient reason to induce me to discard a developer with which I am thoroughly familiar in favour of another. I quite agree that it is a safe plan to follow out implicitly the formula and methods each maker or firm recommend for his or their own particular plates, and would be the last to advise anyone to the contrary, but simply state that for considerably more than twenty years' experience with this developer I have never found it necessary nor desirable to make any change to suit any plate whatever. R. C. PLATT.

# NOTES ON THE ACTION OF AMMONIUM PERSULPHATE AS A REDUCER.

Communicated to the Journal of the Royal Photographic Society by J. W. Dodgson, B.Sc., of University College, Reading.

IT is generally stated that ammonium persulphate will attack the denser portions of a negative before the lighter parts are appreciably affected; it has also been stated that it has but very slight action upon gelatine. The former of these statements seems to be correct, but the second is only true under conditions which are not entirely those which hold during the reduction of the developed image by the persulphate solution. The experiments to be described will show that the action of persulphate upon gelatine alone is a very different thing from the action of persulphate upon a gelatine film supporting a silver image.

It is well known that silver will dissolve in solutions of persulphates without evolution of gas, the change being generally represented by the equation—

$$K_2S_2O_8 + 2Ag = Ag_2SO_4 + K_2SO_4$$

This equation, however, does not represent the entire reaction which takes place when ammonium persulphate is used, as the ammonia is oxidised at the expense of the persulphate and the solution shows the presence of nitric acid.

For the purpose of the experiments, pure silver was prepared in a fine state of division by precipitating silver nitrate with magnesium powder, washing thoroughly with water, then several times with dilute hydrochloric acid and again with water, afterwards with several additions of ammonia and finally with water.

The first specimen of silver thus prepared was insufficiently purified, and on being placed in ammonium persulphate solution caused some evolution of gas; this was due to the magnesium present, which acts upon a solution of ammonium persulphate or ammonium sulphate with evolution of ammonia and hydrogen. An attempt was made to measure the gas thus evolved, and 10 grammes of persulphate in 50 cc. of water were placed in a flask connected with a measuring apparatus; 2 grammes of the finely divided silver *wrapped in paper* were then added; the evolution of gas was much greater than was expected, far more in fact than the measuring apparatus used could have held; 38.4 cc. of the gas was however taken, and was, by treatment with caustic soda, found to contain 31.6 cc. of carbon dioxide. This gas could only have arisen from the oxidation of the paper, and as the reaction raised the question of possible action of the persulphate upon other organic substances, including gelatine, experiments were arranged as follows, with the results given below.

Fresh silver, perfectly purified from magnesium, was prepared, and in all cases, except where otherwise stated, the solution of ammonium persulphate consisted of 10 grammes of the salt dissolved in 50 cc. of water, and the reaction was allowed to proceed for twenty-four hours.

The apparatus employed consisted of a 2-oz. flask connected with potash bulbs containing baryta water.

| | *Results.* |
|---|---|
| 1. 50 cc. of solution with .5 gram of paper. | No evolution of carbon dioxide or other apparent action. |
| 2. 50 cc. of solution with one gram of gelatine. | A similarly negative result. |
| 3. 50 cc. of solution with 2 grams of finely divided silver. | No evolution of gas. The solution on analysis showed the presence of .4988 grams of silver. Precipitation of the solution with barium nitrate showed the presence of 8.2 grams of $SO_4$, thus indicating that the whole of the persulphate had been converted into sulphate, the solution no longer gave the reactions for persulphate, but nitric acid was present. |
| 4. 50 cc. of solution with 5 grams of filter paper and 2 grams of silver. | In about half-an-hour evolution of carbon dioxide was proceeding steadily and a white precipitate of barium carbonate was being thrown down. After 24 hours .36 grams of silver was dissolved; there was no persulphate remaining in the solution, this again giving 8.2 grams of $SO_4$. Nitric acid also present in very small quantity. |
| 5. 50 cc. of solution with 1 gram of gelatine and 2 grams of silver. | In about half-an-hour the evolution of carbon dioxide was vigorous, and the gelatine had entirely dissolved; when the reaction had ceased, .38 grains of silver were found dissolved in the solution, which also yielded 8.3 of $SO_4$. A trace of nitric acid was present as before. |
| 6. Experiment 5 was repeated with substitution of caustic potash for baryta and the addition of a drying tube between the flask and the potash bulbs. After the evolution of gas had ceased a current of air freed from $CO_2$ by passage through caustic potash was drawn through the solution to expel all the evolved carbon dioxide. | The potash bulbs showed an increase in weight of .5141 gram, equivalent to .1402 of carbon. |

7. Experiment 2 was repeated with the same result as previously, after standing 24 hours no $CO_2$ was evolved, although the gelatine had dissolved; two grams of silver were then added, and in half-an-hour vigorous evolution of carbon dioxide was taking place.

8. As the conditions of the above experiments were not exactly those holding during the use of ammonium persulphate as a "reducer" of the silver image in a negative, the following experiment was arranged. The apparatus employed was that used in experiment 6, but with baryta water instead of caustic potash.

Two "Edwards" photo-mechanical plates were exposed to light, developed with "glycine," fixed, and washed thoroughly. The films were removed from their glass plates, washed, and placed in 50 cc. of a 5 per cent. solution of ammonium persulphate (several analyses had given the average weight of silver in each film as .14 gram). Purified air was drawn through the apparatus, and after half-an-hour a heavy white precipitate commenced to form in the baryta water, showing the liberation of carbon dioxide and the oxidation of the gelatine.

The conclusions to be drawn from the above results seem to be as follows:—

Ammonium persulphate even in fairly strong solution does not appreciably act upon gelatine or paper, but in the presence of finely divided silver rapid oxidation of the organic material takes place.

The mechanism of the reaction is probably that expressed by the following equations—

(1) $2Ag + (NH_4)_2 S_2O_8 = Ag_2SO_4 + (NH_4)_2 SO_4$.

Additional persulphate acts upon the silver sulphate.

(2) $Ag_2SO_4 + (NH_4)_2 S_2O_8 = Ag_2S_2O_8 + (NH_4)_2 SO_4$.

Water acts upon the persulphate of silver.

(3) $Ag_2S_2O_8 + 2H_2O = Ag_2O_2 + 2H_2SO_4$.

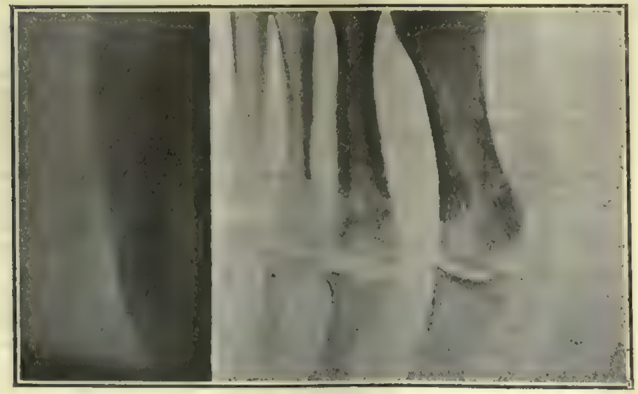
The silver peroxide then becomes the active oxidising agent, being itself reduced to $Ag_2O$, which dissolves in the sulphuric acid also produced forming silver sulphate which can again react with the persulphate. It is obvious, therefore, that the reaction will continue as long as any persulphate remains. The peroxide of silver will oxidise not only the gelatine, but also the ammonia of the ammonium persulphate forming nitric acid.

The results obtained so far do not in any way condemn the use of ammonium persulphate for diminishing the density of a negative; there seems no reason to suppose that the silver remaining in the film is in any way changed, the diminution being caused first by the solution out of the film of a small quantity of the silver, and afterwards in addition to this by oxidation and removal of the gelatine, but the effect of the catalytic action of the silver salt in thus oxidising the gelatine suggests that considerable care is necessary in the use of persulphate.

Certain quantitative relations in the above experiments require further study; these are at present under investigation, and will be communicated in due course.
J. W. DODGSON.

# THE INTENSIFYING SCREEN IN X-RAY PHOTOGRAPHY.

INTENSIFYING screens for reducing the time of exposure in X-ray work have been in use for several years, but innovations in their manufacture and methods of working have recently brought them into special prominence. The pros and cons. of the intensifying screen have been much discussed by radiographers, but the general opinion was adverse to their use, as in addition to the trouble of placing the plate in a special dark-slide, the grain of the screen was always visible on the negative. Of late the subject of intensifying screens has once more come to the front. New screens have been introduced, and a better method of working them has been adopted. The platino-cyanide of barium screen, which, as it gives the brightest fluorescence, has been universally recognised as best for visual examination, is useless for photographic work, the emitted light being of a deep yellow colour. The fluorescing substance which till lately has been found most useful for placing in contact with the dry plate to reduce exposure is calcium tungstate. This gives a white fluorescence, which materially shortens exposure.



Radiograph of foot showing effect of intensifying screen on plate. The right side of print shows unscreened portion of negative.

An improved form of intensifying screen known as the "Sunic" was brought out some time ago. Soon after the introduction of this screen the writer compared the fluorescence of the barium, tungstate, and "Sunic" screens. The three screens were placed close together, and the variations in colour and comparative visual brightness was very striking. The barium screen gave by far the brightest fluorescence, which was, of course, a distinctly yellow colour. The tungstate screen was the next brightest, and seemed, in comparison with the barium coating, to give a pure white fluorescence. The "Sunic" was less bright than the tungstate, and in comparison with the barium screen appeared very obscure, but it gave a blue-violet fluorescence that was extremely actinic and would have by far the most effect on the sensitive film of a dry plate.

A trial exposure was made of the actinic quality of the "Sunic" screen on a dry plate. Only a portion of the plate was covered with the screen. An exposure of one second was given to a foot. On development the portion of the plate in contact with the screen was much over-exposed, and was over-developed before the unscreened part of the plate began to make its appearance. A reproduction of a print from this negative is given here: it will be seen that while one part of the print is much over-exposed, the other is practically black.

In subsequent trials it was found that the use of the screen reduced the exposure to about one-seventh that required for an unscreened plate, in spite of the fact that exposures were made *through* the glass of the dry plate.

A novel feature of the introduction of the screen was the recommendation that the exposure should be made with the glass side of the dry plate facing the tube. The X-rays have consequently to pass through the glass before reaching the sensitive film. This was an important departure from the old method, in which the screen was between the tube and the dry plate, as the grain of the screen was not reproduced on the negative. The preparation of intensifying screens had reached a high degree of excellence, but in spite of the fine grain and even coating of the fluorescent substance, the developed image always appeared somewhat coarse and granular.

This method of exposing through the glass would seem to lengthen the exposure considerably and reduce the value of the screen, but in practice this is not the case. A trial exposure was made on two plates to see the effect of taking an X-ray photograph through the glass. Two dry plates were placed side by side, one with the film, the other with the glass side facing the tube, and a normal exposure given. The plates were developed in the same dish for the same length of time. When fixed, the only difference observable between the two plates was that the image on the film-to-tube glass was somewhat denser than the other, though both were good negatives. The glass of the plate through which the X-rays passed was about 1-16th of an inch thick. A heavy plate would, of course, considerably lengthen the exposure. The intervening glass would affect the exposure more with a very "soft" tube than with a "hard" one.

The use of celluloid films (which offer little or no resistance to X-rays), instead of dry plates, in conjunction with intensifying screens, would naturally suggest itself, but in practice few radiographers care to use films. In addition to their high price, they do not stand forced development, and large films are awkward to handle; consequently, except for dental cases, dry plates are almost universally employed.

In cases where quick exposures are of great importance, the intensifying screen is an invaluable asset, but there are several objections to its use which prevent it being employed in the majority of cases. The trouble of placing a dry plate in a special holder before each exposure is not so convenient as placing a dozen plates in light-tight bags and using them as required. The screen also deteriorates with use, and the friction of the dry plate with the screen coating inevitably produces scratches and abrasions, though careful handling considerably prolongs the life of the screen. Another disadvantage is that only one size of plate can be used with each screen; if smaller plates were pressed into contact with the screen the coating would soon be ruined. Although the latest intensifying-screen developments have greatly improved matters, the unscreened plate still gives brighter and sharper negatives than those produced by the aid of the screen; this is perhaps inevitable, as the fluorescent substance emits a good deal of scattered light, which must more or less affect the sharpness of the image.

For some years Messrs. Schall have advised the use of films in conjunction with intensifying screens to obtain "instantaneous" exposures. An intensifying screen was placed on each side of the film, and a very brief exposure could then be given. This plan, however, did not work well in practice, one of the objections being the use of films in place of dry plates; the coarseness of the image caused by the two fluorescent screens was also a drawback to the scheme.

When the exposure is made with the glass side of the plate facing the tube, the image is, of course, laterally reversed. This may lead to serious errors if the plate is not marked in some way before or after development. The easiest way out of the difficulty would seem to be the placing of a metal disc on the corner of the fluorescent screen; it would then be necessary to keep the sand bags or metal splints away from this corner, or the disc would not be visible on the negative.

J. I. Pigg.

# Photo-Mechanical Notes.

### The Early History of Half-Tones.

The paper published last week in the "British Journal" is a very valuable one, as giving some definite information at first hand of the early history of the half-tone process. Mr. Ives' work is, however, tolerably well known, in spite of his scepticism in this respect, therefore the most interesting part of the article consisted in the remarks of Mr. Horgan at the end. It is much to be hoped that he will amplify these, and give precise facts and dates as regards the early half-tone work he mentions, stating how the early half-tone screens were made and how they were used. Most photo-engravers are certainly not aware that screens were produced so early as the sixties, nor that they were used in anything like the same way as to-day, in the seventies. It would be most interesting to have those further details that Mr. Horgan is probably now alone able to supply.

### Grey Borders to Half-Tone Work.

Many of the illustrated weeklies are using occasionally a grey border around their half-tones that is very harmonious and attractive. On examination under a glass it is found that this border is made up either of fine lines or dots. The way these results are produced is to have the border design drawn in black ink on white board as for a line drawing; they are then focussed to scale and photographed through a screen. Sufficient exposure is given to ensure the high light being completely closed (the screen may be racked out to do this if desired, and then replaced in correct position). Then a piece of white blotting paper is held up in front of the copy while exposure is made, with a small stop to give a dot all over the design. This gives a grey dot. If a line effect is wanted, the same procedure is adopted, but a slit stop is used, which gives a single line instead of a dot; or, of course, if a single line screen is at hand it may be used instead. The negative should be stripped and placed around the half-tone negative so that picture and border may be etched as one block. These effects are sometimes described as two-colour effects from one printing, though this is not strictly accurate, as there are not two colours, but simply two tones of one colour.

### Three-Colour Effects from Two Printings.

Two printings from coloured inks are becoming increasingly popular, though many of these printings only give a suitable colour result, without any attempt to give the effect of more colours than two. But "Kinemacolor" has shown that it is possible to get astonishing simulation of most colours from two instead of three exposures, and blockmakers have occasionally done something in the same direction. In this connection there appeared in the Colour Supplement of this journal last month an article by Mr. Colin Bennet respecting the filters that had been found best for "Kinemacolor," and it is probable that this information would be most useful to the photo-engraver who desired to make a speciality of multicolour work in two printings, though, as the author is careful to point out, it is an impossibility to give natural colour rendering in two colour, and all such systems must be colour blind to some portions of the spectrum. The portions that he makes his filters blind to are those colours that are most seldom met with, at all events in ordinary natural scenes.

### PHOTO-MECHANICAL PATENTS.

The following patents have been applied for:—

Relief Printing.—No. 16,695. Process for the production of relief printing blocks. Niels Bendixen.

Colour Photogravure.—No. 16,790. Production of multi-colour photogravures. Charles William Saalburg.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between July 17 and July 22:—

Changing Bag.—No. 16,406. Photographic changing bag and focussing cloth combined. Percy William Teasdale.

Camera Base.—No. 16,474. Detachable tilting base for photographic camera. Algernon William Smith.

Projection Apparatus.—No. 16,477. Photographic and projection apparatus. Stuart Watt.

Toning.—No. 16,672. Process of toning photographic prints. Henry Marsh Ward.

Developing.—No. 16,730. Plate-development apparatus. James Wyndham Meek, Sydney Alfred Drysdale, and William Henry Phillips.

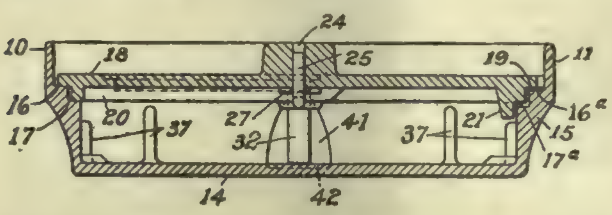
Cinematograph.—No. 16,766. Stereoscopic cinematograph. Joseph Francis Flood.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Light-Tight Developing Dishes.—No. 22,291, 1910 (September 26, 1910).—In the figure 10, 11, indicate the end walls, 12, 13, the side walls, and 14 the bottom of the dish. It will be noticed that the lower portion of the side and end walls are thickened as shown at 15 and offset from the upper portion, and the inner surface of this offset part is formed with shoulders or steps 16, 17, which are continuous upon three sides of the tray, the respective shoulders being upon the same level throughout their entire extent. Upon the remaining side or end 11 there are similar shoulders 16a, 17a, which are slightly below the plane of the corresponding shoulders 16, 17, upon the remaining three sides. Arranged to fit within the tray is a cover 18 which rests upon the upper shoulder 16, but since the shoulder 16a is somewhat lower, there will be a slight interval 19 between the cover and the shoulder 16. Extending entirely around the margin of the cover on the under side and spaced equally from the edge is a dependant flange 20, of suitable depth to rest upon the shoulder 17, being spaced away from the shoulder 17a because of the depression of the latter below the shoulder 17. Extending downward from the flange 20 upon one side of the cover is a lip or flange 21, which extends entirely across that side of the cover and is so arranged as to project considerably below the shoulder 17a, but is spaced away from the wall of the tray below said shoulder. One edge of the cover 18 is provided at the middle point with a spacing lug 22 which projects in the plane of the cover, and abuts against the inner wall of the tray, so that when the cover is in position there will be an opening or space 23 between the margin of the cover upon each side of the lug, while all the remaining margins of the cover are in contact with the walls of the tray. It will thus be seen that the cover fits snugly in its seat, the arrangement of the shoulders or steps and interlocking flanges preventing the entrance of light to the space below the cover, any rays that may trickle through the space 23 and the irregular interval being finally intercepted by the lip 21. The centre of the cover is provided with a lifting lug or handle. to facilitate the insertion and removal of the cover, and this handle is pierced with a vertical bore 24, in which is inserted a short vent tube 25. The lower end of this tube extends below the cover and is bent upward. The extreme end of the bent portion is bevelled, and between the tube and the under surface of the cover is inserted a piece of blotting paper, or other absorbent material 27. The purpose of this vent tube is to permit the free escape of air when the tray is charged with the developer, and the absorbent material 27 will intercept and hold any drops of fluid that may be spattered upward beneath the cover, the object being to prevent occlusion of the vent by the entrance of the liquid in this way. A rectangular portion of the cover is thickened upon the under side to permit the formation of a recess for the seating of a thermometer, which has its stem bent at a right angle so that the bulb end projects through an opening in the bottom of the recess to a point approximating the bottom of the tray. The bulb and adjacent portion of the stem is surrounded by a metal tube closed at the lower end to form a cell and having its upper end in threaded engagement with the opening. The portion of the thermometer included in the cell is surrounded by a suitable filling. The upper side of the recess is closed by a protective transparent plate preferably made of glass upon which is etched, or otherwise impressed, a suitable thermometric scale comprising graduations, and arranged upon the glass. In juxtaposition with these graduations is a time scale, consisting of columns of figures or numbers representing minutes and seconds, each number corresponding with one of the divisions of the thermometric scale, the relation of the two scales being determined by the strength of the developer to be used.



The plates or films to be developed are placed in the cavity of the tray, the means being provided to prevent the prepared surfaces of plates or films from coming in contact with the adjacent negative or the surrounding walls to any extent. In order to space the superposed plates apart so that the developing fluid may have ready access to the prepared surfaces, spacing plates are introduced between the plates. These "spacers" are composed of thin sheets of metal having spaced marginal depressions, which project beyond the surface, forming feet which rest upon the plate below, as shown in Fig. 1, thus leaving an unobstructed passage for the fluid above each plate. These depressions are made in such a way that they do not come vertically above one another in any two adjacent sheets. Since the plates and spacers are held away from the tray walls by the abutments 37, and from the bottom by ledges, the developer can pass freely around and between the superposed plates.

The manner of using the developing tray is as follows :—The operations may be performed in any light with the exception of the transfer of the plates from holder to tray. A changing-bag should be used for this purpose when a dark room is not convenient. The plates are placed into the tray film side upward, with the metal spacers, lugs downward, between the plates. When the negative or film is the full size of the tray, the metal spacers are placed with the projections downward and resting upon the margins of the negative plates. When the negative is not the full size of the tray, the metal spacers are placed into the tray with the projections extending either upward or downward. In this case the projections do not rest upon the margins of the glass plates (or films), but upon the margin of the adjacent spacer, or the bottom of the tray. Under these circumstances care must be taken to have the projections lengthened to correspond with the thickness of the glass plates in order to preserve the necessary liquid space above the plates.

When the plates and spacers have been properly arranged in the tray and the cover placed in position, the tray is then set upon a level surface with a small article, such as a common lead pencil under one end to form an incline. The developer is then to be poured on at the liquid passage-way, so that it will flow slowly into the space beneath the cover. After the required amount of the solution has been thus poured within the tray the latter is rocked gently and continuously during the entire time required for developing, the duration of which is ascertained by observing the temperature as indicated by the thermometer, and noting upon the minute and second scale the figures corresponding therewith. As an appreciable time is required to register the degree of temperature, the reading should be correspondingly delayed, the calculation, of course, being made from the time of the application of the solution. At the expiration of the indicated time, the developer is poured off through the passage-way, and the tray rinsed by the application of clear water, which is to be followed by the fixing solution in the usual manner. In a few moments the cover may be removed, and when the fixing process is completed, place the uncovered tray and contents under the tap, directing a small stream of water upon the open space provided for the thermometer bulb cap.—Waldo Gustavus Rice, Edison Park, Ill., U.S.A.

CINEMATOGRAPHS. — No. 29,832, 1910 (December 22, 1910). This invention relates to devices which produce kinetoscopic effects commonly known as moving pictures, which is usually produced upon a screen by means of a projecting lantern. It has for its object to produce a novel lantern, the light of which is controlled by the picture changing devices, and to do away with the shutter, usually located in line with the axes of the lenses, and near the picture. The light is cut off between the exposures of each picture, during which they are changed from positions of exposure to non-exposure. In my invention the light is suddenly extinguished just before the change is made, and suddenly lights up after the change is made. A pair of rotating electrodes is connected to the source of a current, and a means is provided for starting an arc, which is maintained by the said source. The electrodes rotate in opposite directions, so that opposition portions move in the same direction, the electrodes rotate at such a rate that the arcs produced between them will be carried forward by definite periods of time before they are ruptured by reason of the rotation of the electrodes. During the period between the rupture of each arc and the starting of the succeeding arc, the pictures may be changed. An inter-controlling mechanism is provided to accomplish this inter-relationship.—Thomas Joseph Murphy, 200, South Avenue, Rochester, U.S.A.

DRYING CINEMATOGRAPH FILMS.—No. 27,785, 1910 (Nov. 19, 1910). This invention refers to the suspension of films, perforated or not, and is applicable to film drying devices of the transporting and other types, and more particularly to the continuous drying device forming the subject matter of the British Patent No. 21,099, dated September 15, 1909, in which the suspending devices are fitted to a belt moving in a closed circuit in a drying chamber. According to the present invention, the suspension is effected by device worked on the following principle :—If a film is wedged by its edges when it is in a rectilineal position, it immediately gives and curves according to cylindrical surface, the rectilineal generating lines of which are parallel to the edges of the film. Thus deformed, the film cannot be made to roll around an axis perpendicular to its borders without creasing the film; but on the contrary, if the film is first wound around an axis perpendicular to its borders, even only on a fraction of circumference, it is then possible to wedge or clamp the borders of the film at the spot where it is wound round, without creasing it, and with sufficient force to provoke a friction compensating for example the weight of the descending loop, and for stopping the film as soon as the loop has reached the desired length. The suspension device, based on the above-mentioned principle, is characterised by special arrangements, and by the mechanism supporting the loops and fastened to the transporter. This device is employed in conjunction with other arrangements or parts forming the complete drying system.—The Compagnie Générale de Phonographes, Cinematographes, et Appareils de précision, 98, Rue de Richelieu, Paris.

**Duplex Photographic Paper.**—No. 14,420, 1910 (June 15, 1910). The object of this invention is the use of duplex-paper, consisting of two layers or of similar paper consisting of several layers for photographic purposes. Fine, very transparent, and structureless paper when mounted upon a support of stronger paper possesses that degree of resistance which is required for the treatment to which the paper has to be submitted, that is to say, on the one hand the setting of the sensitive emulsion on the paper; on the other, the exposing, developing, and fixing. By drawing the fine paper bearing the photo off its support a paper-film is obtained possessing the required thinness, transparency, and homogeneity. It is not necessary to mount the said film upon any other support, as it possesses sufficient stiffness and resistance for independent use.

The treatment of this paper does not require more attention than the handling of dry-plates and photographic papers in general, it is exposed, developed, fixed, and washed in the usual manner; when quite dry, the layer of thin paper is drawn off its support. All wet operations have to take place while the two parts of duplex-paper still adhere to one another. The picture can easily be touched up on the paper side of the film, i.e., the side not covered by the emulsion, after the removal of the thin paper layer from its support. The number of layers of paper being unlimited, paper plates can be made as resistant and thick as required by superposing several layers of paper supports and several layers of thin paper. Such paper plates can be advantageously used as substitutes for glass plates of any large size, where celluloid films cannot be used owing to their incapability to lie flat. By use of translucent paper as support, the paper plates can be examined against the light while developing like any ordinary glass plate. By making the support of red paper the formation of a halo is reduced to a minimum. The use of a black paper support offers the simplest means of producting roll-films or film-bobbins.—Ludwig Günther, Chemist, Heidelberg, Neuenheimer Landstr, 36.

**Developing Apparatus.**—No. 11,959, 1910 (May 13, 1910). This invention relates to photographic developing apparatus of the kind in which the developing, fixing, and washing of the plates or films may be carried out without necessitating their removal from the dark slides in which they were exposed, and more particularly to the type of such apparatus in which the development takes place in complete darkness, and not by observation, the process being controlled by timed duration of the action of the developing solution.

The present invention comprises an open sided frame adapted to receive two plate or film holders, one on each side thereof, strips of light-excluding material being removably secured thereto, and apertures for the inlet and outlet of the developing or other fluid being provided at each end. The invention also consists in the provision of a spring clip, adapted to retain the dark slides or film holders in position in the frame.

The invention further comprises the various details hereinafter more particularly referred to.

In carrying my invention into effect in one convenient manner I use any convenient form of dark slide or film-holder, though preferably I construct my plate-holder or dark slide from a rectangular piece of metal or other suitable material, preferably such as will not be deleteriously acted upon by the water or chemical reagents to be employed in the various operations. On three sides the metal is flanged or turned over in the usual manner, so as to exclude light from the plate when the shutter is in position, while upon the fourth side, or that side from which the shutter is withdrawn, I employ a strip or pad of felt, velvet, or like suitable material, adapted to bed tightly against the shutter so as to exclude the light on the fourth side. Instead of securing the strip or pad by means of a suitable adhesive, I prefer to make the same removable, and I conveniently secure it firmly in position by forming the strip with outwardly sloping or bevelled edges, while the sides of the recess into which it fits I make to slope or incline inwardly. This arrangement prevents the accidental displacement of the strip while still ensuring that it shall be readily removable when required. Any usual arrangements are provided for retaining the film or plate in the dark slide, and also for pressing it forward so as to keep it in the focal plane; for example, I may employ spring tongues or the like.

The rectangular or other suitably shaped frame is conveniently formed of metal, and of convenient size, depending upon the size of plate-holder or dark slide employed. The sides of the frame are flanged or turned over or otherwise suitably formed to receive the flanges of the dark slides, of which two are carried, one on each side, by the frame. In recesses at the end of the frame from which the dark slides are withdrawn, I arrange suitable light-excluding strips of pads of felt or the like, the whole arrangement being such that when the shutters are withdrawn from the dark slides the sensitive side of each plate or film will be exposed to the interior of the frame without the possibility of light reaching them.

Along each side of the frame I arrange any convenient number of light-trapped openings or apertures, so formed that while liquid can easily pass through, no light can penetrate to the interior of the frame.

When the dark slides have been placed in their frame, and the shutters removed, the developing, fixing, or washing solutions may be admitted to the interior of the frame, preferably by immersing it in the required liquid contained in a tank or box, and for convenience in handling the frame, I provide a clip or holder. When the frame is immersed in liquid, the latter enters it through the light-trapped openings on one side, the displaced air escaping through those on the other, and in order to get a more even treatment of the plates or films, the frame may be taken out and immersed in the liquid in the reversed position. James Wyndham Meek, 124, Holborn, London, E.C.

**Colour Screen Plates.**—No. 8,761, 1910 (April 11, 1910). This invention relates to improvements in the above, the colours for same being composed of three sets of minute squares arranged in a "key" pattern design, so that each colour set is printed from the same block, or other printing surface, by shifting it the width or distance of a square, by ordinary three colour printing process, and by this means each set of colour point squares fit in exactly to each other, without the necessity of staining in the third colour to fill up and stop out all white light. The three sets of colours being arranged in this way, no two of the same colours come into contact, thus giving an equal distribution and perfect colour rendering over the whole surface of the plate; the accuracy in size of each point square is arrived at preferably by setting up the design for printing in one colour only, in metal printing type, say, for example, the size known as "five point square face," and spacing out with quads to the required pattern for the one colour, leaving room for the two other colours to fit in between; black impressions are then made upon paper to the measurement, say, 5 feet by 4 feet; this is then photographed down to the size points required for printing the multi-colour screen plate; from this a metal etched printing plate is made by known photo-mechanical means. These fine points of colour may be printed on to the glass plate direct, using suitably prepared "additive" transfer or litho inks, or upon a transparent varnished or gelatine coated surface prepared to receive same. Or a printing surface or block may be made by impressing gelatine or celluloid or other suitable substance with the pattern required, from the metal etched plate or block. These multi-colour designs may also be printed on sheet gelatine, celluloid roll films, or other suitable transparent substances, also paper or cardboard, treated if desired with rubber waterproof solution, which is afterwards coated with a printing-out sensitive emulsion, and by this means pictures in colour may be obtained. The method as above described is applicable to a three-colour method of photography, but a greater number of colours can be used in the same manner.

A great feature is that films can be made for cinematography in natural colours, the printing of these long lengths of films being carried out by having the same design made upon a circular wheel or roller, or set of rollers, by which means a continuous film of any length may be mechanically printed in the three colours by the same machine printing method. The films when developed can be retained as stock negative films, from which any number of colour positives can be made by printing in contact in proper registration with a similar colour film, guided by a sprocket wheel or other suitable device which engages the perforations of the two films. The colours for these celluloid ribbon films, or celluloid varnished plates, are specially prepared with a medium which causes them to adhere very firmly, and are similar to those described in Patent Specification No. 9,912, dated April 26, 1909. Henry William Hamblin Palmer, 52, Stephens Road, Tunbridge Wells.

## New Trade Names.

Ahead of All (Design).—No. 330,596. Chemical substances used in manufactures, photography, or philosophical research. F. W. Berk and Co., Ltd., 1, Fenchurch Avenue, London, E.C., chemical manufacturers. February 1, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Carrying the Camera.

Much has been written in favour of the ruc-sac (writes "G. C." in the "Amateur Photographer and Photographic News" for July 31), but the average photographer is usually fitted up with an ordinary square-blocked bag of some sort, and unless he is going on a very prolonged holiday, he does not feel justified in expending the necessary amount in a bag of this pattern; and whatever else might be said, neatness can hardly be described as a characteristic of this method of equipment. For years I have been used to carrying the camera in the orthodox way, however, until some weeks ago, when, watching a troop of Boy Scouts, the idea struck me that a camera could be carried in a similar manner to that in which the boys carry their bag—*i.e.*, flat against the back.

Experiments showed that there were two possible ways of carrying the bag to swing square against the back, but extended trials proved that for myself one was somewhat handier than the other. In the way I recommend, the strap will need to be just a little longer than usual, but this will depend on the "build" of the photographer. This is the only alteration, however. The bag is simply hung over one shoulder, and the opposite arm pushed under the strap, which is behind the back. Then the bag rests naturally in the middle of the back, and the weight is evenly balanced between both shoulders. Then the swing is practically non-existent.

In the other method, the suspending strap is put under both armpits—the bag being held out in front of the chest, with the front facing towards the ground—and afterwards the case passed over to the back, over the head. This causes the case to hang higher up the back, but otherwise there is little difference in the way it hangs to the previous method. In cycling, these two ways are both eminently suitable, for it is necessary that the camera should keep in one position, and not "work" to one side or the other.

◆

South Africa in Photographs.—At the Coronation Exhibition, Shepherd's Bush, a series of large photographs—about 160 in number—are on view, which have been sent by the Corporations of Johannesburg and other towns in South Africa, and represent scenes from the stretch of country between the Cape and the Zambesi. A special building is set apart for the display of the pictures.

## Meetings of Societies.

### MEETINGS OF SOCIETIES FOR NEXT WEEK.

Saturday, August 5.

Darwen Photographic Association. Excursion to Hoddlesden and District.
The United Stereoscopic Society. Outing to Cambridge and Ely (5th, 6th and 7th).

Monday, August 7.

Worthing Camera Club. Excursion to Rye or Fittleworth.
North Middlesex Photographic Society. Outing to Headley and Epsom Downs.
Sutton Photographic Club. Excursion.

Wednesday, August 9.

North Middlesex Photographic Society. Technical and Auction Sale.

## Commercial & Legal Intelligence.

Re Frederick George Clapham, The Medical Hall, 110, West Street, Farnham, Surrey, chemist and druggist, and dealer in photographic apparatus.—The Official Receiver for the Guildford district has now issued particulars under this failure, from which it appears that the debtor has filed a statement of affairs showing gross liabilities amounting to £1,517 8s. 2d., of which £482 18s. 8d. is due to unsecured creditors. To fully secured creditors, £1,000, the value of the securities being estimated at £1,200. The assets are estimated at £322 9s. 10½d., from which £34 8s. 6d. has to be deducted for the claims of preference creditors payable in full, leaving the nett assets at £288 1s. 4½d., and disclosing a deficiency of £194 18s. 3½d.

The debtor alleges his failure to have been caused through "want of capital, owing to which I have been unable to keep sufficient stock on hand, and have made insufficient profits to pay expenses and support my wife and family." The report and observations of the Official Receiver are to the following effect:—"The delay in issuing these observations is due to the failure of the debtor to file his statement of affairs before July 13, 1911."

The debtor, aged 50, who filed his own petition in consequence of executions being levied upon his premises, states:—

That prior to December, 1903, he was an assistant to chemists in this country and in South Africa; that on December 14, 1903, he commenced business on his own account as a chemist and druggist, and dealer in photographic apparatus, at 110, West Street, Farnham, without any money of his own. His wife lent him £250, bequeathed to her by a relative, still due and owing. In December, 1908, a relative died and left him fifteen houses and a shop in Canning Town, subject to a charge for £500. He then mortgaged the property for £1,100, out of which he repaid his uncle's estate £400, lent to him to carry on the business, and the above-mentioned charge, the balance being used in payments to creditors. During the past three years he has been continually pressed by creditors, and since January last has received twenty summonses for debt.

The debtor states that he has kept and he has produced a petty cash book, bought ledger, sold ledger, and a day book, but his business transactions, results of his tradings, and financial position, are not sufficiently disclosed therein.

Of the unsecured indebtedness, £300 appears to be in respect of money lent between October, 1900, and November, 1908, the balance being almost entirely for goods supplied to the business between, so far as can be ascertained from the debtor's figures, 1908, and June, 1911. The creditor treated as fully secured is the mortgagee of the debtor's property at Canning Town, previously referred to, who had taken possession.

In the Official Receiver's view, the debtor's valuation of his assets is not likely to be realised, as the effects were sold under a distress for rent and executions, and the account of the sale shows a surplus of £15 18s. 6d. only, payable to the Official Receiver.

Re Herbert Oscar Seaman, lately residing at 185, Hyde Park Road, Leeds, and lately carrying on business as a photographer at 80, Queen Street, and High Street Arcade, Cardiff; 27, Castle Street, Bristol; 74, City Arcade, and 15, High Street, Birmingham; 3, Regent Street, Weston-super-Mare; High Street, Ilfracombe; Foregate Street, Chester; and 19, Central Beach, Blackpool; and now residing in lodgings at 15, Eldon Place, and carrying on business as a photographer at 84, Briggate, Leeds.

The above-named debtor appeared for his public examination at the Leeds County Court on July 25, before Mr. Deputy-Registrar Peckover. The statement of affairs as filed by the debtor disclosed liabilities amounting to £532, and a deficiency of £518.

In reply to questions put by the Official Receiver, debtor, who attributed his failure to "bad trade and loss on branch shops," said he was twenty-six years of age, and commenced business as a photographer in Bristol in November, 1903, with £30 savings and £30 borrowed money, since repaid. He subsequently opened shops in Bedminster, Birmingham, Cardiff, and Gloucester, and in 1906 he removed the business in Bristol to Ilfracombe. In August, 1908, an execution was levied on two shops in Birmingham, two in Cardiff, and one in Ilfracombe, and the whole effects at these places were sold up. He remained in Gloucester, where, after being in a situation five months, he removed to Swansea with his remaining apparatus. He was there nine months, but afterwards assisted his brother at Southport for the summer season up to September, 1910, when he went to Blackpool. After leaving Blackpool he came to Leeds, where the business resulted in a heavy loss. The examination was adjourned.

Re John William Smith, trading as T. Smith and Son, photographers, 60, High Street, King's Lynn. The first meeting of creditors was held at Norwich on July 27. The gross liabilities amounted to £152, of which £122 was expected to rank, and the assets were put at £58, leaving a deficiency of £64. The debtor, it appeared, was formerly employed by his father, and on the latter's death in 1889 debtor carried on the business for his mother until 1892, when he purchased the stock and effects from the trustees under his father's will, for between £300 and £400. Owing to considerable losses through a burglary the following year, and being robbed by his employees, only £10 was paid on behalf of this purchase. In June, 1897, the debtor executed a deed of assignment for the benefit of his creditors, with a view to a composition of 10s. in the £, and states that he thinks he paid about 5s. in the £. His sister subsequently purchased the stock from the trustees for £100. At that time the unsecured liabilities were estimated at £856, and the assets at £542. The unsecured liabilities in the present case are mainly for goods supplied for business. In his preliminary examination the debtor stated that the stock belonging to him was not worth more than £10, and that the rest of the effects, including furniture, belonged to his sister, who purchased them as stated. The Official Receiver remarked that under these circumstances it was considered that the value of the assets had been considerably overestimated. In the statement of affairs the causes of failure as alleged by the debtor were as follows:—"Losses by burglary, and being robbed by employees shortly after starting in business, competition, and through my extreme deafness for the past three years." The matter was left in the hands of the Official Receiver.

## News and Notes.

Ensign Competition.—Mrs. Jenson, 105, Elkeston Road, Nottingham, is the winner of the "Ensign" roll film competition for July. Houghtons, Ltd., offer a three guinea camera every month for the best negative on "Ensign" film. The entries close on the 3rd of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

The Leto Photo Materials Company.—The employees of the Leto Factories at Edgware and Ealing held their fifth annual outing on Saturday, July 22, the place selected on this occasion being Hastings. The Edgware contingent started at 6 a.m. by special motor bus, and met their Ealing friends at Victoria. Hastings was reached in good time, and favoured with brilliant weather, a very enjoyable time was passed, various parties being made up to visit the town and neighbourhood.

Niece of Michael Faraday.—The death has occurred at Highbury, at the age of seventy-nine, of Miss Jane Barnard, niece and for many years amanuensis of the late Professor Faraday. By her decease a portrait in oils of the great experimental chemist, already accepted by the National Portrait Gallery, and painted years ago by Mr. Edwin T. Butler, who is better known through his recent researches in the art of colour photography, becomes the property of the nation.

Rajar Competition.—The prizes offered by Messrs. Rajar, Ltd., Mobberley, Cheshire, for the best print on paper or postcards of their manufacture submitted for the competition for the month of June have been awarded as follows:—Class 1, open competition, to W. Fisher, Mahalapye, British Bechuanaland Protectorate, South Africa, for print on P.O.P. paper. Class 2, for those who have never previously won a prize in any class of competition, to H. Middleton Jones, Wellside, Heswall, Cheshire, for print on bromide paper, purchased from Mr. C. H. Schuhmacher, chemist, Heswall. Remittances for the prizes have been posted to the respective winners.

### FORTHCOMING EXHIBITIONS.

**September 9 to October 21.—London Salon of Photography. Entries close September 1 (Britain), August 21 (foreign). Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.**

October 11 to 20.—Bournemouth and District Camera Club. Entries close October 2. Sec., Miss Penrice, 41, Wellington Road, Bournemouth.

November 6 to 11.—Southampton Camera Club. Sec., C. M. Cooper, 203, Shirley Road, Southampton.

## Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., *24, Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**Photograph Registered:**

Reni Dasniéres, Kamloops, British Columbia, Canada. *Photograph of Main Street, Kamloops, British Columbia, Canada, showing Train.*

Address Wanted.—Please inform us through journal present address of Bromar and Co., late of Charing Cross House, 29a, Charing Cross Road, W.C.—Liddle.

Sorry we cannot answer this query, as we have no record of the present address of the firm.

Braugwin, Clark, Wise and Co.—The article in question was reprinted in our issue of April 22, 1911, from a pamphlet by W. J. Kinsley, the matter being, as we understood, first published in the "American Annual of Photography." So far as we know, the pamphlet is not published in England. The other book you mention we do not know. Shall be pleased to send you the back number in question on receipt of stamps for 2½d.

Burnisher.—Can you advise me, through the "Journal," where I can get a burnisher wheel made? The makers of the roller—so the firm of whom I obtained it inform me—have given up the business. They recommend me to obtain it through a local ironmonger, but none of the latter will undertake it.—Alfred T. Honey.

We would advise you to write to some large manufacturing firm, such as Houghtons, 88-89, High Holborn.

Government Posts.—1. Are there any posts open to photographic assistants under the Ordnance Department of the Army or Navy at places like Southampton, etc., or do they not employ civilians? 2. To whom should I apply for such a situation?—TWYNHAM.

1. Such posts are rare, and the War Department has already its own photographers. Everybody being a photographer nowadays, there is no difficulty in finding them. 2. If you want to try your luck, write to the Chief Superintendent at the place where you wish to enter.

COPYRIGHT.—Could you please let me know in "Answers to Correspondents," if I can stop a local store from getting photographs reproduced as a postcard, they having ordered a thousand through a dealer?—R. DARNIERES.

If you inform the dealer that the photograph is copyright he is not likely to make the reproductions. The copyright is registered now, but if the reproductions were made before registration you cannot do much except by arrangement with the firm. It is useless taking legal action on account of anything done before registration, though you are now protected against any future piracy.

SUNDRIES.—1. Kindly inform me in your next issue where to get instructions on the "Bijou" photographs. 2. Where to get instructions on the Professional Photographers' "Coupon Scheme." 3. Where to obtain the cheapest blocking presses for mounts, etc.—SEPIA.

1. We do not understand the question. The technique of photography is the same for any size pictures. 2. We do not know of any such scheme. If you want to adopt coupon methods of trading, we are not prepared to assist you, as we do not approve such methods. 3. Apply to Houghtons, 88 and 89, High Holborn, W.C., or Sichel and Co., 52, Bunhill Row, E.C.

BOOK ON PHOTOGRAPHY.—Will you kindly advise me as to the best guide to photography published, dealing especially with lighting, and all branches of operating? I am a retoucher, and want to be capable of taking an all-round assistant's berth.—DORA.

If you want to take up the matter seriously, we should advise you to get handbooks on each branch, rather than one general guide. You will find that the Photo-Miniature series (price 6d. each) includes books on nearly every branch of photography, and you can obtain a complete list from Dawbarn and Ward. For up-to-date hints on practical studio work you cannot do better than study our pages, studio lighting and kindred matters being frequently dealt with. A useful series on this subject appeared in our issues for March 18 to April 15, 1910. If you want a general guide to practical photography, Chapman Jones' "Science and Practice of Photography" (price 5s.) might suit you. Robinson's "Studio and What to Do in It" (price 2s. 6d.) is also useful to a beginner at portrait work.

SHARPENING WHEEL CUTTERS.—I have learnt many useful "tips" from the study of your invaluable "Journal" for the past quarter of a century, but I have never had the temerity or audacity yet to beg you for a little personal help or instruction direct; but "better late than never." So I have now ventured to solicit your aid. What I want to find out is the best means and method of sharpening the edge of a wheel trimmer. I am quite frequently renewing the wheel knife of the trimmer on account of the edge speedily becoming blunt. We wish to economise in this direction, and beg you to kindly suggest a simple and satisfactory cure for blunt edges of circle trimmers. If you can thus help us we shall save sundry shillings which we consider unnecessarily spent, and you will gain our sincere thanks and gratitude.—WHEEL TRIMMER.

No apologies are necessary when you ask us questions. Answering them is one of the things for which we exist. If you refer to our issue of December 9, 1910, you will find an article on "Glass-cutting," in which a method of sharpening wheel glass-cutters is given. You should find this method work equally well with wheel print trimmers if the wheels are small. If large, you can get on very well with an ordinary hone. Hold the cutter at an angle, so that the wheel bevel is almost flat on the hone, and then run it backwards and forwards. It takes time, but is quite effectual.

ORTHOCHROMATIC WORK.—Is it possible for you to give me your opinion on the following points in the next issue of the "B.J.," as I am leaving here for Switzerland next week on a holiday trip? 1. Do you advise isochromatic plates for that country? If so, do you give any preference? 2. Should *all* plates be backed? I am using a Burchett screen with telephoto lens. The few trials made of a very ordinary subject here do not show any gain apparently over non-ortho plates.—DOUBTFUL.

1. Certainly, colour sensitive plates should be considered essential; either isochromatic or panchromatic plates should be taken. Dr. Atkin Swan, in a lecture delivered at the R.P.S. on January 3, 1911, recommended panchromatic plates with a K1 screen as giving the best possible results on ice. 2. Yes. Backing is also essential. With a telephoto lens for mountain work you want an optically worked screen—or "flat"—to get good results. An ordinary filter is of no use with such an instrument, and if you do not care to go to the expense of a flat, you had better do without a screen. Be sure to use a big hood with the telephoto lens. Also be sure to give full exposure in the Alps. There is a common error to the effect that short exposure is necessary at high altitudes. Your trials probably failed to convince you just because the subject was so very very ordinary. In Switzerland the subjects are not ordinary, and there you will find out the benefits of colour sensitive plates; but, of course, a K screen is necessary to make that effect fully obvious.

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STORAGE OF CINEMATOGRAPH FILMS.—At a recent meeting of the L.C.C., a report was made on the subject of dangerous businesses by the Public Control Committee, and the following extract suggests that new regulations will probably be in force before long with regard to the storage of cinematograph films. The extract is as follows:—"Our attention has been specially directed to the danger existent at places where kinematograph films are stored, and to the pressing necessity of control being obtained over such places. A series of kinematograph film fires, culminating on May 17, 1911, in an outbreak which seriously endangered the lives of several persons, has recently occurred in the vicinity of Cecil Court, Charing Cross Road, W.C. There are about twenty kinematograph film depots in this neighbourhood, and we are advised that in some cases the films are stored in premises used partly as dwelling houses." In replying to a question in the House of Commons on May 22, 1911, on the subject, the Home Secretary expressed the opinion that further legislation was needed to deal with the danger, and in a letter to the Council, dated May 25, 1911, he states that it appears to be very desirable, having regard to the number of kinematograph film fires, that steps should be taken by the Council as soon as possible to minimise the danger arising from the storage and sale of such films. After careful consideration of the matter, we have formed the opinion that it would be preferable to obtain licensing powers over kinematograph stores in the Council's next General Powers Bill. We recommend that application be made to Parliament in the session of 1912 for powers to enable the Council to license, subject to the observance of such conditions as the Council may deem necessary for the protection of life and property (i.) all places in the County of London (exclusive of the City of London) where kinematograph films are stored or sold; and (ii.) dangerous businesses as defined by Section 118 of the London Building Act, 1894, except such dangerous businesses as comply with the requirements of the section.

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THE BRITISH

# JOURNAL OF PHOTOGRAPHY.

No. 2675. Vol. LVIII. FRIDAY, AUGUST 11, 1911. Price Twopence.

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## SUMMARY.

Hydrazine Plates.—The full text of the paper on plates prepared with hydrazine, recently read before the Royal Photographic Society by Mr. Sanger Shepherd, details at length the remarkable properties of his emulsion for both plates and papers, in the case of the latter both development and print-out. It is intimated that the new plates will shortly appear upon the market. The new emulsion, as described by Mr. Sanger Shepherd, not only nullifies the effects of over-exposure, but, in the case of paper prints, allows of a series of various warm tones being produced without alteration of the scale of gradation. For both negative and positive work, including lantern-slide making, the appearance of the hydrazine plates is likely to awaken widespread interest. (P. 603.)

The question of the relative efficiencies of the diaphragm and focal-plane shutters crops up again in a letter from Dr. Adolphe Abrahams in reference to the "Multi-speed" between-lens shutter. (P. 618.)

Evidence, on the side both of theory and practice, is accumulating to disprove the assumption that all lenses of the same nominal aperture are equal in speed. A letter on this subject appears on page 617, and some comments upon it on page 618.

In a recent article, Mr. E. J. Wall reviews the methods for obtaining warm tones in transparencies by substitution of a dye for the silver image. (P. 607.)

Some hints on photographic work when the temperature is over 100 deg. F. are quoted from our contemporary, "Photography." (P. 615.)

Various practical matters, including diagram lantern-slides, toning bromides, trimming prints, etc., are among the topics dealt with under "Answers to Correspondents." (P. 619.)

Some hints on a simple procedure for testing a lens for spherical aberration are given in an article on page 602.

The names of the prize-winners in the recent City and Guilds examination in photography will be found on page 616. Answers to the questions set in the ordinary grade (Pure Photography) appear on page 611.

Non-halation plates, changing-boxes, etc., figure under "Patents of the Week." (P. 613.)

Some further hints on practical outdoor work are given in the article by Mr. R. C. Platt on page 608.

## EX CATHEDRA.

**The Camera Fiend.** We regret to see that complaints with regard to the misuse of the camera by the well-named "camera fiend" are once more becoming unpleasantly numerous. At Cowes Regatta certain individuals seem to have made themselves an intolerable nuisance to the Royal family, who found their privacy interfered with at all times of the day by persons with cameras, who swarmed around the Royal yacht in launches. Worse still, it appears that attempts were made to photograph the King and the Prince of Wales while bathing, in spite of the fact that the photographers had agreed among themselves that no such thing should be done. Naturally, the type of person who would attempt prying of this nature would think nothing of breaking an agreement with his fellow-photographers, and no arrangement of this kind is of any avail with the true "camera fiend." Some other outrageous instances of misconduct are given by Mr. Ernest Human in a letter to one of our contemporaries. Three particular instances are given in detail, and while two are bad enough, the third is almost beyond belief. In this case a photographer, having obtained permission to photograph in a church, was eventually found perched with his camera and tripod on the top of the altar, from which he had cleared everything else. It appears that he was caught there by the rector, who, we trust, was of the muscular persuasion. Behaviour of this kind leads to the exclusion of photographers from churches and other buildings, while conduct such as that of the Paul Prys at Cowes produces regulations which bear severely on all photographers. Two other types of fiends: the bicycle fiends, or the "Cads on Castors," and the motor fiends or "Road Hogs," are kept under, not only by the police, but by their own Associations; and we suggest that photographers might very well do something to suppress their own particular brand of fiend. Photographic societies would be quite justified in expelling any member who disgraced himself in this fashion, and they would do good if they made it their business to investigate all instances that occurred in their own districts, and to report the offender to his own society. This might not lead to the punishment of the culprit, who very probably would not belong to any society at all, but it would at least serve to show the general public and those in authority that photographers as a body are not supporters of the camera fiend, and in no way tolerate his impertinences. If, as is sometimes stated, the camera fiends are mainly press photographers, we suggest that press photographers as a body would be wise to combine and endeavour to cope with the matter before their privileges become further curtailed. In any case, they are the people who suffer most from the camera fiend's misdeeds, and the matter is one that concerns them intimately. In all popular sports—and photography is for the most part of the nature of one—regulations of a fairly severe and stringent type are necessary for the purpose of controlling the less ruly, and of punishing offenders, and the same thing holds good in professions. In photography, however, which is to some extent both a sport and a profession, no such regulations exist, and no one seems to have any power to punish. This is a defect that should be remedied, if photographers generally are to escape being looked upon with suspicion and distrust, and from being excluded from all places where the ill-mannered can give offence.

* * *

**The Relative Rapidity of Lenses.** In reference to our recent note on this subject, a letter by Mr. L. Tennant-Woods affords interesting confirmation of the facts to which we drew attention, but in addition the writer suggests that the general theory with regard to the effect of stops on exposure is also at variance with popular practice. In regard to this matter, it has always seemed to us to be obvious that the general theory is often just as erroneous as in the other case, for again it takes no account of the absorption of the lenses. Suppose we consider the case of a central direct light pencil passing through a lens which is thicker in the centre than at the edges. The absorption must then be greater in the centre than at the margins, and therefore a small pencil produced by a small stop suffers proportionately more from absorption than a larger pencil, part of which passes through the thin margins. In the case of an oblique pencil the same thing again occurs, for opening out the aperture cannot enlarge the light pencil outwardly, on account of the cutting-off effect of the lens mount. The only enlargement that can take place is towards the centre of the lens, where the glass is thicker and absorbs more light. We hold, therefore, that the conditions suggested by our correspondent are theoretically bound to be correct with lenses in which the centre is thicker than the margins, but it must be remembered that this is only the case with lenses of certain types. With modern anastigmats the total thickness of the glass is about the same at all parts of the lens—indeed, Mr. Aldis some time ago pointed out that this condition was one necessary to the correction for astigmatism—therefore, the absorption must be very approximately the same. In any case, the differences are small, just as they are in the case of the various factors affecting depth, but this is no valid reason for ignoring them. Other factors, such as small errors in the marking of the stops, or backlash in an iris diaphragm, will also affect the relative exposures at various apertures, and the cumulative effect may be considerable. In testing, it is very necessary to allow for all these factors, especially for backlash, which may introduce an error of 50 per cent. or more in an *f*/64 aperture.

* * *

**Early Experiences of Radio activity.** Though radio-activity as a scientific fact is one that may be described as modern, yet the effects of the phenomena distinguished by that name were observed in very early days when photography was in quite a youthful state. In the fifties M. Niepce de St Victor startled the photographic world by a series of experiments which few but himself could repeat, and that roused much discussion and created many sceptics. In fact, so great was the excitement over his experiments that it was suggested he better deserved the name of fermenter than that of inventor, seeing that his rapid succession of discoveries kept the scientific world in a state of ferment. While there is no doubt that some of his results were illusive owing to drawing wrong conclusions from ill-observed facts, yet there can also be no doubt that many were simply due to what we now know as radio-activity. At the time "latent light" was the favourite term, and an example of the effect of "latent light" of a kind which is now quite familiar to photographers was given by Mr. John Glover in the "Photographic Journal" for March 15, 1859. Mr. Glover was troubled with the appearance of a dark, regular line running across his negatives near one end. After some time spent in looking for non-existent light leaks, he traced the trouble to the leather hinge of the slide shutter, which was a most familiar cause of fog up to quite recently. The theory he advanced was that the leather gave off latent light, which it had absorbed while exposed to the sun, which theory, according to present knowledge, is not exactly correct. It is interesting to note that the latent light theory was at the time submitted to much criticism, and that the truer explanation of an emanation was favoured by several experimenters.

## SPHERICAL ABERRATION.

A RECENT chat with a photographer of skill and reputation showed us that in lens matters, beyond the price, our professional friends have still much to learn. He remarked that he had an expensive anastigmat by a good maker, but that it was no good at full aperture because he could never be sure whether his picture was in focus or not. On examination a considerable amount of spherical aberration was found to be present, and as the lens was of the double cemented type the fault could not easily be rectified. On mentioning the name of the defect our friend asked how it might be recognised by an unscientific person, and its presence proved to an unsympathetic manufacturer who assured him that the lens was faultless. For his benefit and that of others in a similar predicament we give the following hints as to the examination and testing for this particular aberration.

In the first place the camera must be provided with a very finely ground focussing screen, which, if new, should be slightly oiled and rubbed until nearly clean again, and a good focussing eyepiece or magnifier should be used. Care should be taken to adjust the camera back so that it is truly parallel with the front, and the front panel should fit well so that the axis of the lens is at right angles to the plate. These preliminaries settled a test object must be selected; an optician would use the reflection of a small lamp flame upon a mercury bulb, but the photographer will do better with a slip of printed matter, care being taken that the type is small, the paper smooth, and the ink black. This should be placed at a convenient distance from the lens, this depending upon the focal length of the latter; the image upon the screen should be large enough for the wording to be read distinctly. If the letters appear grey and there is a tendency to lose the finest strokes spherical aberration is present, and the lens must be stopped down until perfect sharpness is secured. With a lens having a full aperture of *f*/5.6 this may mean a reduction to *f*/8, or in many cases to a much smaller opening, a large Euryscope we recently tested not giving a sharp image until stopped down to *f*/14. It is very helpful to have a well-corrected lens attached to the camera for comparison, a Cooke lens being used as a standard in the case mentioned. The "Cooke" is also convenient for this purpose, as spherical aberration can be introduced by rotating the front lens, the definition becoming softer until quite fuzzy. We have next to find out whether the unsharpness is due to spherical aberration or to other causes, such as bad centreing, strains in mounting, or imperfections in the glass itself. For this purpose we shall want a little disc of black paper which we can temporarily stick upon the centre of the front lens. This should have a diameter of about half that of the lens itself. The test object should first be focussed with the largest aperture at which sharp definition can be obtained, and then, without moving the screen, the diaphragm should be fully opened and the black disc placed on the front of the lens. If the image is not sharp the camera-back must be racked in or out until it is, the greater the necessary movement the greater the amount of aberration present. In lenses especially designed to give "soft focus," such as the Dallmeyer, Bergheim, and Smith lenses, there is a large amount of purposely introduced spherical aberration, which may be recognised by a fringe of light resembling halation which surrounds any white object, such as the collar in a portrait. This can be seen upon the focussing screen, but is more in evidence upon the negative. In conclusion, we may point out that many secondhand lenses are upon the market because they possess this defect, which is not a serious one if large heads are to be taken, but which cannot be tolerated for the everyday work of the studio, while it is, we regret to say, of rather frequent occurrence in the larger sizes of many anastigmats. Hence lenses of this type should always be purchased subject to trial.

# THE CAUSE OF REVERSAL AND ITS REMEDY, WITH SOME NOTES ON THE PHOTOGRAPHIC PROCESS.

[The following is a reprint from the "Photographic Journal" of a paper recently read before the Royal Photographic Society by Mr. E. Sanger Shepherd, F.R.P.S., and is of interest from both theoretical and practical points of view. We understand that the special plates described will very shortly be put upon the market.—Eds. B.J.]

Most of our members interested in the scientific side of photography are aware that for the last five or six years Mr. William Hay Caldwell has been engaged in photo-chemical investigations in connection with the photographic process, and it has been my privilege to follow some of his lines of thought and to see the results of his labours, especially bearing on the subject of reversal of the photographic image.

Some time ago I endeavoured to get Mr. Caldwell to read a paper here, but his work was still in progress and he did not feel disposed to do so. Seeing the results he had obtained at the end of last year, and recognising their very great importance to everyone interested in photography, I succeeded in getting his permission to describe to you some of the results obtained.

In order to obtain a perfect negative upon an ordinary photographic plate, it is necessary that the exposure should be approximately correct within decidedly narrow limits, over-exposure resulting in a very flat image; still further exposure causing the reversal of the first effect of the action of light.

When light acts upon certain salts of silver, for example the halogen salts, it is generally accepted that a sub-salt of silver is produced, with the formation of a free substance, such as chlorine, bromine, or iodine in the case of a halogen salt; but this action is at once arrested in the absence of an agent which will act as an absorbent of the substance set free. The most active absorbents of chlorine, bromine or iodine are the so-called developing agents we use in the development of our plates. But Mr. William Hay Caldwell has discovered a very important fact, that most of these agents which are so active as to reduce the silver salts in the dark are quite unable to render the same salts sensitive in the light by acting as halogen absorbents. The reason for this is that in the light and in the presence of halogen acid formed by the halogen set free, the oxidised product of the reaction is itself again reduced with a second freeing of halogen which recombines with the sub-salt, to form again a normal salt.

On the other hand, substances which are not so easily oxidised as to be available for developing are not sufficiently active as absorbers of bromine and iodine to enable them to act in such a way as to render sensitive rapid plates or films made with silver bromide or silver iodide.

At present most sensitive photographic material may be divided into two classes, viz.:—

1. Those in which the image formed by light is not visible, or only partially so, and requires to be subsequently treated with a developer, as, for example, gelatine dry plates and bromide paper.

2. Those in which the image is obtained entirely by the action of light, without the subsequent use of a developer, as, for instance, albumen paper, P.O.P. gelatino-chloride and citrate papers.

Now it is obvious that if it were possible to find a substance which would act as a really efficient absorbent of the product of the reaction of light on the halogen salt, there would be no necessity for this distinction; for although the gelatine in contact with the particle of silver bromide acts to some extent as an absorbent of the halogen set free, at the same time the halogen acts as an extremely powerful tanning agent, and retards the developer from acting upon the particle to such an extent as to cause what is known as "over-exposure," tending to produce a general flatness of all tones, and entirely upsetting the gradation of the negative.

Dry plates and bromide paper as at present upon the market are made by heating a halogen silver salt, emulsified in some vehicle, generally gelatine, the rapidity of the emulsion being determined by the degree of heating and the consequent size of the particles of silver aggregated into chemical contact. With films made from such emulsions the exposure must be so regulated that no more halogen will be set free by the reduction of the silver salt than can be absorbed by the gelatine or other vehicle present, and this is found in all cases to be a very limited amount.

In photographic materials included in the second class, the halogen set free under the action of light is absorbed by an organic salt of silver (as, for example, an acid silver citrate in the vehicle) with formation in this case of citric acid, and the normal halogen salt of silver. It is quite possible that a rapid paper might be made in this second class, but hitherto it has not been found possible, a developer sufficiently active to reduce the sub-salt of a silver haloid reducing the organic salt in the dark; and if it be attempted to transform the organic salt previous to development with a soluble haloid salt, it is found that the minute quantity of sub-salt formed by the action of light is destroyed in the process, so far as its capacity for subsequent development is concerned.

Even if it were possible to develop only the organic silver salt to form the image, the want of stability of organic compared with haloid silver salts would make the process of little value.

The ideal absorber or sensitiser for which we have all been looking so long must possess the following properties:—

1. It should be incapable of reduction in the light after its oxidation by the halogen set free.

2. It should not reduce in the dark the silver salt employed, and
3. It should absorb the halogen as rapidly as it is set free by light.

Mr. Caldwell has found all these properties are possessed by some salts or derivatives of hydrazin $NH_2NH_2$ and of hydroxylamine $NH_2OH$. For example, a sensitive surface having the above mentioned properties can be prepared by using either one of the silver haloids alone, or a mixture of two or more of them in the ordinary way. To the finished emulsion the necessary amount of a suitable salt or compound of hydrazin is added, such as, for example, a neutral salt of hydrazin made with sulphuric acid or with an easily oxidizable acid, such as phosphorous acid $H_3PO_3$.

These salts can be made by adding a solution of the acid to hydrazin hydrate. Since chlorine, bromine and iodine form a series of silver salts of gradually increasing stability, the compound of hydrazin used in the preparation of the emulsion can be determined by a consideration of such fact. For example, in the case of silver chloride, as the chlorine evolved by the action of light is a gas that is comparatively easily absorbed, many of the compounds of hydrazin or hydroxylamine will be found suitable, for example, methyl hydrazin. With a halogen salt of greater stability such as silver bromide, a more active compound of hydrazin is desirable than in the case of a chloride, such, for example, as the phosphorous acid salt of hydrazin. The amount of salt used in the preparation of the emulsion is determined by a consideration of the reducing action of the hydrazin, one molecule of hydrazin hydrate being able to reduce four molecules of silver haloid.

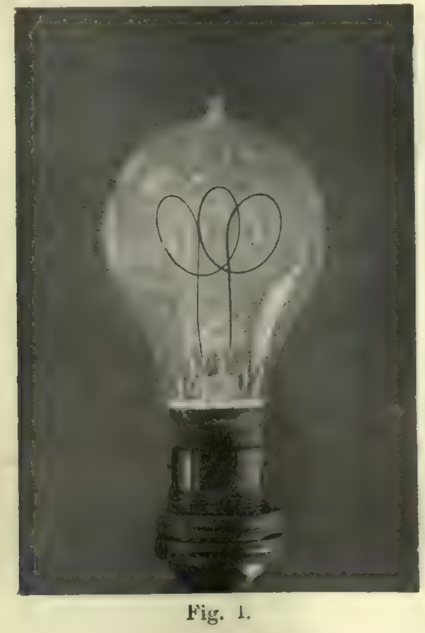
Fig. 1.

With some of the first plates made with emulsion containing hydrazin I exposed a series of plates in the Hurter and Driffield rotating sector instrument. This instrument gives a series of nine exposures in geometrical progression, and I found that a total exposure of 640 candle metre seconds gave me a negative which, with ordinary development, plotted to a correct straight line through these nine steps. Now, if it is true that hydrazin is capable of absorbing the product of the reaction as quickly as light affects the image, it should be possible to prolong this correct period of exposure by giving a longer exposure in the sector apparatus.

I therefore increased the exposure to 2,560 candle metre seconds, and although the whole of the steps were extremely dense, the ratio was still correct. I then increased the exposure to 5,120 candle metre seconds, with the same result. As the exposure was so long for the next experiment I substituted an arc lamp for the candle unit (Wildermann Standard Water Cooled Acetylene Flame, calibrated to a standard candle). The use of the arc lamp naturally introduced difficulties, and the resulting negatives were very difficult to measure. However, so far as I carried exposure, I never arrived at that period which Hurter and Driffield called the period of decreasing rise or over-exposure. The difficulties of measuring extremely dense negatives, and the fact that the best method of developing had not at that time been worked out, led me to abandon the sector machine for the moment in order to get quickly some data as to the period at which reversal took place (if at all) with the hydrazin plate. I therefore photographed an incandescent gas mantle, but failed to get a satisfactory image on account of the movement of the mantle. I then substituted an ordinary electric incandescent carbon filament lamp. The lamp was set up in front of the camera, and given an exposure of ten minutes with stop *f*/22. Two plates were used, made from the same batch of emulsion, one of which had received the addition of hydrazin, while the other had not. With the untreated emulsion the filament was entirely reversed, as will be seen in Fig. 1, whereas in the case of the hydrazin plate (the conditions of exposure and development being identical) the filament, as will be seen in Fig. 2, shows no sign of reversal.

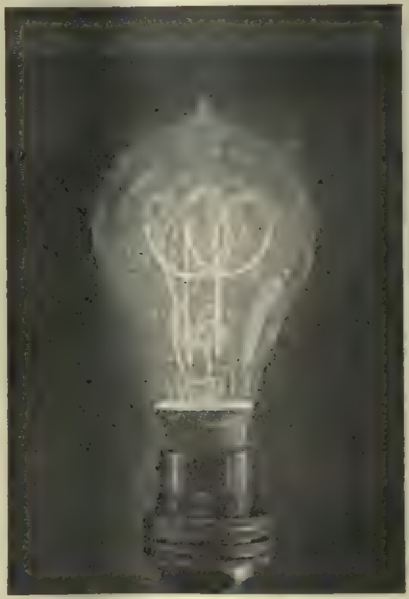
Fig. 2.

For my next experiment I took an ordinary hand feed electric arc lamp, taking 12 amperes at 45 volts, and photographed it under the same conditions. In this instance I made a first exposure with an untreated plate of four seconds; this gave no reversal. I then gave eight seconds and secured reversal. For the actual comparative tests shown in the case of Figs. 3 and 4 I gave both the untreated and the treated plate 120 seconds exposure. The untreated plate is strongly reversed, whilst the plate containing hydrazin shows no sign of reversal.

The next two slides, Figs. 5 and 6, are from two negatives taken by Mr. Caldwell in Scotland. The sun forms the principal object in the picture, and although sufficient exposure has been given to bring out the detail in the near foreground, there is no sign of reversal of the sun's disc. The importance of a plate showing no reversal when photographing the sun for solar physics work will, I think, be fully appreciated by every worker in this important branch.

The mere fact that with the hydrazin plate we are able to represent correctly such an extraordinary range of light intensities places a new power in the hands of the photographer. But there are a great many other interesting facts about the hydrazin emulsion.

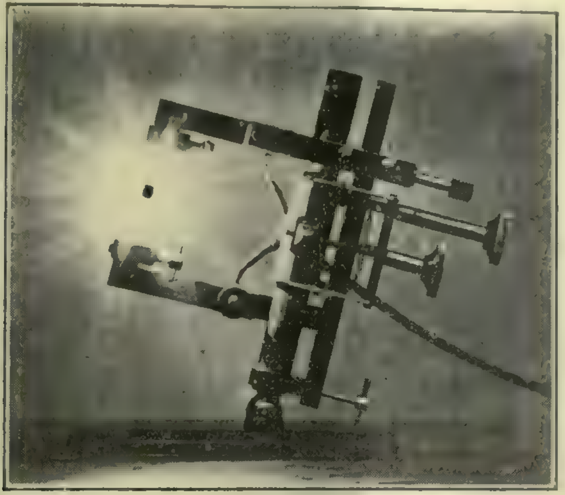

Fig. 3.*

If it is true that the halogen set free by the action of light on a silver bromide film be effectually absorbed by hydrazin it should be possible to print out an image by the direct action of light upon the plate, and experiment proves this to be true. A hydrazin plate may be exposed in the camera and developed; or the same plate may be placed in contact with a negative and printed out in daylight. The resulting image is a rich warm brown, the colour or tone of the finished transparency depending to some extent upon the strength of the fixing bath.

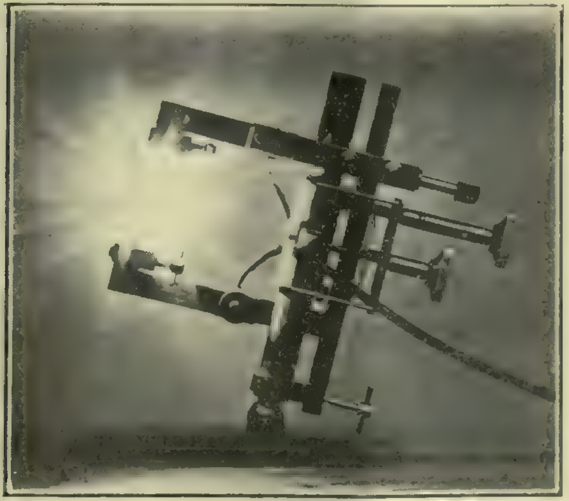

Fig. 4*.

I am able to show you a few lantern slides from negatives printed out in this manner in daylight, and simply fixed in a bath of 3 ozs. of hyposulphite of soda to 20 ozs. of water. The quality of the image and its colour is very similar to that of the very best collodion emulsion lantern slides, a rich warm brown.

The fact that the hydrazin emulsion may be exposed for a very short time and developed, or the image printed right out by prolonged action of light, has a practical bearing on the manufacture of printing papers.

A paper prepared with pure bromide or chloride emulsion with hydrazin may be used as an ordinary bromide paper for a short exposure in an enlarging lantern, and subsequent development; or it may be used in place of a gaslight paper by exposing for a sufficient time to give a faint visible image, and subsequently developing up to full strength: or it may be printed out by direct exposure to the light to the full depth, and merely fixed.

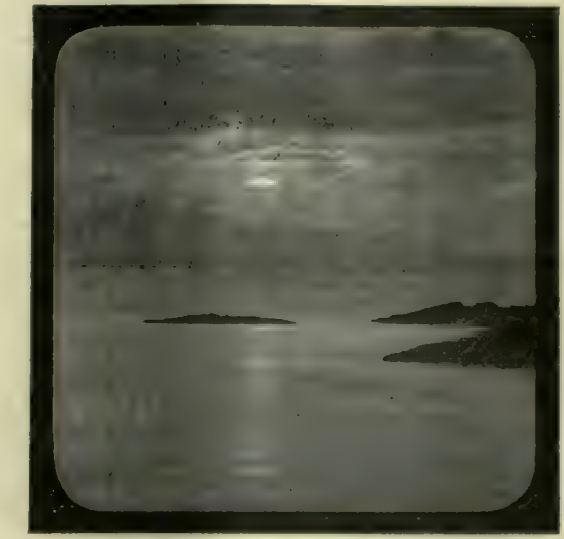

Fig. 5.

I hand round a set of prints illustrating this point. The first two have been printed out from the negative in the same way that one would print P.O.P., print No. 1 being fixed in an alkaline fixing bath, and No. 2 in an acid fixing bath: the acid fixing bath gave a slightly cooler tone in the print.

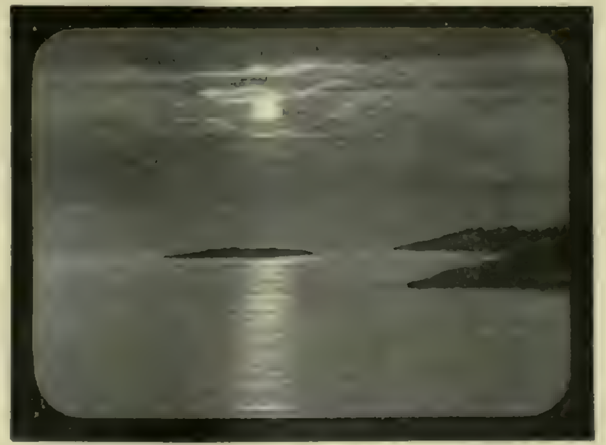

Fig. 6.

The next four prints have been printed out like Nos. 1 and 2 and toned in a sulpho-cyanide gold bath previous to fixing, the time of toning being varied, and the resulting prints show a range of tones from brown to blue-black in exactly the same manner as an ordinary P.O.P. paper.

In the last two prints of this series one has been given a very short exposure to light and developed up in the manner of the bromide paper print. The second has been given sufficient exposure to render the image just visible and the image strengthened to the desired depth by development. It will thus be seen that the one gelatino-bromide hydrazin emulsion paper may be used as a bromide paper, a gaslight paper, or as P.O.P., without alteration in the emulsion.

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* For the preparation of these blocks for figs. 3 and 4 Mr. Sanger Shepherd very kindly placed at our disposal glass transparencies from his original negatives, but unfortunately the half-tone blocks fail to do justice to these transparencies.—Eds. "B.J."

Another important application for the use of hydrazin emulsion has been found in connection with the production of positives upon celluloid. It is well known that the ordinary P.O.P. emulsion containing free silver cannot be used upon celluloid, but the hydrazin emulsion on celluloid forms an ideal printing surface; some of the portraits shown will give you an idea of the very beautiful results to be obtained upon this material.

The next example I show is a pair of prints from the same negative; the one on the left hand has been exposed for a few seconds to gaslight and developed with metol hydroquinone; the print on the right is on the same paper, but printed right out in daylight and simply fixed.

The left-hand print is a fine warm black tone, very similar to an engraving black carbon print; the printed-out print is a warm brown, but the important point I wish to call your attention to is the exact reproduction of every gradation of the negative in the two prints, both in the high lights and the deepest shadows, the black developed print and the warm brown printed-out print corresponding all through the range, tone for tone.

E. Sanger Shepherd.

In the subsequent discussion, Mr. W. B. Ferguson asked what effect, if any, the addition of this new substance had upon the speed or rapidity of the emulsion. No doubt Mr. Sanger Shepherd had himself decided by the H. and D. method the rapidity of the same emulsion before and after the addition of hydrazin. Speaking of the curve showing the period of correct, over, and under-exposure, Mr. Ferguson stated that if any ordinary gelatino-bromide plate were taken and over-exposed, say sixty times, and then developed with a pyro-soda developer containing a considerable amount of bromide, the curve of the plate would be altered so that the exposure which formerly gave an over-exposed and partially reversed image would now come within the "correct exposure" portion of the curve. If, therefore, the addition of large quantities of bromide to the developer would move the curve in that direction, would the effect of adding this new substance to the emulsion be similar, or did its effect belong to an entirely different category?

Mr. Sanger Shepherd said that the effect of adding this substance to the emulsion was a very slight slowing action. He was afraid that his ideas of plate-speed had been largely upset. Apparently it was an advantage to make any emulsion they were going to use as rapid as possible, provided the emulsion were kept from the fogging point. One thing he had found with plates was that with a particular developer he had to give a certain minimum of exposure, while with another developer what had previously been within the under-exposed portion of the curve was found to be a good way up in the correct portion.

With the hydrazin plate it required a certain inertia to overcome the affinity of the bromine for the silver, but that when once that was overcome all plates were alike. In other words, it was necessary to find the lowest exposure which would come within the correct straight line period according to the Hurter and Driffield definition; then any further exposure (up to printing right out in the camera) could be given, and by suitable development a correct negative obtained. The H. and D. plate speeds marked on plate boxes were absolutely valueless, owing to the commercial aspect of the case. Tests made by the Hurter and Driffield method upon the speed of very fast emulsion of one maker marked 400 H. and D. really worked out at 90 H. and D. If the worker were employing ordinary plates for scientific work it was best to provide oneself with a Hurter and Driffield apparatus and test a batch for oneself.

Asked whether hydrazin salt actually preserved the film or saved it from a more rapid deterioration, Mr. Sanger Shepherd said that he was unable to speak on this point very definitely. He had had some hydrazin plates in his own laboratory for eight or ten months—a small quantity made for experimental purposes. He had kept strips of the plates in a cardboard box in his dark-room for the last nine months, and they gave practically the same result under test as when made. He saw no reason why the sensitive surface should deteriorate, though if speed were pushed to the utmost—for example, 450 H. and D.—six or eight months might represent the limit of age for effective use.

Mr. F. F. Renwick said that if anyone less informed and experienced than Mr. Sanger Shepherd had read the paper we have listened to this evening, we might have felt somewhat sceptical, but from what he has told us it is evident that Mr. Sanger Shepherd has gone carefully into the results before bringing them forward. It had been the speaker's misfortune to have no great success in experiments of this description with hydroxylamine. There was one point of scientific interest which he wished to put to Mr. Sanger Shepherd. Had he any information as to the effect of these hydrazin compounds upon the under-exposure part of the curve? The speaker had, some seven or eight years ago, made plates, without using any such addition, which he thought ought to be useful for special purposes. It was practically impossible to over-expose them, for the full range of an ordinary subject was easily covered by the under-exposure curve alone, and it was therefore possible to get a full range negative without realising that with very full exposures extremely dense negatives resulted from very short development. The plates were extremely interesting from the scientific point of view, but the break between the middle and the under-exposure curves was so sharp and sudden that he found it impossible to make any use of them, though this often gave very useful results in very difficult interior subjects. Mr. Sanger Shepherd had opened his paper by referring to the absorption of halogen set free by exposure to light as if it were an established fact, instead of a hypothesis. He thought the tendency of recent work was to render it very doubtful if this occurred in the production of a normal latent image. There are a large number of substances, known to be halogen absorbents, which have no influence in affecting the rate of production of a latent image on a plate, though most of them do affect the rate of production of a visible image, when it is certain that halogen is being set free. It must still remain an open question whether or no halogen is set free when a plate is given an ordinary short exposure.

Mr. Sanger Shepherd, in reply to Mr. Renwick's question as to the effect of the material on the under-exposed part of the curve, said that so far as he knew there was no such effect. He was not quite sure on the point because all his own work had been done higher up in the curve, but he did not think the addition of hydrazin had any effect on the lower portion. He did believe, however, that it had a slight slowing action upon the plate. Mr. Caldwell said that it had not, but he did not say it very emphatically. With regard to his assumption that the effect of light on a plate caused any liberation of the halogen, of course, there had been various opinions, but in recent years most of the workers on the subject appeared to think that there was sufficient evidence to prove that bromine was set free. He believed that when a little more work was done they would be quite satisfied that such was the case.

Mr. C. Butler said that some years ago, while in India, he was given exposures of 1/25th of a second for open landscape, while another worker using the same stop—f/8 or f/11—gave exposures of half a minute or one minute; and yet the latter got better negatives than he. Subsequently the long exposure worker told him that there was nothing else in his method than the use of twenty or thirty times the ordinary amount of bromide in his developer. The method seemed to be applicable to all kinds of exposure. He desired to know whether hydrazin hydrate put in the emulsion had the same effect as the extra bromide in the developer. He wished further to know how far the hydrazin plates were sensitive to any colour. Were they, like the ordinary plate, very insensitive to yellow light, or were they specially sensitive to blue and violet?

Mr. Sanger Shepherd said that he had not found the addition of hydrazin to affect the spectrum negative at all. He had taken a number of spectrum negatives on plates containing hydrazin and had also exposed a number of spectra under exactly the same conditions with a plate not containing hydrazin, and he observed absolutely no difference, either in speed or in colour-sensitiveness. The plates were exposed in a concave diffraction grating spectrograph to crater of the arc light. The exposures were 5, 10, 20, 40 and 80 seconds, so that a range of exposures were obtained on the plate. The two negatives taken, the one with and the other without the addition of hydrazin, were identical. There was no objection to the use of hydrazin in combination with a dye for making a panchromatic plate, or hydrazin could be added to a finished panchromatic emulsion.

The Chairman (Mr. Chapman Jones) said that they must all agree as to the remarkable character of the results that had been brought before them. He was surprised that Mr. Sanger Shepherd started with the assumption that halogen was liberated when light changed silver bromide in a gelatine plate into the developable condition, and he doubted whether Dr. Hurter, who had been so often quoted in the paper, would have assented to such an assumption. He (Mr. Chapman Jones) had never been able to see any direct evidence in favour of this theory, while there were several facts that were difficult to harmonise with it, and he was glad to hear Mr. Renwick say that recent results were further antagonistic to it. Mr. Sanger Shepherd might have extended the curve that he had given them and shown the second rise—the rise after the reversal which was not always easy to get, but of the existence of which there was incontrovertible evidence. It seemed probable that this second rise was due to the liberation of halogen, that is to a printing-out effect, and in that case the effect of the hydrazin was to eliminate reversal, and to render the developable condition and printing out continuous, so that exposure and development were reciprocal over a very long range (instead of as usual over an exceedingly short range), as they were in the case of printing-out paper when it was developed in the manner introduced by Mr. W. J. Wilson. The meeting had greatly enjoyed Mr. Sanger Shepherd's paper, and they would look for the advent of these plates and for further investigations into the correct method of using them. He called upon the members to accord a hearty vote of thanks to Mr. Sanger Shepherd, which was done by acclamation.

Mr. Sanger Shepherd, after acknowledging the vote of thanks, said, in reply to Mr. Chapman Jones, that he might have carried on the curve to the period of re-increase after reversal, but, after all, the ultimate limit of density obtained must be at the point when the whole of the silver in the emulsion had been reduced. It was absolutely necessary to get the range of tones within a period of 1 to 30, otherwise it would be impossible to print the result upon paper.

# WARM TONES BY MEANS OF DYES IN TRANSPARENCIES.

[In a recent issue of "American Photography," Mr. E. J. Wall gives the following useful résumé and working instructions for producing images in dyes, a method of producing warm tones in lantern-slides, etc., which provides an attractive field for experiment. Even more so than in preparing warm tones by the usual methods, it is necessary to judge the effects by purely transmitted light. The results, as seen by reflected light, are entirely misleading, and the worker who fails to test the slides on the screen may at once condemn the process as useless on account of the apparently too weird character of the coloured tone. By transmitted light, however, the tones will be found to be greatly softened in hue.—Eds., "B.J."]

My purpose is to direct attention to some little-known methods of obtaining positives in other colours than black.

We have, of course, the so-called diazotype processes, in which the action of light on diazo compounds is utilised by the formation of dyes from the compounds thus formed or decomposed by light. To this class belong Feer's process, 1889, the primuline process, 1890, of Green, Cross and Bevan, Andresen's diazotype process, 1894, and Lumière's process, 1896, also founded on the use of diazo and tetrazo dyes, which they actually applied to making three-colour prints. All these processes were of but short life, principally because it was difficult to obtain clear whites and the colours were not under complete control. There are, however, processes readily applicable both to print and transparency making, which have so far received but little attention. These practically consist of the formation of an image in a dye, utilising an image already obtained as a mordant.

The first of these processes was suggested by Persoz in 1851; he used bichromated gelatine, and after exposure washed out the excess of bichromate and used the chromium oxide formed by the action of light as a mordant for the aniline dye. Twelve years later, in 1863, Kopp also utilised the same principle, and it was again revived in 1894 by M. Villain. He sensitised fabric, paper, and gelatine with

| | |
|---|---|
| Ammonium bichromate .................. | 350 grs. |
| Ammonium or sodium metavanadate | 28 grs. |
| Distilled water to ........................... | 16 ozs. fluid |

and after drying the paper in the dark, exposed under a negative and thoroughly washed the print, and then immersed in a weak solution of the dye. The dyes he used were artificial alizarine (violet), alizarine blue S, alizarine black and red, galloflavine, purpurine, anthracene brown, Bordeau alizarine, gallein, orange, yellow, and maroon alizarine and alizarine cyanine. These could also be used in mixtures to give compound tints. For transparency work this process is very satisfactory, but the dyes are prone to stain paper, though they can be washed out to a great extent by water or alternate baths of alcohol and water. The range of colours, as will be seen, is very great, and it is quite possible that some may like to use it.

The second class of processes is that in which a silver image is first obtained in the ordinary way and then converted into some salt which acts as a mordant for the dye. The first mention of such a process was made by M. Georges Richard

(*Comptes rendus*, 1896, I, page 609), and although he gave no details and showed no results, to him must certainly be given the credit of the discovery. He says: "The substitution of an organic colour for the reduced silver may be realised perhaps: (1) by the chemical transformation of the silver deposit into a salt capable of fixing or precipitating the colour which one wishes to use; the positive this mordanted will only retain the colour on the places previously black, and this in proportion to the density of those blacks; (2) by the transformation of the silver into a salt capable of re-acting on the coal-tar derivatives and thus forming *in situ* the artificial organic colours."

In 1906 Traube of Munich patented a process, known as "diachrome," which is nothing more nor less than Richard's principle. Traube converts a silver image into silver iodide by immersion in

| | |
|---|---|
| Iodine | 140 grs. |
| Potassium iodide | 350 grs. |
| Distilled water to | 16 ozs. fluid. |

and then after washing immerses the positive in a solution of a basic dye which immediately precipitates or forms a lake with the iodide and gives a coloured image. The silver iodide is, if course, opaque, but this may be dissolved out by potassium cyanide or a hypo bath containing tannin or tartar emetic, the action of these substances being to prevent the washing out of the dye. After fixation the positive is merely washed, and the image consists of a perfectly transparent dye and is of extraordinary brilliancy and transparency in the shadows. It will be noted that basic dyes must be used, as so far the only acid dyes which give satisfactory results are those of the triphenylmethane series to which the eosines belong.

It is as well to point out that in making the above solution of iodine, the iodide should be dissolved in about two ounces of water, then the iodine added and the mixture stirred till complete solution is effected, and then the remainder of the water added. If the whole of the water be used at once the iodine takes a very long time to dissolve.

The parallelism between Richard's process and Traube's is obvious, and one can only assume that in those countries where he has obtained a patent Richard's communication was unknown, or that the patent was granted for the particular method of producing the silver salt. Whether the patent would hold good for the production of silver iodide is uncertain; if it would, then the iodide is barred, and this is unfortunate, as silver iodide absorbs a far greater quantity of dye than the other halides and more than most other silver salts.

Traube's process attracted attention to the subject, and since then numerous methods have been suggested of which the following may be considered typical. M. Tauleigne converts his image first into silver chloride and then into iodide, utilising for this purpose cupric chloride, but as he washes for a quarter of an hour after bleaching it may be doubted whether any cuprous salt is left, though if there was, this would only tend to make the picture more permanent. The bleaching solution consists of

| | |
|---|---|
| Cupric chloride | 720 grs. |
| Glacial acetic acid | ½ oz. |
| Distilled water to | 16 ozs. fluid. |

When the image is entirely bleached, wash for quarter of an hour and then immerse in

| | |
|---|---|
| Potassium iodide | 140 grs. |
| Distilled water to | 16 ozs. fluid. |

This bath converts the chloride into iodide. Then after washing, the bleached image is immersed in one of the following baths

| | |
|---|---|
| Methylene blue | 7 grs. |
| Distilled water to | 16 ozs. fluid |

or

| | |
|---|---|
| Fuchsine | 3.5 grs. |
| Distilled water to | 16 ozs. fluid |

For use, dilute as follows:—

| | |
|---|---|
| Stock dye solution | ¾ oz. |
| Glacial acetic acid | 60 minims. |
| Distilled water to | 16 ozs. fluid. |

When the images are sufficiently stained, wash for a quarter of an hour, then immerse in a five per cent. solution of tannin for ten minutes, rinse, and fix in hypo

Namias of Milan utilises the old lead ferricyanide bleacher:—

| | |
|---|---|
| Potassium ferricyanide | 700 grs. |
| Glacial acetic acid | 70 minims. |
| Lead acetate | 350 grs. |
| Distilled water to | 16 ozs. fluid. |

When the image is bleached, wash in two to three per cent. nitric acid for about ten minutes, then immerse in a solution of the dye and again wash and fix in

| | |
|---|---|
| Hypo | 70 grs. |
| Sodium acetate | 350 grs. |
| Glacial acetic acid | 35 minims. |
| Water | 16 ozs. fluid. |

The purpose of this bath is to remove the lead and silver ferricyanides which form the image.

As basic dyes are the best, one has a pretty wide choice, and the following are a few that may be used: acridine orange, chrysoidine, rhodamine 6 G, rhodamine B, xylene red B, methyl and crystal violet, victoria pure blue B, and all the other victoria blues, methylene blues, methylene green, brilliant, emerald, diamond, and victoria greens, and all the eosine group of dyes which comprises eosine, erythrosine, rose bengal, phloxine, uranine, etc. Compound tints are best obtained by successive baths of different types, as mixtures are apt to stain unequally. Frequently, too, good effects may be obtained by first staining up with a basic dye and then applying an acid dye; and if the combinations are suitably chosen, one may obtain very intense colours in this way, as the basic acts as a mordant for the acid dye.

E. J. WALL.

# PROFESSIONAL OUTDOOR PHOTOGRAPHY.—II.

HAVING now on hand the necessary apparatus, plates, etc., as detailed in my first article, as necessary for successful outdoor work, let us omit all preliminary details, at this stage, as to initial business arrangements, and proceed to demonstrate the actual and practical methods of building, posing, and exposing, say, a group of persons, and, for the sake of simplicity, we will suppose the individuals to number anything from fifteen to fifty. These are quite representative numbers, the lower for cricket and football teams, etc., and the higher for picnics, golf, bowling, corporation outings, and congresses.

On receiving instructions, or permission, the operator will, of course, retire to the dark-room to charge his slides. He will not omit to brush over the glass side of each plate a backing paste, to prevent any trace of halation in the resulting negatives. Ordinary water-colour burnt sienna powder—obtainable of any house painter—makes a suitable paste when saturated with glycerine, to which, if too thick, a little water may be added. To prevent messiness through the use of this paste, it is useful to lay over the paste a piece of brown paper, cut to slightly less size than the plate itself, before replacing the divider and re-closing the slide. It should not be necessary here to remind the operator that, working with the ultra-rapid plates I have already recommended, the safety of the dark-room light, in which the above operations have been made, must be absolutely beyond doubt; and even with the safest illumination it is wise to expose your plates to it for the briefest period admissible of careful handling. Slides being charged with a full supply of plates—you never know when a supplementary engagement may crop up once the camera has been unpacked—the apparatus and slides are carefully packed, after the operator has satisfied himself that all are in good working order, and that not a single article has been omitted. Any system of packing, or rotation of articles, having once been adopted, should never be varied, and this applies also to re-packing after operating, so that it should soon, by force of habit, become practically impossible to overlook anything. The operator should make it a matter of principle to do the whole packing and repacking himself in every case. To emphasise this point, I may be allowed to mention that on one occasion, considerably over twenty years ago, when driving about five miles into the country to photograph an historical house, my employer, who accompanied me, was obviously impatient at my methodical persistence in laying out everything in proper order. After everything was ready, he fussily insisted on helping me to put my cases on the front of the cab, bundled me inside with scant ceremony, and firmly assured me that nothing, positively nothing, had been left behind. All the same, however, on arrival at our destination we found that the inclusion of a tripod (which my friend assured the driver must have fallen off by the way) would have considerably shortened operations and saved him many lamentations over the time lost. The situation was redeemed by resting the camera on the top of the household steps, and, after long and tedious adjustments, carefully marking the camera and its temporary support, so that the slightest movement when inserting slide or withdrawing the sliding panel of same, could be speedily noticed and readjusted.

### Choosing Your Backgrounds.

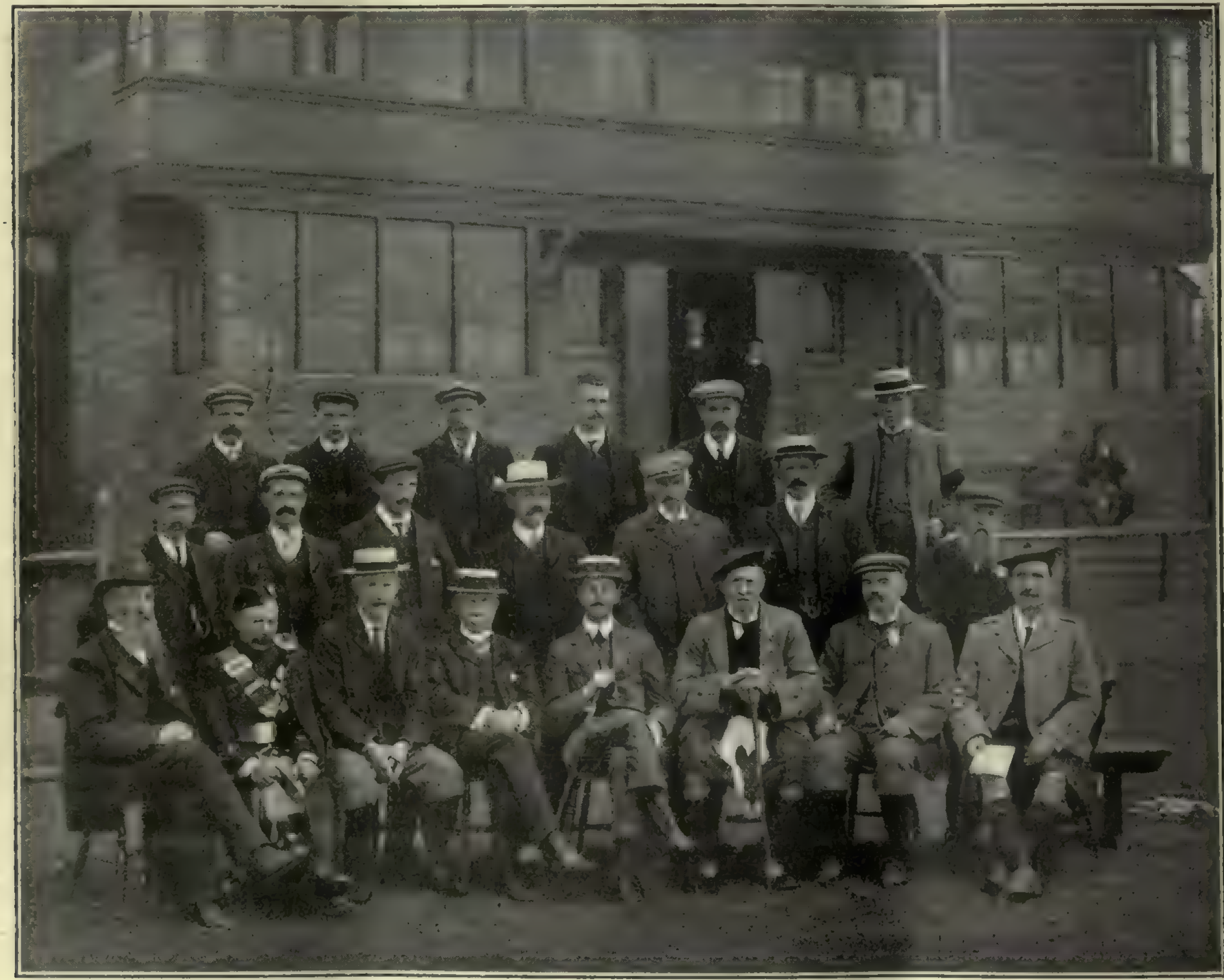
On arriving at the scene of operations the first thing to be done is to make survey of all the available positions in which the group can be advantageously arranged. Beyond the primary matter of deciding on which particular patch of ground you will place your figures, two important considerations have to be taken into account—the selection of a suitable background, and the adoption of the most effective points of view in relation to the position of the sun at the time of exposure, that is, the direction from which the dominating light will fall upon the group. In a goodly number of cases, where the photograph to be taken is in connection with some particular club—cricket, football, etc.—the photographer has no choice as to the background, as they usually wish to have the pavilion appearing in the photograph. Under these circumstances his duty is to make the most pleasing use of it, ever keeping in mind that the background—whether it be a building or buildings, a hillside, foliage, or even a self-assertive brick wall—is to be looked upon as a mere accessory to the main object of the picture—the accentuation of the principal subject—the group of figures as a whole. The background must exist, must be perfectly obvious, when you look for it; when required to do so, it may help considerably in explaining the natural connection of the group with its own appearance in the picture, cutting off whatever might detract from, or appear incongruous with, the particular group of persons to be delineated. While doing all this, it must have a retiring, self-sacrificing effect. Should it be placed in or near the same plane as the faces composing the group, and consequently as sharply focussed, or nearly so, as they, it at once loses most of its principal functions as a background. Under such circumstances, a background of picturesque foliage would prove most confusing, the high-lights on each leaf or twig coming into contact with faces and outlines, with destructive force all round the picture, while a brick or stone wall would, in a similar way, become a nightmare. For these reasons it is highly judicious where possible to have the group placed considerably in advance of whatever object or objects form the background. Then there is a further matter to be considered in relation to the background, and that is, from what standpoint would its lines and contour be most efficacious in aiding the whole composition. In very few instances will it be found satisfactory to place a group of persons in lines parallel to the frontage of a building of any kind. The objectionable effects of doing so are that the perpendicular and horizontal lines yield stiff rectangular formations, which destroy all feelings of gracefulness and variety, and convey the impression of rows and rows of faces with continuations of rows and rows of other substances behind them. By moving the camera from the exact front of the building a sufficient distance to secure an easy perspective, and placing the group directly facing the camera, these lines become much less objectionable, and serve the useful purpose of binding the whole picture together, introducing a grace and pleasing symmetry which is unattainable from a direct front point of view; and although I have specially mentioned these considerations as applied to an architectural background, the same reasoning applies more or less to most other subjects which may be utilised as a background to an outdoor group. The essence of the preceding remarks is therefore a recommendation to secure a pleasing amount of perspective in the subjects forming the background of your picture; to place the figures sufficiently far in advance of your background, to yield the necessary quantity of aerial perspective, to give relief and emphasis to the faces, the background itself being subdued and unobtrusive by reason of its being somewhat beyond the plane of focal sharpness on which the figures comprising the group are placed.

### Making the Best of the Prevailing Light.

A matter of considerable consequence is the direction of the light which illuminates the scene, and this is a potent factor in fixing the point from which the camera will delineate the subject. It is obvious that a background of bold contrasts would destroy all harmony if taken in direct sunlight, or even in a strong diffused light, should the subject be lighted from behind the camera. To obviate this the camera must be fixed, where possible, in a position which will permit a view with the shadow parts towards the lens, taking care that when exposing, the lens is effectually protected from direct sunlight or strong direct light. The use of a strong front light on subject and background inevitably gives a hard and flat rendering lacking in the half-tones. When, however, a fairly well diffused light is found to prevail, a wider discretion may be exercised in working with, across, or against the light, but remembering that, roughly speaking, there are three methods of working in relation to the source of light: (a) With the source of light behind the camera and directly illuminating the subject, resulting in hard, sharp outlines, lack of modelling, and gradation, and barren of what is generally understood as "breadth" or "tone." (b) With the light falling on the subject at a right angle to the line of view from the camera, that is, either directly to right or left of the subject, the characteristic effects of which are the greatest possible amount of contrast between the highest lights and the deepest shades, with (except in too strong a light) full roundness and modulation. (c) With the light originating in front of the camera (when the direct light has to be intercepted from reaching the lens), which method yields the richest, softest, and most harmonious effects which the camera can depict.

In winter sunlight this method may be found not fully practicable, as the sun would probably be so low that the lens could not be protected without cutting off a portion of the subject. Intermediate positions of the camera, relative to the light source, will produce a combination of, or a compromise between, each of the effects mentioned, in exact proportion to the extent of the alteration of the position between any two of the view points indicated. For instance, to produce a modification or combination of relief and soft or shadow effects, we would fix the camera in such a position that the light rays would intersect the line of view at an angle of 75 degrees, that is, with the sun in front of, and to one side of, the camera; while with the sun behind, and to one side of the camera—the rays forming an angle of 45 degrees, with the line of sights from camera to subject—the resulting effect would be a combination of line and relief, very suitable for architectural landscape and similar subjects, but rather to be avoided where groups or portaits are concerned. The position of the sun is always to be taken into consideration, whether visible or not, but, whether veiled or unveiled, the principles which govern the use of its rays remain the same, and the photographer must calculate his angle of view in connection with the sun's position in order to secure whatever effect he may desire.

As a general rule it will be found that sunlight is desirable for architecture (exteriors), holiday scenes, landscapes, etc.; while for groups, portraits, and figure subjects the work is much more easily and satisfactorily accomplished when the sun obliges by retiring behind a cloud. I will therefore conclude this article by submitting a print from a group which may illustrate the application of the principles which I have herein recommended. This group was taken about the last days of May or the first days of June, about 2 p.m., on a football field, with the pavilion showing behind. They wished to be taken in front of the pavilion, and were surprised to find I had arranged seats and forms out in the field some thirty yards more in advance of the building (which was recently built), and the manager of the football team, with which the present group had no connection, being interested, but doubtful of the success of my arrangements, kindly explained to me that one or two groups had previously been taken on the terraced steps immediately in front of the building; but, though I adhered to my own scheme, he afterwards congratulated me on the result, stating that the photograph was much more pleasing than the former ones. The figures were grouped facing to the south-east, the light—a very strong diffused light from a high sun, yielding very little shadow—coming from about 30 degrees west of south. This ought, under ordinary circumstances, to have lighted the right side of each face; but a peculiarity, not uncommon, here displays itself. The sun, while passing its direct light through a cloud almost from the south-west, shone direct on the north-east sky, whence the reflected rays from white fleecy clouds falling on the faces of the party with greater luminosity, converted the dominant lights illuminating the faces into a left front light. This detracts somewhat from the depth and roundness aimed at, but otherwise no unpleasant feature is introduced. The principal lesson I wish to convey by this photograph is the treatment and effect of the background. Had the group been posed on the steps immediately in front of the building, the lines of figures would have been parallel, and in close proximity to the frontage, with the natural consequence that the frontage, being almost in the same plane with the back row of figures, would be almost as sharply depicted as the faces, which would appear amongst a miscellaneous array of bricks and rectangular panes, while the perpendicular lines would appear to be growing indiscriminately and ridiculously out of the anatomical arrangements of the unfortunate party. Each brick in the wall would challenge equal attention with the human faces, each window astragal would be painfully aggressive, and only a small portion of the frontage could be displayed without rendering the figures diminutive, while the lines of the balcony, cutting across the top of the picture in a truly horizontal line, would have had a distracting effect, much as if a strip had been patched on to the top to fill up the whole of the space. By placing the figures some distance in front of the building, the advantages are that, while the faces are in focus, the bricks and woodwork, the principal features of the background, are far enough out of the plane of sharpness to become subdued and blended in tone, thus making for harmony and ceasing to compete with the faces for attention. The distance between the figures and background, moreover, brings into effect a certain amount of atmospherical perspective, which also has a subduing influence on the background and throws the figures forward with more vigour and reality than could have been obtained otherwise. The original is 15in. x 12in., taken with a lens of 24in. focal length, stop *f*/22, exposure 2 secs., plate speed 350 H. and D.



R. C. Platt.

# THE CITY AND GUILDS OF LONDON INSTITUTE EXAMINATION PAPERS IN PHOTOGRAPHY.

THE examinations held annually in May by the City and Guilds of London Institute are a form of encouragement of photographic study of which advantage might well be more widely taken by photographers, both professional and amateur. The former should at once disabuse their minds of the idea that a certificate of their success in the examination will be a passport to the respect of employers from whom they may be seeking situations. In a few cases it may be so, but in the vast majority the possession of the general photographic knowledge which a City and Guilds certificate implies will not be regarded as anything of value in the way of a qualification. A pity that it should be so, but so, on the whole, it is. Nevertheless, the young photographer will be well advised to spend a few hours of his spare time each week in studying for the examination, and in attending the many classes, in London and the provinces, most of which model their courses on the syllabus of the City and Guilds examination. We give below the questions set at the last examination, in both the Ordinary and Honours grades, of the "Photographic" and "Photo-Mechanical" sections.

### Ordinary Grade—Pure Photography.

1. To copy two old collodion positives on glass to twice their height, one being a much over-exposed picture and the other correctly exposed, how would you proceed, and what mode of illumination would you adopt? What kind of plate would you prefer? (40 marks.)

The originals must be placed at a distance of one and a half times the focal length of the lens from its node of admission, and the camera extended so as to give an extension of three times the focal length from the node of emission to the surface of the focussing-screen. Any slight adjustment necessary to obtain sharp focus is now made with the pinion in the usual way. The light should fall obliquely on the glass positive, so as to avoid reflections, and, to the same end, the camera should be covered with a dark cloth, especial care being taken to cover the brass mount of the lens. A slow "ordinary" plate would be suitable. In the case of the over-exposed one, the best result would probably be obtained by removing the black backing, if this could be done safely, and making a transparency by contact; from this the enlarged negative could be made in the camera by transmitted light. If it is thought inadvisable to do this, the best course will be to use a slower plate (of the "photo-mechanical" class) and a strong developer, so as to secure greater contrast.

2. Having a camera with a total possible expansion of 12 in., what is the maximum focus of lens you could use for making the enlargement in Question 1, the positives being half-plate size (6½ in. by 4¾ in.)? Having a lens of 9-in. focus, what is the maximum size you could obtain? What type of lens would you prefer? (40.)

With so short an extension it would not be possible to employ a lens of greater focal length than 4 in. As in this case the original would only be 6 in. from the lens, there would be considerable difficulty in securing equal illumination over so large a plate. An anastigmat or wide-angle rectilinear would be suitable in this particular case, and if not of symmetrical construction the lens should be reversed in placing on the camera; that is to say, the back combination should be turned towards the original.

3. Give the formulæ for making developers for bromide paper with (*a*) amidol, (*b*) metol, (*c*) metol and hydroquinone. Let your reply be grains per ounce, or in grams per litre. (30.)

For amidol a typical formula is :—

| | |
|---|---|
| Amidol | 2½ gr. |
| Soda sulphite | 30 to 40 gr. |
| Potass bromide | ½ gr. |
| Water | 1 oz. |

The amidol *must* be added at the time of using the developer, whilst the sulphite is best not kept more than three days in solution before the developer is used.

A good metol formula, using potass. carbonate as the alkali, is :—

| | |
|---|---|
| Metol | 3½ gr. |
| Soda sulphite cryst. | 33 gr. |
| Potass. bromide | ¼ gr. |
| Potass. carbonate | 11 gr. |
| Water | 1 oz. |

An average formula for metol-hydroquinone is :—

| | |
|---|---|
| Metol | 1½ gr. |
| Hydroquinone | 1 gr. |
| Soda sulphite cryst. | 11 gr. |
| Soda carbonate cryst. | 11 gr. |
| Potass. bromide | ½ gr. |
| Water | 1 oz. |

4. May reasons exist for preferring one or the other of the developers mentioned in Question 3? If so, give any reasons. What are the relative keeping properties of those developers, and how would you ascertain their fitness or unfitness for use? (30.)

Amidol tends to give prints of purer black colour than metol-hydroquinone, the results with which are more of a bluish-black. Metol is best when the prints or enlargements are required soft in contrast, or when working from somewhat hard negatives. Amidol does not keep well; developer should not be used after the day of making up. Of the three, metol-hydroquinone has the best keeping properties, and the developer given in Answer 3 will retain its working power for weeks as a single-solution, but metol should be made up in two-solution, *i.e.*, the potass. carbonate separate from the metol. Colour of the developer is some, but not at all a safe, guide to fitness for use. The only certain method is to make a correct exposure, or series of increasing exposures on a single piece of paper, and see if the developer produces a print of proper strength and colour in the ordinary time—say, two to four minutes.

5. Give formulæ for mercurial intensification by a single solution, with particulars as to mode of use. In mercurial intensification by bleaching and subsequent darkening, name some agents available for the darkening, and describe their relative actions. (40.)

The mercuric iodide intensifier, consisting of 4 gr. to 5 gr. mercuric iodide dissolved in 1 oz. of water by aid of about 90 gr. soda sulphite. This intensifies plates which still contain traces of hypo from the fixing-bath. After intensification the negative is washed well and treated with an ordinary developer. If this is not done, the intensified image is apt to yellow in time.

In the bleaching and darkening process of intensification, ferrous oxalate developer increases density throughout the negative in proportion to the original deposit; the negative can be re-bleached and the process repeated as often as required. Results permanent.

Soda sulphite (10 per cent. solution) gives slight increase of density. Enough to give slight increase of "pluck" to negative.

Ammonia, about 20 drops per oz. of water, gives great density and brilliancy, but action is not even over the negative (good for flat negatives), and results are not of certain permanence.

6. Give full description of a method of glossing bromide paper and postcards, and state the relative advantages of the various supports used for squeegeeing. (30.)

Prints, unless on "hard-surface" paper, should be treated in an alum or formaline bath, or caused to become bone-dry before squeegeeing, Using glass plates, these are made thoroughly clean and dry, and dusted over with French chalk, which is lightly taken off with a duster, and plates polished with a clean, dry cloth. Wet prints are then laid on, air-bells pressed out with heavy roller or bar squeegee, and plates put in moderately warm place (well ventilated) to dry, when prints will easily strip off. A waxing solution (of beeswax in turpentine) may be used instead of French chalk. Glass gives the highest gloss, but is most liable to cause prints to stick. Ferrotype plate is better in this respect, and so are celluloid sheets, which also can be conveniently hung up.

7. A portrait lens used always with success in the studio was employed in the open air for a group, and all the negatives were more or less fogged. Can you suggest a cause and its remedy? The slides and their fitting were light-tight. (40.)

Apart from leaving the slot of the Waterhouse stop uncovered, the most probable cause would be insufficient shading of the lens. Even in the studio some sort of a shade or canopy is usually employed, and this would be more necessary out of doors. The brighter light would also cause fog (*a*) if the interior of the lens mount were not perfectly blacked, and (*b*) if the lenses themselves were not perfectly clean. Flare spot extending over the entire field is often present in portrait lenses, and in such a case care should be taken that no sky was included in the picture. The tendency to flare is minimised by using a diaphragm in front of the lens—almost in contact—instead of in the usual position between the lenses.

8. If bottles containing the following substances had lost their labels, how could you in a ready manner distinguish the contents of each bottle from the others? Potassium bromide, crystallised sodium carbonate, ammonia, silver nitrate. (30.)

Bromide: Add silver nitrate solution—a yellowish ppt. which does not dissolve on adding nitric acid. Soda carbonate: Test with litmus—blues red litmus paper. Ammonia: By the odour. Silver nitrate: Add solution of salt (or potass. bromide)—white (or yellowish) ppt., which does not dissolve on adding nitric acid. Of course, these tests would suffice only if the substances were one or other of the four mentioned in the question.

9. A screw in the upper part of a lens flange was not in its place, and thus there was a hole through the camera front. What effect would this have in photographing a landscape? (40.)

The screw hole would act as a "pinhole lens" and a more or less well-defined image of the most brightly lighted objects would appear upon the plate, their position being displaced from the primary image by the distance between the lens axis and the screw hole. The pinhole image would be the same way up as the lens image, and not inverted as in the case of a secondary image, or ghost, due to internal reflection in the lens.

10. Give in due order the operations that you would perform from the time that you have settled where you wish to set up the camera until you are ready to repack the camera, when exposing a plate on a building out of doors? (30.)

1. Unfold legs of tripod and attach to turntable of camera (or to tripod top). 2. Erect back and front of camera, and, having attached lens (3), roughly arrange subject on ground glass. If subject is too small on plate, use lens of longer focus or approach nearer, preferably the former. If subject is too large on plate, or if whole of it is not included, use lens of shorter focus, or go further away, preferably the latter. 4. Set camera back at right angles to baseboard, and adjust one leg of tripod so that edge of camera back is perpendicular, as shown by plumb-line on side or spirit-level across top of camera back. 5. If top of subject is not now properly included, raise front of camera (*i.e.*, lens). 6. If this is not enough, tilt camera upwards by means of tripod. 7. Swing back forward so as to bring it back to perpendicular. 8. Now focus sharply image in centre of plate, using full aperture, and then using magnifier; put in smaller stop, say *f*/11 or *f*/16, and see if detail is sharp to corners as well as centre. 9. Focus to get this; cap lens, insert dark-slide, and, when all is ready for exposure, but not before, draw shutter and expose.

11. Describe the effects in the print of a negative that is too "soft" and of a negative that is too "hard." (30.)

In the case of the print from the negative which is too "soft" (for the particular printing process), detail will be visible everywhere, but the print will lack contrasts; the shadows will be weak (greyish) instead of black, and the high-lights (sky, or white parts of clothing in a portrait), will be degraded, i.e., veiled over instead of being practically white paper.

In the case of the print from the negative which is too "hard" (again, for the paper), detail will be missing at one end of the scale or the other, i.e., in the shadows or the high-lights. If printing has been done for the shadows, the highest lights, probably also some of the half-tones, will not be fully printed, whilst if the printing is done until all detail is obtained in the highest lights, the shadows and other dark portions of the subject are blocked up in silver (or other deposits).

12. What advantages and disadvantages has a photographic record of an accident as compared with a drawing made by hand? (40.)

The photograph may record a phase of the accident that would have escaped the notice of a sketcher, and it may also afford valuable details which may be of use in elucidating the cause of the accident. The rapidity with which photographs can be taken is also a material advantage, for several negatives can be secured in the time required to make one sketch. Also the details recorded in a good photograph will be outside criticism with regard to accuracy. On the other hand, it is very much a matter of chance whether the photograph records the most important incident, for accidents are necessarily unexpected, and the photographer may not be ready at the critical moment. As a general rule, the photograph will only record the final effects, and the evidence is therefore incomplete unless supplemented by drawings, even if these have to be made from memory.

13. What is an exposure meter? Describe as many patterns as you are acquainted with, giving the method of using them? (30.)

An instrument for calculating the exposure as the result of either (*a*) testing the chemical activity of the light by means of a sensitive paper; (*b*) or by taking the results of tests of the strength of sunlight according to the time of day or year, and allowing for condition of the weather; or (*c*) by measuring the lightness of the darkest parts of the subject by the eye, usually by aid of a wedge of regularly increasing depth.

In the Watkins and Wynne meters (*a*) the sensitive paper is exposed until it just matches a standard tint in depth—the time for this is noted, and this "actinometer time" set against the speed number of the plate. The exposure is then given opposite a given diaphragm.

In the H. and D. "Actinograph" (*b*) the light-value corresponding with a given time of year and day is looked out, and is set against the stop in use. A second sliding scale is then set opposite the speed of the plate, when the exposures, for weather conditions from "very bright" to "very dull," are indicated on a scale of times.

In exposure "meters" of the *c* class the moving wedge or diaphragm is adjusted until the details in the darkest parts of the subject just disappear when viewed by the eye through the wedge, and this setting of the apparatus then indicates the exposure for a given stop or speed of plate.

# Photo-Mechanical Notes.

### A Luminous Watch.

There is being advertised in Germany now a watch that has the hands, and a spot at every five minutes, painted with luminous paint, so that the time can be distinctly seen in the dark. The watch also has an alarm. Such a watch has been found to be useful in developing panchromatic plates by time in total darkness. We believe that some watchmakers in England import these watches and sell them at something under a pound.

### Avoiding Reflections.

The "Zeitschrift für Reproductionstechnik," in discussing the subject of reflections when making reproductions, says that one of the worst kind of reflections come from originals on shiny paper. The writer suggests that if the original is not very valuable, this gloss may be removed by submitting it for some hours to the vapour of alcohol, allowing the vapour to impinge on the back of the original. Or if this is not satisfactory, the back may be repeatedly lightly painted with alcohol. This method failing, the original can be lightly sprayed with matt varnish, which will destroy the gloss. After photographing, the matt varnish may be carefully removed with alcohol.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between July 24 and 29:—

Cameras. — No. 16,903. Hand cameras. Valentine William Edwards and Houghtons, Ltd.

Dark-Slides.—No. 16,905. Dark backs or slides for photographic cameras. Alexander Loutchinsky.

Tripod-Stand.—No. 16,977. Tripod-stand for cameras and the like. William Wilkinson.

Stereoscopes.—No. 17,122. Stereoscope plate changers. Edwin Walter Kelly.

Cinematography.—No. 17,239. Process for making cinematograph pictures. John Owder O'Brien, for Edward John Wall, United States.

Cinematography.—No. 17,341. Substances suitable for the production of non-inflammable cinematograph films, and for other analogous purposes. William Henry Burney, Basil Scruby and David Aitkin Young.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Magazines and Changing-boxes.—No. 15,050, 1910 (June 22, 1910). The present invention relates to improvements in apparatus for changing photographic plates and films in cameras into which the plates or films (hereinafter generally referred to as plates) are inserted in light-tight packs with light-proof carriers for the plates, and the invention relates in particular to apparatus of the class wherein the changing is effected in a change-box provided with a change-slide into which the pack of plates is so arranged that at each withdrawal of the change-slide, catches provided on the change-slide withdraw the uppermost plate, which is then pushed in at the bottom, when the change-slide is re-inserted into the change-box. The object of the invention is to secure increased reliability of action and facility of manipulation of the apparatus.

One part of the invention consists in arranging the catches so that they engage the plates at the front end, during withdrawal, instead of pushing from behind, and in providing the package of films with a shutter slide, adapted to coact with the catches so that insertion of the shutter disengages the catches from the plates. No general claim is made to a shutter which, prior to withdrawal, lies between the catches and the plates.

The shutter may be provided in a simple manner with a reliable guide, occupying small space, by forming the package of two parts, one forming the receptacle proper of the pack and the second forming an end closing member for the receptacle, the two parts being slidable one within the other, with the shutter slide slidable between them, so that it does not require a special guide.

For reliability of action the plate must be securely engaged by the catches, and be held by them during the entire withdrawing movement, and there must also be adequate means for disengaging the plate from the catches. Reliable engagement is secured by providing one of the slidable parts of the package, which is moved by the change-slide during the changing process, with springs which bear upwards from the bottom of the package and are so arranged that when pulling out the change-slide their free ends press the plate against the catches. The end of the plate engaged by the catches is not disengaged from the springs until the change-slide is pushed in again.

In order to ensure release of the end of the plate engaged by the catches, the latter are provided with elastic abutments which tend to depress the plate and disengage it from the catches as soon as the pressure of the spring relaxes.

The plate-carriers may have detachable lugs clamped in a holder engaged by a device in the box. No general claim is, however, made to the use of lugs provided on plate-carriers for engagement with a holding device in the box, or to the use of clamps for the lugs. C. P. Goerz Aktiengesellschaft, 44/46, Rheinstrasse, Berlin-Friedenau.

Reducing Size of Cinematograph Films.—No. 493, 1911 (January 7, 1911). Cinematograph films at present in use generally consist of celluloid bands or ribbons having a width of about 35 millimetres and a forward movement of 19 millimetres; and the size of the pictures upon them is usually 25 millimetres by 19 millimetres. These sizes cause a considerable expense. It has already been proposed to diminish this expense, and there is no other practical method than that of reducing the size of the pictures upon the films, whilst any reduction of the films, either in width or length of movement, would entail a change, or rather important modifications of the machines now in use, which it is naturally desirable to avoid. The present invention has for its object a reduction of the pictures upon the cinematograph films by a simple and inexpensive process, but which realises perfectly the desired object. By this process it is possible to obtain a reduction to one half the size without producing the least diminution of clearness in the projection.

An ordinary deformer is employed, in which the effect of deformation is produced either by cylindrical lenses or by one or several prisms combined.

In the first place this deformer is inserted into the optical system of the machine employed for taking the pictures. It is possible to reduce the pictures to any dimensions, but a deformer will be chosen giving just a half of one of the sides relatively to the other. According to the arrangement given to the deformer in this machine, there will be obtained a deformation in height (vertical) or in width (horizontal) of the picture; that is to say, its reduction to half, without in any way diminishing the photographic field; that is to say, the amplitude of the scene which it is desired to reproduce. These pictures, thus deformed, will be projected by employing the same deformer, but naturally inverted, added to the object glass of the projecting apparatus, thus producing an inverse and equal deformation to the original one, and consequently obtaining the projection of a normal size. Ernesto Zollinger, No. 26, Via Catania, Turin, Italy.

Portable Dark-room.—No. 3,008 (February 6, 1911). This invention relates to portable dark-rooms for photography of the kind constructed of telescoping box-like casings. In dark-rooms of this kind it has hitherto been proposed to place two flat glass windows upon opposite sides of one of the casings, so that when the apparatus is in use non-actinic light may enter one window while the operator views the interior through the opposite window. In such a construction it is not possible to clearly view the interior of the dark-room when manipulating within the same, owing to the light entering the dark-room between the eyes of the operator and the edges of the window. According to the present invention, a casing is provided over an inspection opening in one of the telescopic box-like casings and carries a mask through which the user can clearly view the illuminated interior of the dark-room, without the manipulation within the same being interfered with. Alexander von Bajkay, 10, Csengery-utca, Budapest, VI., Hungary.

Apparatus for Drying Prints.—No. 15,463, 1910 (June 28, 1910). This invention relates to apparatus specially adapted for drying large photographic prints, such, for example, as prints taken by the ferro-prussiate or other process and used largely for reproduction of engineers', shipbuilders', and architects' drawings.

The method for drying the prints is of the same general nature as that which is used in the drying and ironing of certain textile fabrics; that is to say, a metal cylinder is mounted to rotate on a horizontal axis and an endless apron guided by guide rollers so as to make contact with a portion of the exterior cylindrical surface of the cylinder and to be driven by the latter. Means are provided for heating the cylinder and for passing the print over its exterior surface between the latter and the travelling apron.

The invention comprises certain characteristic features which render it of special advantage for the purpose for which it is intended.

The print to be dried is inserted between the apron and the cylinder at the place where the apron first meets the cylinder, and is drawn between the apron and the cylinder and makes a semi-revolution of the cylinder, during which half revolution it is dried and is then discharged from the machine. The heat applied to the cylinder is so regulated with relation to the speed of rotation of the cylinder that the print is completely dried in the half revolution but without sustaining any injury. The heat can be regulated by means of the main gas cock to suit prints printed on different kinds of paper or composite material, and moreover, the speed of the motor can, if desired, be regulated by means of resistances or otherwise. The drum being driven positively, its speed can be accurately determined.

In order to insert the print between the apron and the cylinder, it is first wound on a roller, which I will designate the wet print roller. The print having been wound on this roller, the spindle of the roller is placed in slots provided in the machine. The loose edge of the wet print, which has been wound on the roller, is now taken by the hands of the operator, and placed on the top of the feeder belt. By the motion of the feeder belt, it is drawn between the latter and the apron and then between the apron and the cylinder, and passes first over that portion of the cylinder which is heated by the gas jets.

The apron may be of any suitable material; but a material is preferably employed which is cellular or very porous so as to allow of the escape through it of the steam caused by the evaporation of the water on the print. The feeder belt likewise may be of any suitable, and not necessarily porous, material. It may either be formed in one piece; or several bands working in parallel may be employed, and, if desired, spaced some distance apart. Herbert Malcolm MacCallum, 175, St. Vincent Street, City of Glasgow.

Non-Halation Plates.—No. 16,421, 1910 (July 9, 1910). Processes are already known which also have for their object to avoid objectionable halation. Among other things, it is known to put a layer of coloured gelatine soluble in water between the emulsion support (the glass plate) and the emulsion. This process has, however, the disadvantage that when the emulsion is put on, the gelatine, in spite of the previous drying, is again dissolved, and gives off so much of its colour or dye to the emulsion, that the sensitiveness to light of the latter is affected.

If it were possible to harden the gelatine layer, the dissolving would be done away with. There are means for hardening, but hitherto they could not be used for this purpose. The one-sided layer hitherto used had, in order to be operative, to be of such thickness that after hardening, the opposite disadvantage would accrue; it would be too difficult to dissolve and remove the layer, and it could not be removed during developing, or could be removed only imperfectly.

It must be further pointed out that the reduced sensitiveness to light of the emulsion again affects the usefulness of the gelatine layer, as it requires a long exposure, the light finally penetrating through the gelatine layer, and halation being formed.

According to this invention, the above disadvantages are done away with, and the solution discovered is of great importance, as it is of great use to a large industry. This solution consists in the gelatine layer, which has hitherto been put on one side, being distributed in about half the thickness on both sides of the emulsion support.

The effect of this new process is briefly as follows:—

Owing to the said division, the single layer becomes so thin that it can be hardened (in a well-known manner), and yet in spite of that, can be easily removed during developing. On the other hand, the hardening prevents the layers from becoming dissolved by the emulsion. The reduction of the sensitiveness to light is thus done away with, the time of exposure remains normal, and the two layers of the total thickness equal to that of a single layer hitherto used, are sufficient for preventing the penetration of light (and consequently halation).

The improvement is so efficient that the layers can be made even thinner than half the thickness of the old layers, for even then they are sufficient with the short time of exposure required, and in view of their small thickness, the amount of dye stuff is so small that even if the layer should be dissolved by the emulsion, the said dye would not in any way affect the latter.

The process can be carried out for instance in such a manner that the emulsion supports (the glass plates) are prepared by dipping into a coloured gelatine solution, the proper thickness of the layer being obtained by regulating the consistency of the gelatine. The layers are then hardened in the known manner, but the hardening substance might also be incorporated in the gelatine solution. After the complete drying of the layer, the emulsion is applied in any desired well-known manner.

For colouring the gelatine solution according to this invention, all actinic colouring substances soluble in water, such as those of the saffranin, auramin, or like series, can be used. The coloured gelatine solution can be hardened with chrome-alum.—Adolf Herzka, 15, Gabelsbergerstrasse, Dresden, Saxony, Germany.

Cinematographic Apparatus.—No. 17,872, 1910 (July 27, 1910). This invention comprises a multiple image film for forming cinematographic pictures in natural colours by the superposition on a screen of similar images projected simultaneously through coloured screens, in which for obtaining a film to be used with the ordinary projecting apparatus, the images of selected shades which must be projected simultaneously and superposed on the receiving screen for reproducing the view in its natural colours, are grouped on a surface corresponding with that of an ordinary known image, this surface being determined, in width, by the useful surface of the film, and in height by the amplitude of the driving movement, which is the same for the apparatus for photographing the view and for projection. Also a multiple-image film of the kind set forth, characterised by the surface which corresponds with that of an ordinary image being subdivided into two or more similar images, obtained simultaneously by two or more object-glasses provided with selecting screens, and exposed during the same time in the unwinding of the film, the similar images, but of different selected shades, being then projected simultaneously through the same screens which have been used for taking the views. Also a method for obtaining a film of the kind set forth above, and a method of using it in which either as many object-glasses are used as there are images to be obtained or projected simultaneously, or a multiple object-glass is used comprising two or more parts of object-glasses connected by plane faces which allow of their juxtaposition, these object-glasses, or a multiple object-glass, being combined with circumferential radial or central marking devices which enable the exact superposition of the images projected on the picture to be effected. Pierre Ulysse, 66, Chemin de Chartreux, Marseilles (Bouches-du-Rhone), France.

## New Trade Names.

Windmill (Design).—No. 333,870. Chemical substances used in manufacturers', photography, or philosophical research, and anti-corrosives, but not including glue and not including any goods of a like kind to glue. W. S. Merrikin, Ltd., Greenland Paint, Colour, and Varnish Works, Bankside, Sculcoates, Kingston-upon-Hull, paint, colour, and varnish manufacturers. May 25, 1911.

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### FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Entries close September 1 (Britain), August 21 (foreign). Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.

October 11 to 20.—Bournemouth and District Camera Club. Entries close October 2. Sec., Miss Penrice, 41, Wellington Road, Bournemouth.

November 6 to 11.—Southampton Camera Club. Sec., C. M. Cooper, 203, Shirley Road, Southampton.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Temperature Difficulties in North China.

In this country—North China—(writes the Rev. B. M. McOwan in "Photography and Focus" for August 8) where the temperature varies from below zero to over 100 deg. Fahr., it is necessary in the summer to get all operations over as soon as possible. My practice is to develop as rapidly as possible with a developer that has been cooled down a well, to fix in fresh hypo, to place the negatives in a Hypono bath, also cooled in a well, to wash them for five minutes, and then hang them up to dry. My negatives are usually dry within an hour after developing operations begin. I find negatives finished in this way are quite permanent, and show no signs of being imperfectly fixed. In the winter the opposite conditions prevail, and everything has to be warmed up. In the cool weather any of the ordinary printing processes can be worked satisfactorily, provided the materials can be got out from home in good condition, which is not easy, seeing they have to pass through the Tropics on their way out. In the hot weather gaslight and bromide papers are the most satisfactory, though in the hot, damp days of July and August printing and enlarging operations have to be entirely suspended.

My practice in enlarging is to develop with amidol and tone in the hypo-alum bath. The latter process has the double advantage of hardening the film and rendering it obnoxious to a particularly pernicious insect called the "silver fish," which attacks the film of most photographic papers, and will spoil a big enlargement in a night. The waxing process, explained by the editor in "Photographic Enlarging," has a similar effect, besides improving the appearance of the prints. The mounting of enlargements, always a nuisance in hot countries, I get over by leaving it severely alone. After the print is dry, I make it as flat as possible, trim it to the required size, and then attach it to the mount by the two top corners with a very little dab of gum; it is then placed in the frame and pressed firmly against the glass by means of a thick pad of paper between the back of the mount and the back-board of the frame, which is then fixed in the frame in the usual way. It is a good plan to cover the whole of the back of the frame with a thick brown paper pasted on with flour paste, in which a little strong carbolic has been mixed. This prevents insects attacking the paste.

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# New Books.

"Hand Cameras." By R. Child Bayley. Published by Iliffe and Sons, 20, Tudor Street, E.C. Price, 1s. 6d. net.

A practical handbook by Mr. Bayley is always welcome, for it is certain to be practical and very sound in its advice. This book covers the ground very fully, treating of types of hand cameras, hand camera lenses, shutters, movements, and fittings, focussing, exposure, orthochromatic and telephoto work, and the practical use of the reflex, and while developing is touched upon, it is only dealt with so far as is necessary in connection with hand camera work. The author has carefully omitted the general photographic instructions which form so prominent and necessary a feature in most small text-books of this type, and his book is so much the more valuable on this account. Nothing mars a handbook more than unnecessary padding foreign to the main purpose of the publication, excepting, of course, errors. But naturally Mr. Bayley has avoided errors as well, save for what appears to be a misprint on page 70, where we assume that the "Multiplex" shutter described is really intended to be the "Multispeed." We also regret that he thought it necessary to state that depth depends on focal length and size of stop, "and upon nothing else whatever," for this is not strictly accurate when we compare different types of lenses. These are, however, minor points that in no way diminish the value of a very useful handbook.

# New Materials, &c.

**Porous Blotting Boards. Sold by John J. Griffin and Sons, Ltd., Kingsway, W.C.**

These are white stiff blotting sheets of good quality paper; quite fluffless, and, we are informed, chemically pure. One side being practically smooth they are eminently well adapted for such purposes as drying prints, or for blotting off the prints in the oil and bromoil processes. They are also very useful for removing the surplus water from negatives just removed from the washing tank. A packet of two dozen 12 x 10 sheets is sold for 1s., a price which is certainly very moderate, considering the quality of the boards which would not be at all ill suited for mounts when short of ordinary mounting papers.

**"Paragon" Plates. Sold by W. Ziegler, 14, Oliver Grove, South Norwood, London, S.E.**

The name of the Frankfort firm of dry-plate manufacturers of Dr. Schleussner and Co. has for many years enjoyed a reputation among Continental photographers in respect to all descriptions of sensitive gelatine plates, and though the Schleussner plate has come to some slight extent upon the British market, it is only quite recently that Messrs. Schleussner have been actively represented in this country. Their plates, under the name of "Paragon," are now energetically marketed in Great Britain by Mr. W. Ziegler, who, with a full knowledge of the requirements of British photographers, professional and amateur, has introduced a full line of the Schleussner products manufactured specially to fulfil the requirements of users in this country. The series of plates includes four of the ordinary description, two of the orthochromatic brand (one of which is for use without a filter), in addition to a non-halation plate, with the "backing" prepared as a film between the emulsion and the glass, and plates for process work and lantern-slide making.

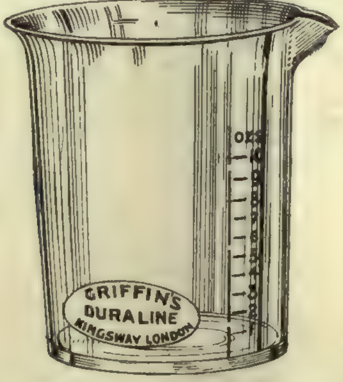
Our present notes must be confined to the plates of the ordinary kind, an ample supply of which was placed with us some time ago by Mr. Ziegler with the request that in due time we should state our experience with them in these columns. The plates are issued as "Fine Grain Ordinary," "Extra Rapid," "Special Rapid," and "Ultra Rapid," this sequence of names being used to indicate increasing degrees of speed. Since, both for studio and hand-camera photography, the chief interest is in a plate of the highest degree of speed, we may refer first to the "Ultra Rapid" Paragon, which, however, in the matter of sensitiveness and other qualities, is run very close indeed by the "Special Rapid." Our exposures, made upon a variety of subjects, have showed us that Messrs. Schleussner have here produced an emulsion of which any dry-plate manufacturer may be justly proud. The plate unites the very highest degree of speed with that fineness of grain which makes for the crisp rendering of detail as a consequence of the reduction of the reflection among the particles of the film, which in a plate suffering from this so-called irradiation can easily give rise to halation-like effects. In the matter of speed the Paragon "Ultra Rapid" is fully on a par with the fastest products of the emulsion maker's art, whilst in its range of gradation and non-liability to fog or veil during development, it responds to the most exacting photographic requirements. We found the latitude of the plate to be such that very considerable intentional departures from correct exposure resulted in very small differences in the negatives, and we can thus fully endorse the maker's recommendation of the plate for professional portrait work as well as for those hand-camera workers—and we number ourselves among them—who prefer a plate of the highest speed obtainable.

The "Special Rapid," while of slightly lesser speed than the "Ultra Rapid," is nevertheless a very fast plate, suitable both for portraiture and rapid hand-camera work, whilst those workers who pin their faith to a plate of more moderate speed, even for instantaneous exposures, should find themselves well provided for in the "Extra Rapid." For landscape work, and particularly where the negatives are to be used for enlargements of great size, the fine grain "Ordinary," which is by no means a slow plate, may be selected, and is an excellent plate, which dealers may place in the hands of their beginner customers whose hand-camera work will be done usually in bright light. Professional and commercial workers will appreciate the value of a highly fine-grain plate for many technical purposes. The instructions for the use of the plates recommend metol, glycin, and pyro developers, in regard to which full directions, together with many other useful hints on negative making, will be found in the "Paragon" hand-book, obtainable free from Mr. Ziegler. Our professional readers, who are naturally well advised not to adopt a new plate without ample trial, are afforded the opportunity of putting the "Paragon" plates to the test by the offer which is now being made by the agent to supply three dozen "Paragons" of half-plate size, for a quite nominal sum. Such a quantity is a fair and reasonable one upon which to make a working trial in the studio, and this offer, announced elsewhere in our pages, will doubtless be one of which our readers in considerable numbers will take advantage.

# New Apparatus, &c.

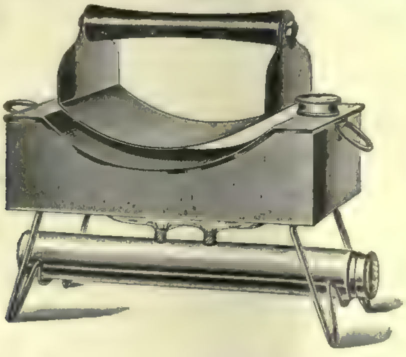
**Duraline Measures. Sold by John J. Griffin and Sons, Ltd Kingsway, W.C.**

These measures are made of specially toughened glass, designed to stand either rough usage or hot solutions. Accidents easily happen in the dark-room, while hot solutions are required for many purposes, and the breakage of measures is such a frequent cause of annoyance and expense that these introductions should be very welcome. Further, the measures are impervious to ordinary rough treatment, such as falls or blows, which would at once break ordinary glass graduates. The measures are of tumbler form, with a lip for pouring, and gradations up one side. They are heavy, and not easily upset, while their toughness ensures them against damage if they do meet with mishaps. Two sizes are obtainable, 4oz., priced at 1s. 4d. each, and 10oz., at 1s. 9d. These are rather higher than the usual prices for such sizes, but their unbreakable nature nevertheless makes the Duraline measures cheap investments.



**The Primus Dry-Mounting Press. Sold by W. Butcher and Sons, Camera House, Farringdon Avenue, E.C.**

This is a novel and very cheap form of dry-mounting apparatus, with some good features that suggest the main idea to be worthy of consideration for larger machines. In effect the apparatus is designed to carry out the method of mounting advocated by the late Mr. Horsley Hinton, who coated the backs of his prints with a strong solution of shellac, and then when the shellac had become tacky ironed them down on to the mount. The main feature of the Primus Press is the provision of a special type of iron for the pressing process, the iron being made very much on the lines of a hand blotter, and of a special heater with which the presser can be raised to and kept at a constant temperature. The heater consists of a small copper water tank, shaped at the top to fit the curved face of the presser, and carried on folding legs. The tank is filled with hot water, and this is raised to the boiling point by a very simple form of spirit torch which can be placed underneath. With this arrangement the temperature of the presser is always constant, and just right for the mounting operation. A bottle of shellac solution and a brush are provided with the apparatus, the whole outfit being sold for 8s. 6d. The method we found to work admirably on either stiff card or very thin paper mounts, and it should be extremely convenient for mounting into an album.



# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

SATURDAY, AUGUST 12.

South Suburban Photographic Society. London Outing.
Southport Photographic Society. Excursion to Chetham's Hospital.
Hackney Photographic Society. River Trip.

MONDAY, AUGUST 14.

Southampton Camera Club. Print Mounting Competition.

TUESDAY, AUGUST 15.

Hackney Photographic Society. Exhibition of Prints.
Bradford Photographic Society. Excursion to "Marley Hall."

WEDNESDAY, AUGUST 16.

North Middlesex Photographic Society. "Platinotype." A. H. Lisett. Print Competition, Outing, Aldenham.
Southampton Camera Club. Outing to Wherwell Village.

# Commercial & Legal Intelligence.

LEGAL NOTICES.—A first and final dividend of 2½d. in the £ has been declared in the bankrupt estate of Albert A. Archer, photographic artist, 140, Kensington High Street, W.

# News and Notes.

CITY AND GUILDS EXAMINATIONS.—The following are the prize winners in the examinations of the City and Guilds of London Institute, appearing to the list recently issued by them. According to this it would appear that no prize was awarded in the Honours grade in Pure Photography, and that the first prize was not awarded in the Photomechanical section in the Honours Grade.

Pure Photography.—Ordinary grade: First, £1 10s. and bronze medal, A. Dashwood-Howard; second, £1 and bronze medal, N. F. Horne; third, bronze medal, A. S. Gannon. The first two prize winners came from the Thornton Heath Polytechnic, the third from the Battersea Polytechnic.

Photomechanical Processes.—Honours grade: Second, £2 10s. and silver medal, S. Sahasrabudhe. Ordinary grade: First, £1 10s. and bronze medal, H. D. Halstead; second, £1 and bronze medal, J. Hurst. All three of these winners came from the Manchester Municipal School of Technology.

TURIN EXHIBITION.—Messrs. Thos. Illingworth and Co., Willesden Junction, London, N.W., send us a photograph, herewith reproduced, of their stand at the Turin Exhibition, where they are showing enlarged photographs made by themselves on the Illingworth carbon tissues, in addition to enlargements on the many grades of "Illingworth" bromide papers, and prints on the Zigas and Slogas and Enitone self-toning papers.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## EXPERIMENTS ON SOLARISATION.

To the Editors.

Gentlemen,—Some of the results described by G. A. Perley in the articles on "Experiments on Solarisation" which have just appeared in "The British Journal of Photography" are interesting, but his conclusions are open to criticism on many sides. I should like, at any rate, to point out, regarding Abney's experiment in reference to the Herschel effect, that the description of it given in "Instruction in Photography" (11th edition, page 53) concludes with these words:—"When the red disc was thrown on the plate without any white illumination there was no developing action, showing that the reversal was not caused by over-exposure." That entirely disposes of Mr. Perley's explanation of the cause of the phenomenon observed. There is, in fact, abundant evidence that the Herschel effect is totally distinct from the ordinary reversal resulting from prolonged exposures.—Yours faithfully, H. J. CHANNON.

20, Lewisham Hill, S.E.
August 4, 1911.

## SEEING BEFORE THE EVENT.

To the Editors.

Gentlemen,—Your correspondent Mr. Osborne says that he has never heard Dr. Abrahams lecture. That is not of the least importance, and if his suggestion that a recital of the chief points would be of general interest is an invitation to me personally, I beg most respectfully but emphatically to decline to waste my time in enlightening him upon the photographic topic, with the details of which he might have made himself conversant before he put pen to paper.

His last remark, in which he "fails to find in my experiments any endorsement of what you yourselves have said," seems under the present circumstances nothing less than a deliberate attempt to be offensive. When you yourselves put forward a figure of twenty yards, I ventured to suggest that this distance was mere conjecture on your part, and without any more consideration you might as easily have said 200 yards or 15ft. It would be easier, I think, for your correspondent to conduct my experiments than for me to obtain a hammer and wedge; besides which he could have the assistance of his boy, of whose acoustic capabilities he seems justly proud, until which time it would be more courteous to refrain from prejudicing me in your eyes by quoting mere haphazard figures as a proof of my comparatively dull perception.—Yours faithfully,

B. M.

[The distance of twenty yards that we suggested was more or less a conjecture, as our correspondent says above, and as we endeavoured to explain at the time. It was founded on the fact that we had just had an opportunity of testing the point in question at about that distance, and we are quite prepared to believe that the true distance is much greater.—EDS., "B.J."]

## THE RELATIVE RAPIDITY OF LENSES.

To the Editors.

Gentlemen,—I read with much interest your "Ex Cathedra" note on the relative rapidity of lenses, which appeared in your issue of the 4th inst., and beg very humbly to endorse your remarks.

From the earliest days of photography writers of text-books, experts, and others, have been drumming it into us that *f*/8 is *f*/8 with all lenses, and that the exposure must be the same with *f*/8, no matter what type or size of lens is used. Most practical workers, who, as a rule, do not bother very much about theory, have never failed to give a trifle more exposure than meters or calculations gave, just "for luck," when using very large plates. In my Paris days, when working on furniture in the Louvre with other operators, and with plates between 27 x 33 cm. (say 12 x 10 ins.) and 50 x 60 cm. (say 19 x 23 ins.), it was our invariable custom to give extra exposures "for luck," and the larger the plate the more "luck exposure" the plates had. This was necessary, as we found by experience that large plates did really require more exposure than small ones.

Even in England at the present time amateurs work on these lines to some extent, be it consciously or unconsciously. Many amateurs to-day go out with a hand camera, perhaps of the reflex type and fitted with a focal-plane shutter, and probably get good results; but suppose that same shutter had a whole-plate, or even a half-plate, instead of his hand camera, would he give the same exposures when using the larger cameras as when using the hand camera? I think not. Amateurs with half-plate cameras, as a rule, give longer exposures with a half-plate stand camera than they do with a smaller hand camera, even though the value of the stop in the lens may be the same. In theory this is, of course, wrong, but in practice it proves to be right. The difference, however, between a 3¼ x 2¼ ins., or even a quarter-plate, and a half-plate is not very great, but the fact remains.

Some time ago I carried out some experiments, which were more or less successful, with the object of proving that large plates did really require more exposure than small ones. It was somewhat difficult to prove my point with actual negatives, and finally I decided to use the Chapman-Jones plate-tester for the experiments, which were carried out in the following manner:—A quarter-plate camera fitted with a lens of 4 inches focus was taken, the plate-tester was put in in place of a plate, and in contact behind it was placed a piece of gaslight paper. Stop *f*/8 was put in the lens, and the whole exposed to a brilliant blue sky, such as we have been favoured with this summer, for exactly one minute. For the next experiment a 12 x 10 camera was used, and by means of a carrier the plate-tester and gaslight paper were used in the dark slide. A lens of 16 inches focus was used with *f*/8, and an exposure of one minute was given to the same sky, and within a minute or two of the previous experiment. Both pieces of paper were then developed together, and for the same time, the two quarter-plate pieces being cut from a halfplate sheet. Although in theory both had precisely the same exposure and after-treatment, that taken in the large camera, and with the smaller focus lens, received less light than that taken in the smaller camera, and is therefore under-exposed, presuming, of course, the first to be correctly exposed. The difference, it is true, is not great, neither should it be, but there is a difference, which can be seen upon the original prints. [Not reproduced.—EDS.] In the first, taken with the small camera and lens, square No. 14 shows distinctly, and No. 15 faintly; but in the second, No. 13 is the highest number which shows, and there is little or no trace of Nos. 14 and 15. Had the prints been made on bromide paper and developed without bromide, more squares would have shown, but they might not have shown the difference in the exposures any better than these prints. Some mathematical expert—say Mr. Welborne Piper or Dr. Mees—will perhaps some day kindly go further into the matter, and tell us the proportionate increases needed with large lenses of long focus, or I may try to do it myself when business is slack. To carry out these experiments scientifically needs care, thought, time, and the most accurate of apparatus, but with every-day apparatus and a fair technical knowledge a practical worker can, I think, prove to his own satisfaction that larger plates need more exposure than small ones.

While on this subject I would like to mention another point which somebody might clear up for us, and that is the difference stops make in the exposure. We all, I think, know the rule of finding out the relative exposures by squaring the stops, but is this absolutely correct? Theorists say it is, but practical workers, as a rule, doubt it. My experience is that the smaller the stop the more exposure one must give over and above that given by the rule. We know, for example, that f/16 requires four times the exposure necessary with f/8, which is perhaps correct, as the difference is not great. At the time of making the experiments recorded above I made others in practically the same way to prove my experience with stops. I used f/8 and f/64 under the same conditions, and Figs. 1 and 2 are the results. Fig. 1 was taken with f/8, an exposure of 30 seconds being given, but on another make of paper. Now, we are told that f/64 requires sixty-four times the exposure of f/8; Fig. 2 was, therefore, exposed immediately after Fig. 1 for thirty-two minutes in the camera, at midday, the sky being a brilliant blue and cloudless. It will be seen that Fig. 2 received less exposure than Fig. 1. In the latter, square No. 12 shows very distinctly, and No. 13 very faintly; but in No. 2, which was taken with the smaller stop, the No. 12 square is scarcely seen at all.

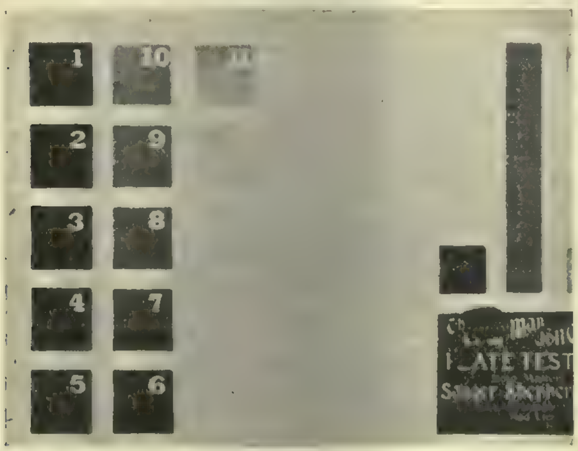


Fig. 1.

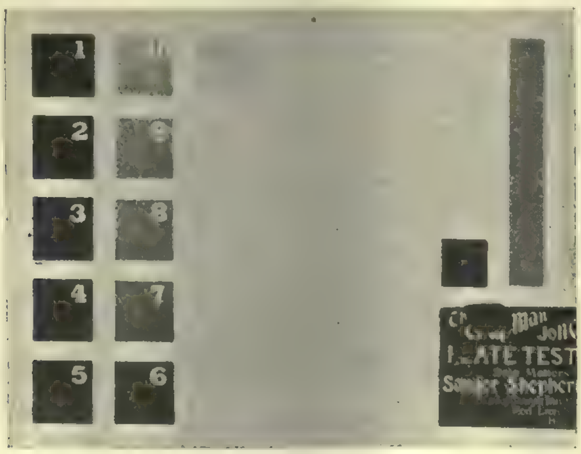


Fig. 2.

These experiments were carried out some time ago, with no thought of publication, but your note reminded me of them, and they may be of service and interest to some of your readers, who, like myself, enjoy probing into problems and attempting to elucidate what appear to be mysteries.

The difference in either experiment is not very great, and will probably not interfere with the working methods of your readers, but it is as well to know what really happens, even if we take little or no notice.—Yours faithfully,

L. Tennant-Woods.

[Our correspondent sends prints illustrating the effects of his first experiment, which show clearly that the short-focus lens gave more exposure than the other. The differences are, however, too slight to be reproduced in half-tone.—Eds. "B.J."]

## SUNDAY CLOSING AND CUT PRICES.

To the Editors.

Gentlemen,—I follow with great interest the matter in your correspondence columns respecting Sunday closing, price cutting, and the photographic state generally. I may say that I am a firm believer in Sunday closing, having never yet opened my studio on a Sunday, and despite bad trade and price cutting (which I do not do), I can still go on successfully. There are many grievances we all like to display for discussion, and though I have no patience whatever with the cheap man and price-cutter who must have work at any price, the action of some of those who consider themselves the cream of the profession is not very creditable. The other week one of your correspondents complained of a so-called professional man coming into his district, and, as it were, stealing his business. Well, I know where a similar instance occurred, when one of these high-flown firms wrote the town clerk asking for the names of all the town councillors and mayor. These evidently received free sittings, with the offer that a framed picture of the mayor and councillors would be presented for the council chamber. Of course, in the invitation to come and sit (forty miles away, mind you) was one price for cabinets, all a guinea per dozen upwards.

Now when men of this so-called standing stoop to this sort of mean work, what can we say to the struggling cheap man? I know a town where three years ago one F.R.P.S. advertised three cabinets for 2s. 6d. for Christmastide. The following Christmas the advertisement was risen to three for 3s. Last Christmas it was conspicuous by its absence. I suppose he found it did not pay the price of his advertisements. This was done in a town where there are three others, all respectable photographers, without title all of them, yet this F.R.P.S. was the only one in the place to advertise at all and was the only one to do the price-cutting. If titles are given for purposes of what I call gulling the people rather than for ability, then I should propose that the standard of attainment for the title be considerably increased.—I am, yours,

An Observer.

## MULTI-SPEED VERSUS FOCAL-PLANE.

To the Editors.

Gentlemen,—In your issue of July 21 you refer to an article of mine in a contemporary in which I describe some experiments dealing primarily with the latent period of a reflex camera, and incidentally with the relative efficiencies of focal-plane and multi-speed shutters.

I have only just returned from abroad, or I should have written you sooner, for I am absolutely and utterly bewildered by your reference to the Multi-speed's efficiency. You say "it is by no means clear why the latter should be so much more efficient; from its construction it should be a shutter of rather low efficiency."

I wonder if some revolution in your opinion of the efficiency of shutters can have taken place recently. You, more than anybody in the world of photography, have established the question of speeds and efficiencies of shutters upon a definite scientific basis. In 1909, week after week, you opened your columns to an exhaustive correspondence, strengthened by lucid editorial notes, all combining to strike the death-knell of the ancient legend that a focal-plane shutter must, *ipso facto*, have an efficiency of 100 per cent.

And, finally, in your issue of December 9, 1910, in an editorial note you review an article of mine in the "Photographic Monthly," in which I express surprise at the Multi-speed's efficiency; and at considerable length you explain how it is that the Multi-speed has so high an efficiency relative to a focal-plane shutter. These remarks of yours have gone all over the world, they have been copied and re-copied, you have stimulated me to use the Multi-speed because of its efficiency—for I regard your teachings as indeed, *ex cathedra*—and now I am literally amazed at such a *volteface!*

I confess I had not considered the possibility of one lens being much faster than the other in my tests. You suggest this as not improbable. I respectfully beg to differ. Both lenses were of same aperture, and, both being high-class anastigmats of very similar formula, I cannot bring myself to imagine that there could be much difference in their speeds.

You say that possibly my focal-plane shutter has an exceptionally low efficiency at high speeds. Has not every focal-plane shutter a low efficiency at high speeds when a wide aperture lens is used? Is this not your very own teaching? [Vide "British Journal of Photography," December 9, 1910, and "British Journal of Photography," 1909, *passim*.] My focal-plane shutter at maximum speed (lens aperture *f*/6) has an efficiency of only 45 per cent.—very accurate testing. The Multi-speed's efficiency is probably 55 per cent., or perhaps a little more with low speeds. I am not concerned.

You suggest to me that measured tests of both shutters and lenses would most likely clear up the matter, and perhaps afford some valuable new information. I confess I am too bewildered to know where to begin.—Yours very truly,

St. Bartholomew's Hospital, E.C. ADOLPHE ABRAHAMS.
August 4, 1911.

[Dr. Abrahams seems to have misread our various articles on this subject. There is no *volteface* in our note of June 21 of this year, because we said precisely the same thing in the earliest note to which Dr. Abrahams refers. In the "B.J." for December 9, 1910, we described the Multi-speed as essentially a shutter of low efficiency when considered by itself and without a lens. In the only reliable test that we know of the average efficiency was 47 per cent., which is undoubtedly low. In spite of this fact the results show high efficiency as compared with focal-plane exposures, and the puzzle is to find a feasible explanation. One is that the general use of a large-diameter shutter with a lens of relatively small aperture increases efficiency, another is that the efficiency of a focal-plane shutter is even less than it is generally believed to be. For our own part we think both explanations are true, but measured proofs, which are the only ones of any value, are not apparently available. In any case, we are not satisfied that the ordinary methods of measuring efficiency with a focal-plane give correct results. We think that if Mr. Abrahams again compares our note of July 21 with that of December 19 he will see that there has been no revolution at all in our ideas of efficiency. With regard to varying speed of the two lenses this point has been raised only very recently, and while we have no doubt that the rapidities of lenses of the same aperture may vary very considerably, no figures are yet available. In the case of two anastigmats of the same focal length and aperture and similar design, it is not likely that any material difference could exist unless one lens happens to be slightly discoloured. If, however, the designs differed to any considerable extent we should expect a marked difference. It would be safe to use the same lens with the two shutters. We would suggest that the most useful tests from the informative point of view would be the following:—Test Multi-speed for efficiency, both with and without lens, and so obtain a factor showing the increase due to the smaller lens-aperture. Test focal-plane by actual quantitative test, disregarding the usual method which involves calculation. The results should give all the information required, and clear up several knotty points.—EDS. "B.J."]

# Answers to Correspondents.

*** *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

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INK-PEN.—We know of no such plate.

SHELDRAKE.—Try either A or B, or a mixture of the two.

SUBSCRIBER.—Write for particulars to the Howellite Co., 22, Farringdon Avenue, London, E.C.

H. K.—All four are very enterprising firms. Better address them direct, sending them sample prints.

SUFFERER.—1 and 2. Conditions are very much the same as here, though we should say they are more high-class firms. 3. "Camera Craft," 713-715, Call Building, San Francisco, Cal., is the best for your purpose.

CANADA.—My husband and self are desirous of going abroad (Canada). Could you give advice of how we could obtain a situation for the two together if possible. We both understand the business thoroughly right through. If not together, for my husband alone as manager-operator, etc.—J. MORTON.

We can only say, as we have to many other enquirers, that the opportunities for business in the Dominion are growing at a rapid rate, but it is not possible to give precise advice. You would need to look for a situation in a large town, and later, with some capital at your command, might profitably start for yourselves in some township, in the western provinces. If you are prepared to take any kind of work, photographic or otherwise, which offers itself, you will stand a chance of success. You must remember that Canada is still in its early stage of development.

BLUE LINE PAPER.—Can you tell me if there is a description of copy-paper on which prints may be made from ordinary tracings or drawings, so that the copies are positives in blue, that is, pure blue lines on a white ground.—T. F. E.

Certainly, this is the well-known Pellet paper, which is not used so much now as was formerly the case. The method of preparing it as follow:—

| | | | |
|---|---|---|---|
| A. | Pure gum arabic | 4 ozs. | 200 gms. |
| | Water | 20 ozs. | 1,000 ccs. |
| B. | Ferric ammonium citrate | 10 ozs. | 500 gms. |
| | Water | 20 ozs. | 1,000 ccs. |
| C. | Ferric chloride (crystallised) | 10 ozs. | 500 gms. |
| | Water | 20 ozs. | 1,000 ccs. |

Add 8 vols. of B, then 5 vols of C to 20 vols of A, in small doses with constant stirring. The prints are developed on 10 per cent. solution of potass ferrocyanide, and "fixed" in 1.25 sulphuric acid (specific gravity 1.98).

DIAGRAM LANTERN-SLIDES.—Can you give me a few hints on getting proper clearness and brilliancy in slides made from illustrations in books. I have some commercial slides which are everything that could be desired, intensely black lines on a perfectly clear ground, but I cannot get anything like these results using black-tone lantern plates and the usual, metol-hydroquinone, developer.—GLASGOW.

Most of the commercial slides are made by the wet-collodion process, which easily yields the utmost intensity of line and clearness of ground, but you will get greatly superior results with the plates you are using if you employ a hydroquinone developer, say, the formula which Thomas gives for their plates, but using double the strength, that is, without diluting with the equal volume of water. It is a good plan to over-develop considerably—you can go on until the slide is black all over—and then, after fixing and a slight rinse, to reduce with Farmer's reducer, applied on a piece of cotton wool.

Toned Bromides.—1. Do you regard the red chalk tone produced by Schlippe's salt (on bromide print) as permanent? 2. I have seen some very nice prints produced on "Antique Seltona." Do you think that papers of the self-toning variety are permanent—that is, reliable enough for good class professional work? 3. I am enclosing a print sulphide-toned—you will see that there is a slight veil or tone over it. This I always get in my white background prints, whereas I am anxious that the whites should be as pure as possible and not tinted like this. Is there any way I can remedy the matter?—Dawson.

1. Yes, it is a very permanent tone, though not quite equal in this respect to that with sulphide. 2. Yes, if the usual precautions are taken as to fixing and washing. 3. The fault lies in the prints, which require to be somewhat more contrasty if they are to be sulphide-toned. We advise you to use a gaslight paper amenable to sulphide toning, or get extra density in your negatives. Recollect that the sulphide tones slightly soften the contrasts in the print.

Baby Show.—With a view to creating interest in my studio and making myself known in a town to which I have lately come, I was thinking of holding a competition for the prettiest baby. Can you tell me what the rules of such a competition should be, and where I could get the photographs judged? I may say that for two special days I am offering to photograph any baby at a greatly reduced price, and these photographs along with others that people may have taken in the ordinary way, are to be sent in to me (after they have been paid for), and I shall give a prize to the best, second, and third. Any hints would be esteemed a favour.—W. Blackstone.

We do not know that any rules are called for. If such a scheme is thought to be advisable, it is best to arrange it as free from all restrictions as possible, but we certainly advise you to persuade some outside person to make the awards. Perhaps as good a plan as any would be to issue a small advertisement of the competition in your local paper, and no doubt if you did this the editor would be willing to judge the portraits, and thus relieve you of the trouble which would inevitably follow you yourself acting as judge.

Methylated Spirit.—I have been advised to use methyl alcohol in my work, and it has been suggested to me that the old-fashioned methylated spirit will answer the same purpose. Can you inform me if this is the same as what is now described by the Excise as "industrial spirit"? The Excise officer maintains that this industrial spirit is the same as the ordinary methylated spirit, except that it is adulterated with only one-third the amount of naphtha, and he also maintains that the basis of both is pure alcohol. He cannot inform me what kind of naphtha is used, and he says wood spirit is unknown to him. Are there several different names given to the same article?—Methyl.

Methylated spirit contains a little light petroleum oil as well as naphtha, while industrial alcohol contains naphtha only. We believe that wood naphtha is used. No doubt the basis of both is pure alcohol, but the final result is not pure by any means. Methyl alcohol is a different thing altogether to methylated spirit. The petroleum in methylated spirit sometimes gives trouble, but industrial alcohol will serve for most of the purposes for which alcohol is required. There is, however, some trouble in getting it, and a special license is required.

Sharpening Wheel Trimmers.—Many thanks for your kind reply in last week's "Journal" *re* sharpening wheel trimmer. I regret to say, however, that I have mislaid the "Journal" for December 9, 1910, containing the required information. I remember noting same at the time, but failed to keep a record of it. I believe the gist of the paragraph was to run the wheel in a groove of carborundum powder, but I am sorry to say I have forgotten the proper means and method of carrying it out. I feel sure that you would benefit other members of the profession, as well as myself, if you would kindly repeat the desired information in the "Journal" in as lucid and detailed a manner as possible.—Wheel Trimmer.

Select a piece of soft, straight-grained wood and run the wheel along the grain until a groove is formed fitting the wheel edge. Then take a sharp-edged knife and run it along the groove so as to make a cut just where the edge of the wheel comes. Sprinkle a little fine carborundum powder in the groove, and then run the wheel backwards and forwards in the groove until sharpened. The knife cut is to prevent the sharp edge of the wheel from being blunted.

Developing in Daylight.—I have recently made for my own use a piece of apparatus which I use for the development of plates without a dark-room. I use the apparatus in my own home, where I have not the facilities for a dark-room, and also, as the bulk is not much more than a half-plate camera case, I find it convenient frequently to take it with me on an excursion and develop plates at the time. I think that many others would be glad of an apparatus of this kind, and my object in now writing you is to ask your advice as to the steps I should take in getting some manufacturer to place it upon the market. Would you advise me to take out a patent for the apparatus, and what would be the cost of doing this?—F. Thethwaite.

Innumerable pieces of apparatus answering to the description you give have been designed, and in many cases patented, yet we do not know of one, for plates, that has ever been a commercial success. The custom of the amateur photographer, even if he has not a proper dark-room, is to make do with a bath-room or some corner in the house which he can darken or use at night. Our candid advice to you is not to waste your money over patent fees nor, if your time is of any value to you, to trouble about placing the apparatus on the market.

Flare Effects.—Flare and fog in an anastigmat lens have considerably vexed me. It appears to be the weakness of such lenses, but what conditions cause the trouble? I have used an 8-inch lens hood and stopped down to *f*/22 without success when sky is included on the plate, and I was astonished to find a diffused, round foggy spot, dis-central, in an interior where the only light was skylight along one side of room, parallel to which I worked, and which was several feet away from the position included on the plate. A Cooke lens gave no trouble. What angle of light causes flare or fog? Or to what angle can one work to the light to ensure its absence? E.g., if the lens were at 90 deg. angle, would flare be avoided by keeping bright light outside an angle of 45 deg., half the angle included by the lens. Sorry I cannot express myself more clearly, but what I want is some kind of safe working rule.—W. Plucknett.

The lens you mention is an early type of uncemented anastigmat rather prone to the defect you describe. We believe it is no longer listed by the manufacturer. The effect will be evident whenever a bright source of light falls on the lens. The flare effect is likely to be a continual source of trouble, and we should advise you to dispose of the objective and get one of more modern type. We cannot suggest any remedy that would be likely to give you satisfaction. In some cases a hood might be useful, but in many it will be of no avail.

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No. 2676. Vol. LVIII. FRIDAY, AUGUST 18, 1911. Price Twopence.

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## SUMMARY.

Mr. Gordon Chase, in an article on tank development, deals with this question from the point of view of the professional photographer. He describes a simple adaptation of a reliable tank, gives formulæ and times of development, and details the few precautions which are necessary. He describes the simple procedure in working for different types of negative when using a tank. (P. 624.)

An American professional photographer has described how he (and his wife) doubled their business by looking after branches of work outside of studio portraiture. (P. 623.)

We return to the question of the decomposition of solutions of soda sulphite, which engaged our attention in 1907. The test solutions of various brands of sulphite have been retained since that time, and the results of further examination of them are contained in an article on page 622.

Dr. A. P. H. Trivelli, in a further chapter on the use and production of safe-lights for the dark-room, deals with the design of the dark-room lamp to ensure agreeable illumination and efficient ventilation. He considers the best colour for the walls of the dark-room. (P. 628.)

A practical hint on the packing of half-tone blocks for posting will be found on page 633.

A writer in the "Amateur Photographer" makes some recommendations for dispersing flies from studios and other rooms. (P. 636.)

The adaptation of the electric torch, sold by dealers in electric supplies, for use as an efficient and portable dark-room lamp is the subject of a note on page 622.

We give this week model answers to the question set in the Honours grade of the examination in Pure Photography held by the City and Guilds of London Institute. (P. 631.)

Designs for folding reflex cameras, types of construction of anastigmat lenses, figure with other matters under "Patents of the Week." (P. 633.)

An account of celluloid manufacture in Japan has been published by the Board of Trade. (P. 637.)

The latest date for receiving British entries for the forthcoming London Salon of Photography is September 1. (P. 638.)

## EX CATHEDRA.

**Hydrazine Plates.** Following the publication of the paper by Mr. Sanger Shepherd on the new hydrazine plates of Mr. Hay Caldwell, in our issue last week, we have had an opportunity of examining a large number of test exposures on the new plates made by the Paget Prize Plate Co., Watford, by whom the hydrazine materials will very shortly be placed on the market. These tests represented degrees of over-exposure from 20 to 320 times and more, and demonstrated the extraordinary capacity of the plates to yield negatives which are first-rate as regards tonal correctness and convenient printing density by very slight modification in the developer (and this by varying the strength only), or even, when the degrees of over-exposure are not tremendously different, without any modification of the developer. These special features of the hydrazine plates, it will be understood, fit them pre-eminently for stand-camera photography, in which work their properties call for a revision of our ideas of "correct" exposure. The dictum to "expose for the shadows," so often a counsel of perfection, becomes advice which it is easy to carry out, and results in technically perfect negatives of subjects which would be regarded as beyond the powers of the photographic plate. We shall shortly have occasion to refer at greater length to the remarkable features of hydrazine emulsions on both glass and paper. Meanwhile, it is sufficient to say that photographers everywhere will eagerly await announcements from the Paget Prize Plate Co.

* * *

**A Travelling Dark Lamp.** One of the troubles of the touring photographer is the provision of a suitable safe-light for plate-changing or developing. While many portable lamps are on the market, it would be difficult to say which of them is both convenient and effective, as well as really portable. The average cheap folding-lamp of this type depends on a night-light or candle end for the illumination, and usually on fabric for its safety. As a rule, it gets so hot that a glass safe-light is out of the question, which renders safety impossible; while invariably it deposits melted candle grease and soot in all kinds of inconvenient places. A proper candle lamp is better in all respects, but it is usually too bulky to be readily portable. Obviously, an electric lamp is the most desirable article, but the few on the market do not seem to have been designed by practical men. A pocket-lamp with a red-glass bull's-eye and a feeble dry battery that is exhausted in about a week is of no use at all. Efficiency and safety are both essential, and the few efficient lamps that we have met with are distinctly unsafe, besides being somewhat bulky. For our own use we have adopted a very simple expedient that works perfectly. The lamp is an ordinary electric torch, nine inches long and 1½ inches in diameter, and therefore of a form that is very easily packed. It contains a metallic filament lamp and a dry battery of over four volts, that gives a brilliant light and lasts extremely well.

* * *

**Safe-Lights for a Torch Portable Lamp.** To convert this into a safe-light all that is necessary is to unscrew the bull's-eye, drop in behind it a small circular safe-light, and then replacing the bull's-eye. The lamp being exceedingly powerful and close to the safe-light, the latter has to be specially made, and ours are all constructed with the Lumière papers bound up between circular glass discs. For the deepest red light ten pieces of "Rubra" paper and one or two pieces of thin white tissue are employed. For panchromatics two sheets of green and four of yellow "Virida" papers are bound up with two or three discs of white typewriting paper, while for ordinary plates, bromide paper, etc., we have prepared a bright red light consisting of one sheet of "Rubra" with seven or eight pieces of yellow "Virida," and some tissue paper to tone down the brilliancy. With the two dark screens the brilliancy is regulated by white paper, so that the seconds hand of a watch can just be read when held close to the light. This is, of course, all the light that is required. We may add that too much green paper used in the green safe-light gives, not a green, but a red light, and with our lamp more than two green discs are inadmissible. This effect may vary with other lamps, so the number of sheets should in all cases be adjusted experimentally. These little safe-lights are bound up with lantern-slide binding strips, and, being only 1½ inches in diameter, a complete set can be carried with the greatest ease. A spare refill is, of course, desirable, in case the battery is submitted to over much work and runs down. In practice the lamp need only be switched on to read the time or to find our way about in the dark-room at odd intervals, and one battery will last a long time if economy in use is observed.

* * *

**Some Ancient History.** The subject of development after fixation is one that is continually cropping up and arousing interest, but we are apt to forget that it was one of the very early facts noted in regard to photography. The attention of photographers was first directed to it by Mr. J. H. Young, of Manchester, who experimented in 1859 with collodio-albumen plates. These results attracted much attention, and M. Davanne investigated the matter, the result being that he, together with M. Girard, put forward a theory of development that accorded very closely with the modern nucleus theory advocated by Dr. C. E. K. Mees and others. In brief, M. Davanne's theory was:—That the image appeared, not because the developing agent continued the reduction begun in the iodide of silver, but because the developer in contact with the nitrate set the molecules of silver free, and these latter fixed themselves upon those parts which the light had influenced. It will be seen that here we have the theory of the light-formed nucleus clearly defined. This theory led to one relating to the action of light in exposure, practically identical with the silver germ theory, which has been revived by Professor Abegg and received considerable support in recent years. We are not quite clear who originated this germ theory, but it is well described in an article by the Foreign Correspondent of the "Photographic Journal" (now the "B. J.") for June 15, 1859. This article, which is signed "J. P.," after commenting on the discovery of J. H. Young, and on the nucleus theory of Davanne and Girard, sums up the theory of exposure and development as follows:—"Light sets free some molecules of silver, in greater or lesser number according to its intensity; these molecules are the first points of attraction. The developing agents develop the image in so far as, mixed with nitrate of silver, they can set at liberty new molecules in much greater number, which proportionately group themselves around the principal nucleus points, and cause the image to appear with a rapidity that always increases in proportion as the centre of attraction becomes greater." With the exception that the last sentence ignores the fact that the rate of development must diminish as the source of the silver supply becomes exhausted, this general sketch of the production of the negative image is not very far removed from modern theories. We may add that the silver germ was objected to in an editorial on the ground that no sign of silver could be seen under the microscope, an objection that, with all due respect to our predecessors, we are not prepared to sustain.

* * *

**Enlargement Orders.** A little domestic demonstration with one of the "opaque" lanterns now sold so cheaply suggested the idea of reviving Sarony's artifice for procuring orders for enlargements without the expense and trouble of producing a transparency, as with the opaque method an ordinary print is used, the ordinary postcard portraits making excellent slides. In the case of original pictures bought for copying or enlarging, a better order would often be obtained if the customer had some idea as to the appearance of the picture on an enlarged scale. The majority of people have very hazy ideas as to sizes of enlargements, and often demand a life-sized picture when a 10 x 8 is what they really want. An arrangement by means of which a moderate enlargement could be shown would also be very useful for copying by artificial light, especially if enlarged negatives were required. A metallic surfaced screen on the Anderton principle would add greatly to the brilliancy of the projected picture, and would also tend to conceal any tendency to show the grain of the original.

## EXPERIMENTS ON THE DECOMPOSITION AND PRESERVATION OF SODA SULPHITE SOLUTIONS.

### I.

In the "B. J." for April 26, 1907, we described some experiments on the keeping qualities of sulphite of soda, in which we tested four samples, A, B, C, and D, against each other. These tests were made with very weak solutions of N/20 strength, or 0.6 per cent. of the crystalline sulphite, to shorten the time of the experiments. We now reprint the tabulated results, the figures in which show the relative percentages of sulphite remaining in the various solutions at different periods.

| | A. | B. | C. | D. |
|---|---|---|---|---|
| Fresh solution | 83 | 86 | 90 | 91 |
| Three days old | 76 | 78 | 84 | 80 |
| Four days old | — | — | 69.5 | 53.5 |
| Nine days old | 11 | 54 | 37 | 0 |
| Fourteen days old | 0 | 33 | 0 | — |
| Twenty-two days old | — | 1 | — | — |

From these results it is apparent that B had the best keeping qualities, and D the worst, though initially D was the stronger and presumably purer sample of the two. At the time we considered this to afford good evidence of the variability of different samples of sulphite, which conclusion is fully confirmed by the more recent experiments that we now have to record. We may add that all the four samples were obtained from well known firms. None of them were cheap qualities, and all were classed as pure. When these tests were carried out in March and April, 1907, we made up some thirty odd bottles of solution, using the same samples, but employing various modes of mixing, and also using various preservatives. Some of these solutions were in N/10 or 1.26 per cent. strength, and some in N or 12.6 per cent. strength, and the whole were put away for future testing. For various reasons the tests were delayed until July of this year, so that the results now to be recorded represent a trial of keeping quality lasting for four years and three months. As the result, the whole of the N/10 solutions are found to be exhausted. That is to say, they no longer contain any sulphite. This was only to be expected with such weak solutions, but with the N solutions some rather surprising results have been obtained.

First, we will consider the solutions made up with water only, and no additions. In these instances the sulphite has completely disappeared in seven bottles of C, and in two bottles of D. Of two bottles of A one still contains 2 per cent., and the other 6½ per cent. of sulphite, while in four bottles of B, one is exhausted, one contains a trace, less than 1 per cent., of sulphite, one contains 4 per cent., and the fourth contains no less than 63 per cent. As at the start its strength was only 86 per cent, it still contains 73 per cent. of the original quantity. From these results two facts are apparent; first, that our original conclusions with regard to the good keeping qualities of B sample were fully justified; and, second, that even with a good sample like this the possibilities are very uncertain. All the samples of B were made with distilled water in exactly the same way. Each bottle contained the same amount, none being filled; each was a corked bottle, and all four were kept in precisely the same conditions. Perhaps the corks were not all equally air-tight, but beyond this possibility there was no variation that we know of. It is therefore evident that we cannot absolutely rely on a plain solution of sulphite, however good the quality of the chemical itself.

It will be noticed that the only other sample that survived was A, which in our first test of four years ago showed no advantage over C. A is of moderate price, but it is a very efficient quality of sulphite which is much used. Its initial strength is low, as is that of B, and it is not impossible that this fact is connected in some way with the keeping qualities of both samples. This point will be referred to again later. We now come to the other solutions to which various additions had been made. Unfortunately, we could not ring the full series of changes on all four samples, because this meant an enormous increase in shelf room for the bottles, and also because one or two of the samples ran out, and we could not rely on getting fresh ones which would be identical. Various additions were made, including the following:—Sulphuric acid, mannite, alcohol, glycerine, and carbonate of soda. The last four additions were tried with both N/10 and N solutions, but all the N/10 solutions failed. In these bottles sample D alone was used, and the results obtained with the N solutions were, to say the least, very remarkable, considering that this sample was the worst failure before, and certainly is much inferior in keeping qualities to B. These results we tabulate as follows:—

| Date of Mixing. | Sample. | Addition. | Original Strength. | Strength on 29·7·11. | Percentage of $Na_2SO_3$ remaining. |
|---|---|---|---|---|---|
| 25/3/07...... | D | 2 p.c. mannite | 91 p.c. | 82 p.c. | 90 p.c. |
| 25/3/07...... | D | 10 p.c. alcohol | 91 p.c. | 86 p.c. | 94½ p.c. |
| 25/3/07...... | D | 10 p.c. glycerine | 91 p.c. | 75 p.c. | 82½ p.c. |
| 26/3/07...... | D | N soda carb. | 91 p.c. | 79 p.c. | 87 p.c. |

From these results it appears that alcohol is the best preservative. Rectified spirit was used, but no doubt industrial alcohol or methylated spirit would serve as well, and at the same time be much cheaper. Alcohol was suggested as a preservative by S. L. Bigelow some years ago (see "B. J.," September 23, 1898), but the idea does not seem to have been followed up. It would be worth while to test further the effect of alcohol, and see if a less quantity than 10 per cent. will suffice; 5 per cent. will probably serve nearly as well for all practical purposes. The next best preservative to 10 per cent. alcohol appears to be mannite, the objection to which is, of course, its expense. Roughly speaking, the amounts of mannite and of alcohol used in the above experiments represent expenditures of 4d. and 2d. respectively in the attempt to preserve 1d. worth of sulphite. The use of mannite is therefore unpractical, though that of alcohol will be quite reasonable if cheaper spirit can be used, or if the quantity can be reduced. Glycerine appears to be fairly effective, but a fungoid growth develops in the solution, and this seems to render it an undesirable addition. The result with carbonate wants special notice, because the effects of this addition have led to so many varying results. Reference to our article of April 26, 1907, will show that we then referred to the uncertainty of carbonate, which in the test destroyed the sulphite in a few minutes, and in most tests materially affected it, only in one instance seeming to act as a preservative. Other experimenters have also described carbonate as detrimental to sulphite, while others, again, have found it to be a preservative; we therefore cannot place much reliance on one solitary test such as the one given above, though considered by itself the results are sufficiently remarkable. The remaining tests were made with sulphuric acid, B sulphite being used in all. In the first test the sulphite solution was neutralised to phenolphthalin, which means that the carbonate nominally contained in the sulphite was changed to bicarbonate. An equal quantity of acid was then added. The result of this was a failure, the solution containing no sulphite at all. In the second test the sulphite solution was made neutral to methyl orange, which means that it was converted into a solution of acid sulphite, while all carbonate was disposed of at the same time. This, again, was a failure, no sulphite being present. It is, however, noticeable that the exhausted solution is distinctly acid, while in the case of the first test it is distinctly alkaline to methyl orange. In the third test the sulphite was only half neutralised to methyl orange, and in this case the result contains 2½ per cent. of sulphite, and is still alkaline. The alkalinity of these two solutions is probably due to bicarbonate, in which case it would seem that the excess of acid over that required to convert the carbonate must have been used up by the sulphite, and not by the bicarbonate. In the other case, in which the final solution is acid, the effect may be due to the addition of two much acid in the first instance, which we do not consider to be likely, as especial care was taken in the process of titration to avoid doing any such thing, or it may be due to the formation of an acid as a decomposition product. This point, together with some others, will be further considered in succeeding articles, as will also the method of analysis.

◆

A NOVEL SHUTTER-RELEASE.—On the old principle of necessity and invention, an unusual method of releasing a shutter was devised recently by Mr. B. J. Falk, of New York. A gay party of thirty, including Mr. Falk and a few other well-known professional photographers, had been rehearsing a fancy-dress revel in one of the mountain resorts, and wished to have their portraits made, group wise, around the summer cottage that formed their head-quarters. There was no spare hand to press the bulb, so a simple trap arrangement was made, and was released by a rifle shot fired by a member of the group.

# TANK DEVELOPMENT FROM THE PROFESSIONAL PHOTOGRAPHERS' POINT OF VIEW.

THAT the tank method of development has proved its superiority for professional work over the older methods in every respect is now an unquestioned fact. Many progressive photographers have for some time been using it entirely, yet others, less venturesome, hesitate; they fear to take the plunge, and pack their plates in a tank to develop by themselves. This "fear"—and I experienced it—in my opinion, has not met with the sympathy of the manufacturers, and is responsible for tank development not catching on with the less venturesome. Had the makers introduced the tank with the suggestion that the plates could be examined from time to time to see if correct before passing to the hypo bath, photographers would have felt the satisfaction in their own judgment as to density, etc. In less than a week they would have been thoroughly convinced of the fact that, without troubling to look, they had complete control over both quality and density. The instructions sent out in most cases with tanks are to transfer the rack of plates bodily to the hypo bath. This I feel sure, has prevented a good many would-be converts from attempting the system.

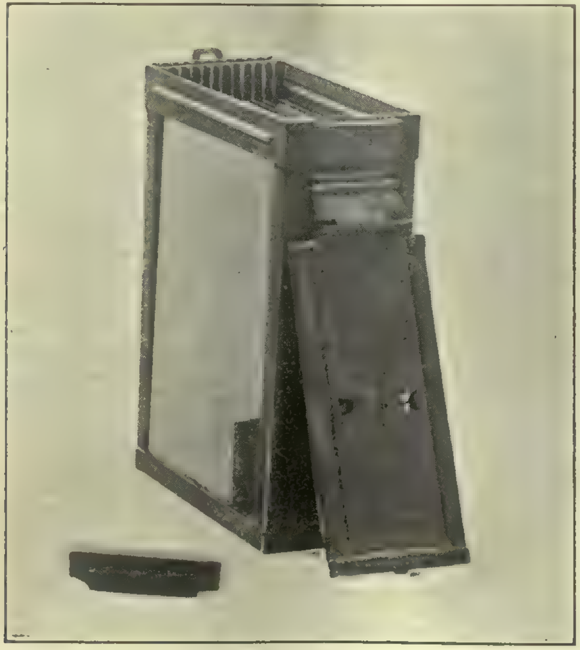

Fig. 1.

Some two years ago a friend of mine, to whom at last I made an offer to be entirely responsible for success, wrote me, after trial:—"Have just developed my first batch by tank. It required some pluck to leave the plates alone, but they turned out splendidly." Now he uses two or three tanks, and is fully convinced of the utility of the method as regards time saved, quality, and regularity of density of the negatives.

I started using my tank, some three years ago, for the simple reason that I thought, if nothing else, it would save stained fingers and considerable time shut up in the dark-room.

### A Tank—and How to Use It.

I selected an Eastman 7 x 5 tank, supplied with an adaptor, to bring the width to 4¾ inches for half-plates. When first using it, at the end of time named I withdrew the rack from the tank, held it under running water to rinse the plates, and attempted to remove them one at a time to have a look at them. Here I discovered a fault. The plates, being 6½ inches long, were half-an-inch below the top surface of the rack, and the frame of the latter prevented me lifting them from the bottom. Ultimately I had to turn the rack upside-down, shoot the plates out like a pack of cards, with the result that several films were damaged. This nearly killed my faith in tank development, and I should have discarded it had I not thought of placing a half-inch bar of wood (see left-hand corner of Fig. 1) across the bottom of the rack at right-angles to the plates. This enabled me to insert a finger under each plate from the side and raise it quickly and simply. Another advantage gained was by keeping the plates flush with the top: one can load quickly and surely, as the top edge of each plate clearly shows the groove occupied, whereas if the plates settle down half-an-inch lower one cannot load without using the special wooden loading block supplied with tank for that purpose. This, I find, is not required, as, even in total darkness, with the plates flush to top, one can feel with certainty and load the rack in the correct order.

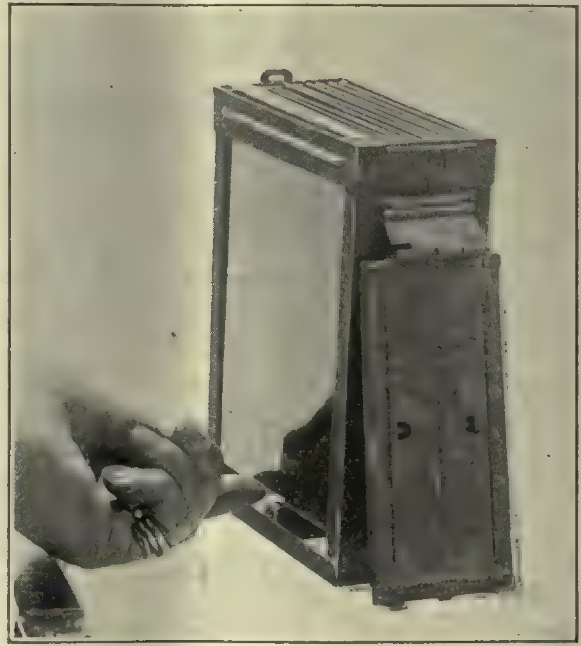

Fig. 2.

### A Simple Pyro-Soda Tank Developer.

The developer I have found most satisfactory is a very simple one. I make two Winchester quarts of stock solutions at a time:—

| | | |
|---|---|---|
| A.—Pyro | 1 | oz. |
| Potass. metabisulphite, about | ¼ | oz. |
| Water up to | 80 | ozs. |
| B.—Soda carbonate | 8 | ozs. |
| Soda sulphite | 8 | ozs. |
| Water up to | 80 | ozs. |

For use I take 8 ozs. of A and 6 ozs. of B ( = 14 ozs.), and pour into tank, adding water to bring bulk up till it just covers the line specially marked on inside about one inch from the top. I might mention here the 14 ozs. developer, or proportionate quantities, is my ordinary developer for plates that I have to develop in an open dish, so that dilution is the only difference for tank use.

The best temperature is 65 degrees F. Usually this is about the natural temperature of the water supply, but in the cooler days and winter I find the easiest and most reliable way is to heat the tank, when filled, over a gas ring, watching the thermometer standing in the solution gradually rise to the 65 degrees.

### Dark-Room Manipulation.

In placing the rack in front of the dark-room lamp ready to receive plates it is well for the operator to stand it always in the same direction, so that he naturally falls into a regular method of working, and can therefore at once pick out a certain plate if required earlier than others.

I always stand the rack with the hinge falling back towards me both in filling and taking out plates. I place my box of exposed plates on my left, and transfer to the rack, working from the left. I place eleven plates with the films inwards, and the twelfth (the last) reversed, so that the two end plates are both glass outside. This, to prevent damage to films. By placing in this order there is no danger of the finger scratching the film on removing the plates, as the plate next to the one being raised has the glass side nearest, until the eleventh is being lifted, and then a little care only is necessary to prevent touching the film of the last.

Having filled the rack and fastened the hinge, it is lowered, without stop, into the tank containing developer. Then, still holding the loop, the rack is just agitated up and down about ten times without bringing it above the surface of the solution. This will effectually disperse any air-bells that may have formed. After fastening the lid, set the hand on the dial face of tank to the time for the completion of development.

### Times for Development.

The following are the times I have found correct for the plates named, and will give good, quick-printing negatives clean and full of quality for P.O.P., sepia, platinotype, or bromide. Two to three minutes longer will give sufficient extra density for carbon or collodio-chloride:—

Royal Standard S.E. Rapid, 17 minutes.

Gem Portrait and Wellington and Ward's 'Xtra Speedy, 18 minutes.

Marion's P.S. Plate, 20 minutes.

Exposures of white dresses on white grounds will require longer development. If taken out at the times given, though full of detail, they will be too thin, but by replacing them for ten or fifteen minutes longer they gain in density and brightness.

A portrait lit in the Rembrandt style requires about one minute less than the time given to be in good gradation. Here the advantage is of loading the rack always in the same direction, as by placing the Rembrandt-lit plate on the extreme left, followed by the P.O.P., sepia, platinotype, bromide, then last by the C.C. or carbon, one knows just which one is to be taken out first, though it is not often one will get the rack filled with such a varied lot.

### Necessary Precautions.

The only attention during development is to turn the tank upside-down in about five minutes, and again reverse at the end of another five minutes. At times I have forgotten to do this, and have found no ill-effects, but it is advisable, as it makes certain of the developer acting regularly. I should never advise fixing in the tank, as trouble might arise sooner or later.

At the end of time allowed for development, lift the rack and drain before removing. Then raise the lid and let water run well between the plates in the rack for about thirty seconds to remove the developer. Stand the rack in front of the lamp in the same position as in filling, with the hypo trough on the left. Then, by using the tip of the finger of the left hand, each plate can be easily raised, viewed against the lamp, and, if correct, passed into the hypo.

Very seldom is it necessary to replace in developer, unless the exposures are white background work.

As pointed out at first, viewing is not necessary, but I must admit there is a satisfaction in just glancing at each plate; it gives a sense that everything is under control.

I always use an acid fixing bath, which keeps the plates clean and hard during the warm weather, and, when finished, have always a batch of regular negatives for quick printing, and with good detail in the high-lights of white dresses. It is necessary to rinse out the tank after developing, as instructed by makers. I always do so with hot water, and drain and wipe the tank dry each time of using. I have used the same tank for three years constantly.

My one and only trouble occurred last year, and then a certain batch of plates I had would not develop by tank without bringing out peculiar markings, though everything went quite normal when development was done in a dish as usual. Otherwise, I have not had a faulty plate—no air-bubbles, finger-marks, or developing stains. If I have more than one dozen exposed plates I use the same solution twice with success, seeing, of course, that the quantity is sufficient to cover the top of the rack, and that the temperature is correct. I should not suggest any further use, though I find developer after second use is quite colourless.

I need hardly point out that the usual care to avoid touching the surface of plates with the fingers applies to tank development quite as much as to any other method. The plates can be handled by the edges quite easily in filling the rack, and the surface of film need never be touched.

Both the photographer in the one-man studio and the busy man in the large commercial way are using tanks with advantage. The former is spared a lot of waste time in the dark-room; he keeps clean hands for operating, and has no dirty dishes with oxydised developer.

The commercial man is able to handle large batches of plates, for, once temperature and solution strength are arranged, a junior assistant can watch several dozens at once. Thus both these classes of workers secure the great advantage of regularity of printing—density and quality—which is greatly appreciated by the printer.

It leaves one entirely free to attend to exposure, because of the four factors three are regulated—viz., temperature, strength of developer, and time of development—and will always, under the same conditions, give similar results.

### Under- and Over-Exposures.

I have been asked by several: "How do you get on with under- and over-exposed?" My reply is: However carefully I expose, I get them now and again, but find the tank gives me a good result, even if over- or under-exposed. The difference is in density, which, if too marked, can be treated afterwards advantageously with reducers, or intensified, according to the case; but one does not realise that in ordinary dish development the tendency—if the plate is under-exposed—is to continue development far beyond the point where maximum detail is obtained, and the result is hard and too contrasty. The reverse applies to over-exposure—the plate taken out too quickly—because it darkens rapidly, and it is therefore thin and flat. Now, the tank turns out the one certainly thin, but printable, and the other dense, but correct, gradations. With practice in the studio—and it is for professional studio workers that this is written—one does not often get these extreme cases, and, with exposure kept within reasonable bounds, development by tank gives a far greater percentage of good, regular printing negatives than by dish development in the ordinary photographer's hands.

In conclusion I must again emphasize the necessity of careful attention to cleanliness, also to the strength of developer, temperature, and time, which must always be the same if similar results are to be looked for. If the photographer attends to these, he will find a developing tank a most reliable and cheap assistant.

GORDON CHASE.

# HOW I DOUBLED MY BUSINESS IN A YEAR.

[At a time when so many photographers who have started in a small way on their own account acutely feel the pinch of competition, it may be help to set forth for their encouragement the experience of a photographer, in a small American town, communicated to the current issue of our San Francisco contemporary, "Camera Craft." Circumstances vary widely, and what is effective in a United States province may not succeed in, say, Huntingdonshire; but the example of tact, push, and persistence shown by the writer of the article may well be followed by photographers at home, and caused to take a form suitable to local conditions.—EDS. "B. J."]

ATTRACTIVE title, isn't it? Perhaps it has a peculiar interest to you. It may be that you are wondering what is the matter with business, your own business in particular, and what you can do about it. While not desiring to offer anything in the way of advice, I will try to show you how I increased my own business one hundred or more per cent. in a year; then, if you think you care to go forth and do likewise, I believe you will come to enjoy your work as much as I do, and will realise its illimitable possibilities.

We (the writer, his wife, and the bull-pup) had been in business in a small town of three thousand inhabitants for nearly two years. We had, as competitors, two fine workmen. I frankly acknowledged them my superiors—at that time. One had been established twenty-four years; the other, twelve. The young man whom I bought out had struggled against their entrenched position for four years, and quit.

## Flashlight for Winter Business.

We found that business was fairly brisk in summer time, but for eight long months there was very little doing. People said that money was tight, men did not work in winter; and, anyhow, you were expected, in a small town, to hug the stove nearly all winter, and make it up out of the city people in the summer Decidedly cheerful; particularly as we were not the kind who could save a great deal. We had very little equipment and needed to keep busy for some time in order that we could purchase necessary tools, cameras, etc. We had started in business with a 5 x 4 camera; and, although we had been making money during the summer, we had spent it as fast as we could get hold of it in fitting up the place. We wanted to have the finest studio, with the best cameras and other paraphernalia, in the neighbourhood. So when autumn and winter came on it was pretty hard plugging. The next summer was a repetition of the first; we were quite busy, and again spent all our spare cash on equipment; and as winter again approached, we were able to look on its coming with a little less dread than on its previous approach. Still, I often thought that it might be wise to close up until spring and go to work in the city. However, I bought a flashlight outfit and kept busy until well into spring, making over three hundred dollars' worth of flashlight pictures between January 1 and April 1. It was something new in the locality; neither of my competitors had ever thought it worth while to bother with, and, being a novelty, everybody wanted them.

The only outfit needed was a "Spredlite" lamp costing sixty cents, and some Victor powder. I selected Victor because that is my middle name. I had previously provided myself with a Zeiss wide-angle lens in a Volute shutter, and found it of inestimable value for the work. I photographed bowling clubs, dinner parties, amateur theatricals, church parties, and the like, working in surrounding towns as well as at people's houses in my own town.

## Business Outside the Studio.

All this set me to thinking that if one could only work along different lines, he could keep busy right along. There was no use trying to compete for the portrait business, my competitors had too much of a lead on me; and, anyway, I did not see that they were getting rich at it. So why not leave it to them and go in more for commercial and outside work? The field appeared to be practically untouched, except for the house-to-house men who infest the rural districts every spring. It looked to me as if I could build up a good business along those lines.

Our fiscal year starting in April, we decided to try to make every month's business double what it had been the preceding year. We retained the studio feature, improved it, in fact, but decided that henceforth it should be a side line. We were particular to keep the place looking at its best at all times, and whenever I made a particularly attractive picture we made an enlargement of it, framed it tastefully, and used it for display. The place was always well lighted, all customers were met with a smile, and all made to feel that nothing was too much trouble for us to do for them. The framed enlargements were hung in conspicuous places where every one was bound to see them, and we made it a point to call customers' attention to the fact that we did a great deal of outside work. We installed a system of electric lights for portraiture, and my wife made evening appointments, whenever possible, with portrait customers. This gave me the entire day for work outside and on the road, and I improved every hour, as I shall show you.

## Photographs for Estate Agents—

The local public had long recognised my ability as a view man, but could not see that they needed our pictures, so I made up my mind that I would have to create the demand for the wares I could supply. The real estate men were canvassed for work, and shown how they could interest buyers at distant points by sending them attractive pictures of properties on which they were negotiating sales. Houses they had for rent were likewise advisable subjects for the camera. Some of the operators went so far as to have all their properties photographed and booklets printed showing a few general views as well. My name was printed under each picture, and the advertising they gave me was very valuable.

## —And for Stock Dealers, Builders and Hotels.

A stock dealer, one who sold cattle on commission, was shown how much better a picture would convey the impression and assist the sale than a long descriptive letter. He has since added the selling of chickens to his line, and my pictures are responsible for many, many sales. A number of chicken fanciers were induced to do business by similar methods, and large numbers of pictures are now used for these purposes in this town.

The local builders were taught what a nice thing it was to have neat albums of views of all the houses and other buildings they had erected, as well as to have a number of framed photographs hanging in their offices. As every building had been erected for some particular individual, one can easily imagine that that particular person would also purchase a few copies, thereby increasing the income from the negatives.

One large hotel was induced to consider the advertising value of a scheme for placing, in all the garages for miles around, a nice framed picture of the house. The manager saw the point at once, and I booked a nice order. Nearly all the other hotels in the vicinity have since adopted the plan, we doing all the work. Had the place been one where we were the only ones doing that kind of work, it would have been an easy matter to have charged big prices; but we figured that a steady flow of business was worth more to us than an occasional large fee, and so made our prices that we would be assured the future orders of all the firms we did business with.

### A Reflex as a Money Spinner.

I thought long and earnestly before I could make up my mind that a Graflex camera would pay interest on the investment; but when, one day, a very good customer wanted a broadside view of his forty-knot motor-boat at speed, and said he had to have it, and that if I could not make it he would have to send to New York for a man to do the job, you may be sure that I went to New York myself that very day and purchased one. It paid for itself in less than a week in jobs that I could not have done with any other type of camera. I may say, for the benefit of many of the brotherhood, that I do not own an anastigmat lens, using an ordinary rectilinear. So many photographers delay purchasing a Graflex camera because they do not feel like laying out a large sum of money for a high-class lens. To these I would say, Do not be afraid; your rectilinear will do almost all that you will ever require of it. I have tested mine out with some of the best and most favourably known lenses on the market, and could not see that I was so greatly handicapped except in occasional exceptional cases.

### Making Ourselves "the" People.

Well, to make this story short, the situation was simply this, we took it for granted that we could keep just as busy as we could use brains to see where our work lay. If the church had a dramatic show, the cast would gladly purchase pictures of themselves—if we went and made the picture. They would never think of coming and asking us to do so. If a body of men were engaged in the erection of a large building, we could always secure a good group that would be profitable. A political convention was productive of another good seller. It soon came to be understood that, wherever there was something doing, our camera was sure to be on the job. The advertising feature, alone, of such a reputation was a very valuable one.

It was not long before the writer was considered a "live wire." At any gathering, from church social to stag dinner, the camera was as sure to be there as the toastmaster. Any and all newspapers wanting anything illustrative of the town, knew where they could get it, and came after it. That started another line of thought. A newspaper's influence is far-reaching; its prestige descends upon its representatives, and many doors are opened to them that to others are closed. One could think of a number of places to go and make a picture for the papers, places where it would not seem right to push in as an individual, because, above all things, a photographer must conduct himself in a dignified manner in order that he may not be considered a "butter in."

### Business in Local Events.

When a local celebrity had a golden wedding he was tickled to death at finding the event illustrated in the paper. The right thing, therefore, is to make a group picture of the principals and their guests; the members of the group are delighted, and they gladly purchase copies at fifty cents each. By watching the local papers one can easily keep posted on these coming events and prepare for them. I never tell the people that I contemplate coming to make a picture of them; but when I think that the guests have had time to arrive, I go down and explain my mission, stating in a clear, dignified manner what I want to do and to what paper I intend to send the item. When the desired permission is granted (and it has never been refused yet), I set up the camera, make the exposure with the least possible fuss, pack up rapidly, and get out, refusing all invitations to "sit in" on the score that I am too busy. I never ask any one to buy a picture, never even suggest such a thing unless asked point blank, and even then I do not let it appear that that is what I came after. In a few days, if the people do not manifest any interest, I send them a proof, and that does the business.

Well, do you think we doubled our business? I guess we did, more than doubled it, and, what is more, we gained self-confidence. We found that there was unlimited work to be had if we only went around and found it; we found that the number of people who will purchase pictures cannot be judged by the numbers who will come to a studio. We found, in fact, that everybody will buy pictures if one can only find out just what sort of pictures they are interested in and offer that kind. I filled my street show-case with interesting pictures of all the latest and most interesting events that were going on, made a sort of pictorial bulletin board of it. I filled the hall cases with special and very attractive photographs, plentifully interspersed with written comment calling attention to their uses, commenting on their photographic excellence as well. This hall was kept brilliantly illuminated until nine o'clock at night, and the displays were changed often. I am now trying to increase the business still more, that is, in net receipts. To do this, I shall have to get higher prices, as I have about the work I can manage to do without assistance, and I am much averse to hiring help. The only way for me to get higher prices will be to specialise, and I am now engaged in so doing, taking cattle as my subject.

James V. Feather.

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Southampton Camera Club.—The competition recently organised by the Southampton Camera Club took place last week at the Philharmonic Hall. The competition was for a print, any subject, and was open to all photographers residing within fifteen miles of the Bargate, no member of the club being allowed to compete. There were not quite so many prints sent in as the committee hoped, but of the thirty or forty sent in, there was not a bad print amongst them. They were all examples of first-class photography, and showed great care and taste in their production. The prints were judged by the members of the club, who afterwards voted for the two best photographs, the winners being Mr. H. H. Northover, first prize, silver medal; Mr. G. Tozer, second prize, bronze medal. The committee's idea of these competitions is that they will bring forward those photographers, of whom there are a very large number, who do not know of the Club and the benefits of membership.

# SAFE-LIGHTS FOR THE DARK-ROOM IN THEORY AND PRACTICE.

## IV.

FOLLOWING what has been said in previous chapters it may be noted that the coloured glasses, in comparison with safe-lights prepared with organic dyes, possess the great advantage of giving a light which is practically unalterable. The liquid safe-lights, the colouring matter in which is composed of metallic compounds, are, as a general rule, similar in this respect, but in the case of the organic dyes the maker of safe-lights has to do with bodies which, to a greater or less extent, are unstable. This defect may be reduced by converting the dye into a coloured varnish, but this is possible only in the case of safe-lights prepared in fabric or paper form. The action of the mordant cannot be exerted conveniently through the gelatine film of a safe-light in consequence of the somewhat great thickness of the latter. But it is possible to prepare the dye as a colloidal solution in gelatine by first dissolving the mordant in the gelatine and mixing subsequently with this latter the gelatine solution of the dye, both preparations being fluid at the time of mixture. The whole is allowed to set, well washed, again rendered liquid, and finally coated on the glass. As a great drawback, must also be mentioned the change of the absorption spectrum which the dye undergoes by the action of the mordant or conversion into a coloured varnish. The nature of this change is to render the absorption spectrum similar to that of the less useful coloured glasses, that is to say, with absorption bands of a lesser degree of sharpness and a greater absorption of colours which the safe-light is intended to transmit.

It must, however, be stated that but little experimental work on this question has been published, so that we may still hope of obtaining improvements in safe-lights manufactured by this method.

It is in the form of a liquid safe-light that organic dyes supply the least constant form of coloured illumination, inasmuch as the dyes oxidise most rapidly when in a fine state of division in water. From this standpoint the liquid safe-light prepared with metallic colouring compounds is preferable, but, on the other hand, the inorganic substances which are soluble in water are not available in sufficient number for the purpose of preparation of suitable dark-room safe-lights. Recourse must thus be had to organic dyes. Compared with gelatine safe-lights, the liquid filters possess the further disadvantage of requiring all the dyes in a formula to be either acid or basic. Thus, for example, the well-known formula of Abney in its best form may not be used for liquid filters, since the acid tartrazine and the basic crystal violet react chemically upon each other when in solution in water. As a result the solution rapidly loses its properties, ceases to exert the desired action upon the light and becomes practically useless.

Liquid filters, too, involve the practical drawback of less easy removal from the lamp or lantern than a glass or gelatine safe-light. Furthermore, in consequence of the heat of the lamp they evaporate more or less rapidly and become turbid. In order to avoid this defect F. Novak[45] advised the use of glycerine as a solvent for the dyes in place of water.

For the manufacture of safe-lights with coloured gelatine there is no necessity to restrict the dyes in a given filter solely to the basic compounds or solely to acid colouring matters. The acid dyes may be placed in one gelatine-coated glass plate and the basic dyes in another, and when the gelatine coatings are dry the two plates may be bound film to film.

The non-transparent, or rather semi-transparent, safe-lights to which reference has already been made possess the great defect of absorbing too large a proportion of the non-actinic rays. Though the illumination of the dark room is thus rendered "safer," this end, in my opinion, is better attained by cutting out a larger part of the spectrum. In this way a transparent safe-light gives, for an almost equal degree of "safety," a greater quantity of light in the dark room. Only the development of the "spectrum panchromatic" plates of Wratten and Wainwright require the use of a semi-transparent filter. These plates are sensitive to the whole of the visible spectrum to such an extent that an illumination of relative "safety" can be obtained for their development only by means of a filter which allows the least possible amount of light to pass. Fortunately it is possible to make use of a green light, to which the eye is particularly sensitive.

So far the best safe-light for the dark room seems to be one consisting of a coloured colloid film—gelatine, suitably stained, appearing the best. For long past many complaints have been made against the general application of the organic dyes. The purity of the dye plays an important part in the manufacture of dry safe-lights. Almost all the organic dyes obtainable in commerce contain substances which play an important rôle in the art of the dyer, such as chloride of zinc, sodium sulphate, dextrine, sugar, etc., and it sometimes happens that a given colouring matter varies in composition according to the place of its manufacture. It will be readily understood that these impure dyes are not suited to the manufacture of safe-lights. Even if a practical formula could be drawn up for use with them, any other person making use of it would always be uncertain of obtaining the same result. An example of this has already been seen in the experiments already referred to of Lüppo-Cramer on the Abney filter.

Moreover, the by-products of the dye may have a very injurious effect upon the gelatine. They may prevent the gelatine from drying, cause it to dry irregularly, or produce stains. On the suggestion of Dr. E. König the Hoechst dye-works of Meister Lucius and Brüning supply dyes specially for photographic work, but nevertheless formulæ drawn up, even on the basis of chemically pure dyes, must be received with a certain amount of reserve, for the reason that many experimenters are not fully cognisant of the chemistry of the organic colouring matters. On this point Dr. E. König writes:—"When, for example, acid and basic dyes are mixed as directed in many formulæ it is not surprising that this mixture leads to the production of streaks or scum, or indeed results in a precipitation of the component dyes."

As has been previously mentioned, the colloid bodies most usually employed for transparent safe-lights are collodion and gelatine. We must examine the qualities and effects of these two substances.

### Collodion Safe-Lights.

In these, the dye is distributed on the glass in the form of a coloured collodion film. These safe-lights best withstand the heat of dark-room lamps supplied with oil or gas, but on the other hand possess great drawbacks. The choice of dye is limited to a small number of colouring matters soluble in alcohol and ether. In the second place it is very difficult to prepare filters in accordance with a precise formula by the usual method of pouring on the highly volatile collodion. It is not possible to control the absorption spectrum of the safe-light, since this latter is too greatly influenced by the viscosity of the collodion, the temperature, the size of the filter, and even by the way in which the excess of collodion is allowed to drain off.

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[45] "Phot. Korr.," 1909, p. 591.

### Gelatine Safe-Lights.

There are two methods of preparing safe-lights consisting of glass covered with a film of dyed gelatine :—

(a) A glass plate coated with gelatine, for example, a dry plate which has been fixed and washed, is immersed in a strong solution of the dye in water. In preparing a filter by this method it is necessary to examine it with the spectroscope as the process goes on in order to obtain the desired absorption spectrum. In this case it is not necessary that the worker should be provided with chemically pure dyes. A disadvantage of this method is that exact formulæ for the preparation of a safe-light cannot be given. Moreover, it is not always possible to obtain a sufficiently large quantity of the dye in the gelatine, a desideratum which, as we shall see later, is of considerable importance.

(b) The glass plates are coated with a dyed gelatine solution. By observing the precautions which are detailed in a later paragraph this method gives the best dark-room safe-light hitherto obtainable.

### Materials for the Manufacture of Safe-Lights.

In selecting the gelatine, price should not be the sole guide, but a trial made of a sample. Any gelatine which dries regularly to a smooth surface may be used. In the preparation of safe-lights I have found at times that a gelatine costing 25 centimes per 100 gms. was preferable to one of another brand sold at 50 centimes per 100 gms.

As a general rule the glass used for dry plates is of a kind which is suitable for the manufacture of safe-lights. The use of plate-glass is necessary only for some dyes, such as the green and dark red, for the illumination of the dark room. The absorption spectrum of these substances changes considerably with the thickness of the film as also with the concentration of the solution, and it is not possible to obtain a regular solution of the dye on an imperfectly flat surface of waved glass of dimensions exceeding 8 by 7 inches.

### The Source of Light.

The time during which a gelatine safe-light prepared with dyes may be used without alteration of its properties will be very much longer if daylight is never used as a source of illumination. Of all descriptions of light this exerts the most actinic action on dyes, producing a difference in the absorption spectrum of the filter. This change is marked by a reduction in the absorption of the rays which act on the plate, the dye becoming paler in colour; in some cases it may be noticed that this reduction in colour of the dye is first preceded by an increase in density.

Daylight should be rejected as a source of illumination for a dark room. An artificial light has the advantage of much greater constancy and allows of all plates being developed to the same degree. Even when the greatest care is taken in working, a room illuminated by daylight (through a safe-light) is bound to give rise to results of varying density. I quote Dr. E. Vogel on this point[46] :—" Place two identical plates in the stereoscopic camera, so giving to each the same time of exposure, and develop one by a bright light, the other by a feeble illumination. There will always be a tendency to develop too long by the bright light and not long enough by the weak light."

Since safe-lights prepared with gelatine will not withstand too great a degree of heat, the choice in the selection of a source of artificial light is limited. There is the inverted incandescent gas mantle, or, better, the electric incandescent lamp. For this latter a metallic-filament lamp should be chosen in preference to one with a carbon filament, but I have had in use for four years a carbon-filament lamp behind an Abney safe-light (made by myself) which shows, up to the present, no change in its absorption spectrum.

The position of the light-source with regard to the safe-light is likewise a point of importance. In practice it is necessary to keep the dark room lamp of as small dimensions as possible, many dark rooms being of small size. This involves placing the lamp very close to the screen, an arrangement which is bad, inasmuch as it is liable to lead to over-heating of the safe-light. In fig. 1 L is the light-source and AB the screen, P being then the shortest distance between the screen and the light. This part of the safe-light will thus be the most brightly illuminated. If the distance between the safe-light and the light-source be increased the illumination over the surface of the former is rendered more even. A similar result is attained when the rays come not from a light-source of very small size but from a larger surface, such as an incandescent gas burner. These variations, in different parts of the safe-light, in the intensity of illumination are especially injurious when using an electric incandescent lamp without a matt bulb. As a result the safe-light shows a different absorption spectrum at P compared with that in the extreme corners.

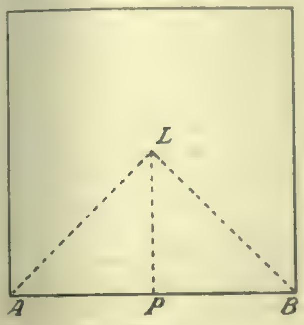

Fig. 1.

But, as already stated, other means may be used than by increasing the distance of the light from the screen. Up to the present the best method seems to consist in not allowing the light to fall directly on the screen but causing it to pass first through a ground glass and then reflecting it by a matt white (or yellow, or pale green) surface. In adopting this plan the dimensions of the lantern are necessarily greater, but not so much so as to be inconvenient in practice.

In fig. 2 FGHB represent the opaque walls of the lantern; between A and B is placed the safe-light, in L is placed the source of light. DE is a white matt surface and CE a semi-transparent screen. Arranged thus the rays given off at L are reflected and diffused by DE before passing through the filter A.

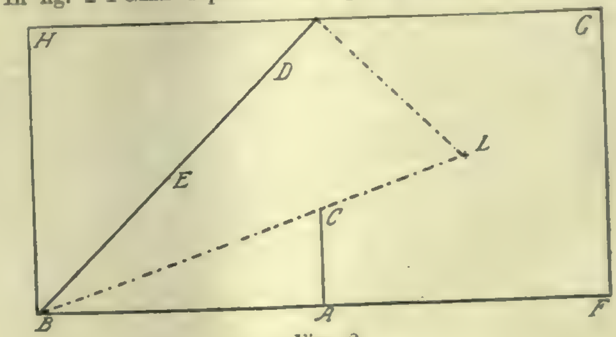

Fig. 2.

### The Dark-Room Lamp.

Of the many forms of dark room lamp or lantern on the market it goes without saying that only those adapted to take a flat, coloured glass can be fitted with a safe-light consisting of a glass plate coated with coloured gelatine. The first condition for the use of such a safe-light is good ventilation, in order that the filter may not overheat, say, to such an extent that at the end of a fair time in use it cannot be touched with the finger. With perhaps a single exception no commercial lamp or lantern fulfils these conditions. With ordinary incandescent gas or with the oil-lamp used in many lanterns the ventilation is by no means sufficient; the filter gets very hot, frequently to such an extent that the gelatine peels off in small pieces or the glass breaks. The choice of the colouring matter has some effect in this respect. Thus, toluidine blue, which absorbs the whole of the heat rays, should be avoided. As a general rule the green filters, owing to their greater absorption of red and of infra red, suffer no more from the effect of heat than the red filters. Temperature, too, has an effect on the life of the safe-light. The photo-chemical change in the dye takes place more rapidly at high than at low temperatures, and it will be readily understood that the safe-light will last much longer by keeping it as cool as possible by good ventilation. The dark-room lamp of Wratten and Wainwright, of Croydon, fulfils excellently and practically the two chief conditions, namely, diffusion of the light by a matt white surface and good ventilation. In this lamp (fig. 3) the source of light, L, is placed in the upper part. It may be an inverted incandescent gas burner provided with a ground-glass globe or preferably a matt electric incandescent bulb. In the figure A is an opaque sliding door used only in order to afford access to the light, or when white light is wanted in the dark-room. Underneath this door are two sets of grooves in which slide two safe-lights, B and C. The lantern itself is painted matt white inside. The rays from the source of light are reflected by the matt surface D from which they reach the dark-room through the two safe-lights B and C.

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[46] Eder's "Jahrbuch," 1894, p. 391.

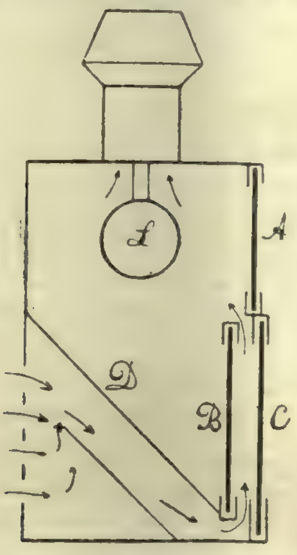

Fig. 3.

The ventilation is provided for in a particularly effective manner, the air enters behind the reflector D through an opening in the back wall of the lantern. It flows downwards and passes up between the two filters, which are thus kept cool. This type of construction it will be seen keeps the lower part of the lamp cool, the safe-light B becoming more heated than C. For this reason the more stable filter should be placed on the inside. I have myself tested the heat produced by this lamp by keeping it in use for 15 hours with an electric incandescent lamp of 16 candle power (carbon-filament). I chose safe-lights which offer the least resistance to heat and possess the greatest absorbing power so as to obtain in the safe-light the greatest possible production of heat. After the 15 hours the hotter safe-light had a temperature of only 25 deg. C., thus testifying to the good design of the lamp. The lamp may be termed most "comfortable" in use, inasmuch as the eye is spared direct rays from the source of light. It may be used in conjunction with an oil lamp, in which case it is built longways. So far as concerns heating of the safe-light the result is not so satisfactory as with electric or incandescent gas lighting, but I understand that means are being taken to improve the oil lantern in this respect.

### The Colour of the Dark-Room.

In strict relation to what has been previously said is the question of the colour which the walls, etc., of the dark-room should have. Some say black: others, white, or red. W. Ridel[47] gives the following advice:—"Let the walls of the dark-room be of yellow colour and matt surface, and use a powerful ruby lamp, the light of which is turned towards the wall. You will then obtain a strong reflected orange light in which work may be done in great comfort, which illuminates all parts of the room and does not fog the most sensitive orthochromatic plates."

Foregoing paragraphs have given us a better solution of obtaining diffused lighting in the dark-room, and it remains now to consider whether the colour of the walls should be white, black, red, or yellow.

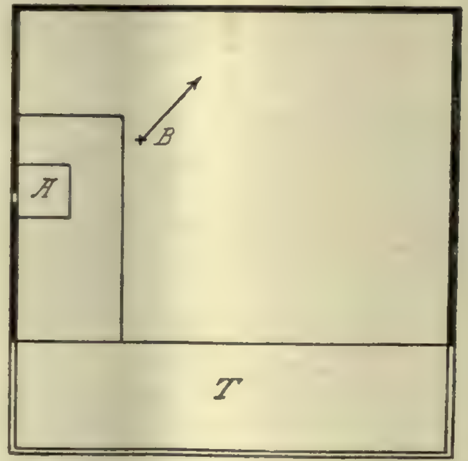

Fig. 4.

In the case of black there is the practical drawback that it is often difficult to see the objects which are used during development. There is an advantage, when one is accustomed to it, in following the recommendation of Dr. König and handling and developing the plate in the shadow of the dark-room illumination. Much less light is then received by the plate during development, and even if the worker makes it a rule to develop with the dish covered he has still the comfort of handling the plates before development in a "safer" illumination. As regards white, what is an advantage when the walls are painted black becomes here a drawback and vice-versa.

The use of a red colour for the walls has the effect of white when red light is being used and of black when the illumination is green. A yellow colour for the walls is almost the same as white, appearing only a little darker, and of the two white is better.

We have thus to choose between white (or a very light green) and black. Perhaps the best solution of the difficulty is to use both black and white, painting or papering part of the dark-room one colour and part another with regard to the shape of the room and the position of the dark-room lantern. Supposing the dark-room to be square, and to have the dark-room lamp placed as at A in fig. 4, the thick black lines may be taken to indicate the parts which should be papered black: and the thin double lines, white. The table T, the sink and drying racks are placed as far as possible along the white walls, leaving the black covered walls, opposite, bare as far as possible. The table is covered with a white material, whilst the dark-room lamp is best placed on a black base. When handling plates or developing in uncovered dishes one's back is turned to the lamp, the face looking in the direction of the arrow at B in fig. 4. The ceiling is best black, whilst for the sake of cleanness the floor is preferably of light-coloured material. If one does development as a rule in covered dishes, there is no need to consider that any disadvantage results from having the ceiling and walls entirely white. In this case I think it would be better to have the wall against which the dark-room lamp is placed black, since lanterns are liable to allow white light to leak from behind, and such reflected rays are then minimised if they fall upon a black surface.

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[47] Eder's "Jahrbuch," 1906, p. 333.

### Preparation of Safe-Lights.

I give here the method which has been described by Dr. E. König and others, adding to it for the sake of completeness the slight modifications which my own experience has led me to introduce.

If it is wished to use the glasses of old negatives, the most simple method for removing the gelatine consists in immersing the plate for about half a minute in a dish containing a solution of chromic acid (potass bichromate and sulphuric acid). The gelatine does not come away from the glass as in a bath of hydrofluoric acid, but almost as readily, and can easily be removed. In order to clean the glass, the plate is left for half an hour in a bichromate solution containing sulphuric acid, then washed, first in ordinary water and then in distilled, and finally put to dry.

Immediately before commencing the preparation of the filter the surface of the glass which is to receive the gelatine coating is cleaned with a mixture of alcohol and ammonia, which is then carefully polished off. The plate is then laid on a piece of plate-glass of large size, which is placed level by aid of a spirit level.

In 100 ccs. of distilled water, 6 or 8 gms. of gelatine (whichever the formula directs) are placed for ten minutes to soften. The water is poured off into a graduated measure, and a note made of the quantity absorbed. The water is poured away, and there is then added to the gelatine a quantity of distilled water equal to that thrown away. After ten minutes this operation is repeated, and again a third time. The gelatine is then raised gradually to a temperature of 60 deg. C. by placing its containing vessel in a salt bath or boiler. We thus have a solution of gelatine of 6 or 8 per cent. strength, which is used in the formulæ to be given later. After having added the requisite quantity of dye in the form of a solution, the mixture is filtered hot through paper, and is flowed as rapidly as possible on the glass. During filtration care must be taken that the mixture remains liquid and does not set. For this purpose it is best to use a funnel which can be heated with hot water, or to filter with the aid of a pump.

From 7 to 10 ccs. of the 6 or 8 per cent. solution of gelatine are used for each 100 sq. cm. of surface. In applying the 6 per cent. solution of gelatine to the glass the temperature should be about 50 deg. C.; in the case of the 8 per cent. solution, 55 deg. C. The room in which the work is done should be kept at a temperature of from 15 to 20 deg. C. If warmer, the gelatine sets too slowly, and if colder too rapidly.

The gelatine is poured on to the middle of the plate from a graduated measure. If the surface is quite clean the gelatine flows equally in all directions, and, by means of a curved glass rod, is spread uniformly up to the edge of the plate. Any air-bubbles are removed as quickly as possible, before the gelatine begins to set, by touching them with the tip of a moist finger. As soon as the gelatine is quite set the plates are put to dry away from dust.

A. P. H. Trivelli.

*(To be continued.)*

# THE CITY AND GUILDS OF LONDON INSTITUTE EXAMINATION PAPERS IN PHOTOGRAPHY.

## II.

In continuation of the intention expressed in our last issue, we give herewith answers to the questions set in the Honours grade of the examination in "Pure Photography" by the City and Guilds of London Institute. Answers to the questions set in the Ordinary grade were given in last week's issue. We shall complete the series by publishing answers to the questions set in the two grades of the examination in "Photo-Mechanical Processes."

1. The method of transferring a negative film on to a fresh glass by the aid of hydrofluoric acid is quick and readily available, but there is, unless due precautions are taken, a liability to expansion of the film. How can this trouble be avoided? Describe in detail the whole process and the chemicals employed, and state what means you would adopt to ensure the adherence of the film to its new support. (40 *marks.*)

The acid should be made up with a mixture of methylated spirit and water. The advisable working details are as follows:—The film of the negative is cut through to the glass all round about ⅛in. from the edges, and the negative is placed level. Some of the mixture of acid and spirit and water is poured on. A suitable proportion is methylated spirit, 1oz.; water, 2oz.; hydrofluoric acid, 1drm. This is spread over with an end of paper and allowed to act for some little time, say five minutes. The edgings of the negatives are tested to see if they come away quite easily—without any pull being necessary. If so, the whole film is probably loose on the glass, but it is well to make sure of this by passing a waxed silk thread, stretched on a bow of cane, under the film. If film is then seen to be detached, the acid mixture is poured off and some plain mixture of spirit—about 25oz., with water 1oz., and glycerine 1oz.—poured on. A sheet of paper is now lowered on to the film, and squeegeed down and removed, carrying the film with it. This can be done by placing knife blade under film when removing the paper. To cause film to stick to new glass plate, the latter is flowed over with very thin gum solution and allowed to dry. It is then flowed over with the spirit-water-glycerine mixture, and the film, supported on the paper, laid down upon it, the squeegee passed over the paper, and the latter removed, keeping the film down by inserting a knife blade between it and the paper.

2. Describe some typical shutters employed for so-called instantaneous photography, and give their maximum alleged speeds. State any disadvantages that may attend the use of any particular form under certain conditions. (40.)

The three chief types are the roller-blind, diaphragm, and focal-plane. The first consists of a long blind of opaque fabric mounted on rollers in a box (which fits on the lens hood). The blind has in it an aperture which usually is seven or eight times the diameter of the lens itself. The blind can be caused to move at various speeds by winding the actuating spring, the lens being open for the time occupied by the aperture in passing over it.

The diaphragm shutter consists of a series of sectors or blades mounted in a metal casing which usually is made to form part of the lens-tube, the back and front components screwing into the threads provided on the shutter. The action of the leaves or blades of the shutter is to open from the centre and to close again to the centre like an iris diaphragm. The rate of movement is controlled not by varying the tension of the actuating spring, but by adjusting a brake.

The focal-plane shutter consists of a moving blind mounted close in front of the plate and provided either with several slits or with one the width of which can be varied from about ¼ in. to the full width of the plate. The exposure given to the plate is thus varied by altering both the width of the slit in the blind and the tension of the actuating spring.

The *alleged* speeds of roller-blind shutters are from 1-15 to 1-100; of diaphragm shutters, from ½ to 1-100 or 1-250; of focal-planes, from 1-10 to 1-1000 or 1-2000.

For very rapidly moving objects, *e.g.*, jumpers, racing, etc., the roller blind and diaphragm shutters do not give a sufficiently short exposure, and they are inconvenient shutters when a variety of lenses have to be used on one camera. On the other hand, the focal-plane is more liable to derangement, and the blind is apt to perish in hot countries.

3. For carbon printing describe the method of sensitising the tissue so as to be available for use within an hour. How would you proceed to make a carbon print on rough drawing paper, starting with the paper as received from the stationer? (45.)

Carbon tissue which will be sufficiently dry for use within an hour after sensitising if sensitised with a solution of bichromate of ammonia of rather less than ordinary strength, 50 to 60 per cent. of the water being replaced by methylated alcohol. The solution is applied by means of a pad of cotton wool or a "Buckles brush," made of a strip of flannelette fastened over the end of a slip of glass. The solution is applied plentifully and quickly, the strokes being crossed so as to avoid lines.

For transferring to rough drawing paper, the paper must be coated with a solution composed of gelatine 1 oz., water 20 oz., to which is added, while hot, chrome alum 20 gr., hot water 2 oz. This is applied with a brush, two coatings being given. When the second is dry the paper is ready for single transfer. It may be used for double transfer if the print is developed upon flexible support and coated with a plain gelatine solution 1 oz. to 30 oz. of water to secure perfect contact.

4. Give description of various modes of producing photographs in colour direct in the camera by one exposure. (45.)

The chief method is the screen-plate; e.g., Autochrome, producing a transparency (positive and negative) in colours by an additive process, i.e., mixture of coloured lights. The plate is coated with three series of coloured filter units or elements, red, green, and blue-violet. These minute filters are adjusted, as regards intensity of colouring, and relative number, so that the whole plate is as nearly neutral in colour as possible. This filter layer (if necessary) is covered with a varnish upon which the panchromatic emulsion is coated. On exposure to light in the camera, with a compensating filter on the lens, the glass side of the plate is turned towards the lens so that the light passes through each filter element before reaching the sensitive emulsion. Thus, in the case of an object emitting red rays, the red filter elements, on development of the exposed plate, are covered by silver deposit, and the green and blue-violet units left bare. These, on the plate being viewed by transmitted light, combine yielding and coloured light, the complementary of red and greenish-blue. If, however, the negative image produced in the camera be converted into a positive one (by treatment with acid permanganate followed by redevelopment) the green and blue-violet units are covered and the red left bare, thus reproducing direct the colour of the original object.

The methods of producing the screen-plate filter film are very various. Dyed starch grains are dusted over the plate and rolled down to fill up minute interspaces. This is the Autochrome plate. In others, filter bands or patterns are printed in bichromated gelatine or fish-glue, and dyed up with suitable colouring matters. In others, part of the pattern is printed in greasy ink on a gelatine-coated plate, and parts left uncovered dyed.

A second, but at present impracticable, method of direct colour photography is the so-called bleach-out process, according to which paper or other support is coated with three fugitive dyes (rendered more fugitive with anethol, etc.) which among them absorb all the spectrum colours. Each dye is bleached out by rays of its own colour, so that the result of exposure (which, however, requires to be greatly prolonged) is a positive facsimile in colours.

5. What do you understand by a lens-pupil? (35.)

A lens pupil is the virtual aperture—as distinct from the actual diaphragm aperture—which governs the action of the lens. Every lens has two pupils—the entrance pupil which controls the amount of light entering the lens, and the exit pupil which fulfils a similar function if the lens is reversed. In a doublet the entrance pupil is an image of the stop aperture formed by the front combination, while in a single lens it is the stop aperture itself. The distance of the entrance pupil from the subject controls the perspective or the "drawing" of the image, and its size governs the exposure and also the depth obtained.

6. In a telephotographic lens in which you have a positive lens of 10-in. focus and a negative lens of 4 in., what length of camera would be required to increase five times the size of image that the unaided 10-in. lens would give? (40.)

The rule for finding the camera extension necessary is to take the focal length of the negative lens, multiply it by the number of (linear) magnifications desired, deduct once the focal length from the product, and set the focussing screen at this distance from the negative lens. In the example given this is 5 x 4=20—4 =16 in. The degree of magnification depends entirely upon the focal length of the *negative* lens, although the actual size of the image varies according to the focal length of the positive lens.

7. In the photograph of a horse the fore legs were only half the length of the hind legs. What does this show, and how, in making another photograph, could you avoid this unpleasant result? (40.)

Assuming that the fore legs of the horse were farther from the camera than the hind ones, and that the horse itself was of normal proportions, it would indicate that the camera was too near to it at the time of making the exposure. This could be avoided either by the use of a lens of greater focal length to secure an image of the same size, or using the same lens to take the photograph at double the distance.

8. Explain fully the disadvantages of a front focussing camera when used for copying a print to a one-half scale. (35.)

The principal disadvantage of using a front focussing camera, when copying to a one-half scale, is the necessity for repeated trial focussings to obtain the correct size, both conjugate foci being altered at each movement of the lens. In the case of a back focussing camera the lens remains stationary, and only the back conjugate requires alteration if the node of emission of the lens is placed at the correct distance from the original. A minor disadvantage is that the focussing pinion is usually not in such a convenient position as with a back focussing model.

9. In the use of a telephotographic lens on a distant object, what steps would you take to avoid getting a fogged negative? Explain the effect of each precaution as definitely as possible. (40.)

The first and most important is to provide a long well-blacked hood for the lens. This should be about one and a half times the diameter of the lens-tube and as long as can be conveniently used, say 8 to 10 in. Secondly, the glasses composing the lens should be absolutely clean and bright, and the interior of the lens-tube perfectly dead black, using a velvet or cloth lining for preference. Thirdly, a fairly deep iso screen with a rather slow orthochromatic plate should be used, great care being taken to avoid the slightest risk of veiling by an unsafe light in the dark-room either during filling the slides or development. Fourthly, give the minimum exposure possible to secure the necessary detail and develop very fully.

10. If it were required to photograph a buttercup in front of a sheet of white paper on which some broad lines were drawn in Indian ink,—(1) so that the flower should appear white; (2) so that it should appear black; how would you proceed in each case? Give reasons for your procedure. (45.)

In the first case it would be necessary to record the light reflected from the buttercup on the negative, and in the second, to prevent it from recording, and at the same time in both cases to record the light reflected from the white paper. The light reflected from white paper comprises the whole range of the spectrum: the light reflected from a buttercup is mainly that occurring in the spectrum from the red end down to about the end of the green, say, wavelengths 7,000 to 5,000, and therefore in order to record this light we must have a plate that is sensitive to it. No plate exists that is sensitive to this light alone; all plates are most sensitive to blue light. An ordinary isochromatic plate is sensitive as well to a portion of the required light, and a panchromatic plate is sensitive to all of it. Although the first plate could be used, the latter is the better. But as both plates are also sensitive to the blue end of the spectrum, if used alone the white background would be over exposed before the buttercup was recorded and the detail of the black lines would be lost in consequence. Therefore a filter must be used to prevent the blue light affecting the plate. Any filter that does this adequately will do, from a red to a green. A filter admitting both red and green, namely, a yellow, is perhaps the best. A good filter would be that sold as "K3," or a filter could be made by using a 5 per cent. bichromate of potassium solution in a cell.

To prevent the buttercup recording we must obviously proceed in the opposite way. Therefore we do not want a plate sensitive to anything but blue, such as an ordinary plate, or if it is, we must use a filter that absorbs all the green and red light reflected by the buttercup. Such a filter might be the blue of a three-colour set, or one could be made with Victoria blue and a small quantity of naphthol green dye.

The white background will be recorded equally well in both cases, because its record will be made in the first case by the red and green, and in the second by the blue light reflected from it.

11. If a pyro-soda developed negative has a brown stain over the whole of it, how would you (1) proceed to get rid, as far as possible, of the stain, and (2) to avoid getting the stain in a new negative that you might make? (40.)

1. If stain is only slight, immerse plate in a clearer of ferrous sulphate, alum, and citric acid, letting it act for twenty minutes or half an hour. This clearer being acid, the stain is liable to recur in time, but it is a quite practical method. If stain is so deep that it does not yield to this treatment, the best course is to use an extract of bleaching powder made by shaking up bleaching powder with solution (cold) of soda carbonate and filtering. The solution is used alkaline or, after acidifying, with hydrochloric acid. In the latter form it is a very powerful stain-remover, but requires to be used with care, as it is liable to bleach the silver image.

2. Use, if necessary, more sulphite in the developer; avoid exposing the developer both before and during use to the air: also a fixing bath of the "acid" type (*e.g.*, containing potass metabisulphite) will avoid the formation of stain.

12. What do you understand by the following terms:—Astigmatism, focal volume,[*] covering power, diaphragm distortion, time development, temperature coefficient (in connection with development)? (40.)

Astigmatism.—The defect in a lens by which oblique rays (only) converge to two lines instead of to a single point. Its effect is a general want of definition in the margins of the picture, and the inability of the lens to bring both horizontal and vertical lines in the subject into focus in the same plane.

Covering Power.—The field covered by the lens with sharp definition, and therefore measured by the diameter of the circular disc over which the lens defines sharply.

Diaphragm Distortion. — The bowing inwards or outwards of straight lines, which lie towards the margin of the subject, by a single lens. With the diaphragm in front of the lens the distortion is outwards (barrel-distortion); with the diaphragm behind the lens the distortion is inwards, or pin-cushion.

Time Development.—Development to a given density or degree of contrast, not by inspection, but by using developer of previously fixed composition, at a given temperature for a certain fixed time, which is determined by previous practical trials on correctly exposed plates. This is what is strictly understood by time development. A method of "time" development in which the total duration is judged by noting the time of appearance of high-light detail is described properly as "factorial" development, but is by some loosely spoken of as "time."

Temperature Coefficient.—The ratio of the times of development necessary to produce the same degree of contrast at two temperatures. 10 deg. C. apart.

# Photo-Mechanical Notes.

### The Packing of Blocks.

The usual method of packing blocks for post is to break a piece of millboard or strawboard of the correct size, place this on the face of the block and wrap in brown paper. Where a large postal business is done, however, it is better to have cardboard boxes made that just take a block. Of course, this means having a large series of different sizes made, and necessitates a certain amount of room to have the boxes suitably disposed, so that they may be come at quickly in the size required. If this space is available, then this method is by far the most satisfactory, and even cheaper than others, since the boxes are very inexpensive; the blocks need no packing, but are merely placed inside. No wrapping is needed, for the box is simply tied round with string and the address put on the box itself.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between July 31 and August 5:—

Reflex Cameras.—No. 17,832. Reflex photographic cameras. Bertram Lewis Medland.

Cameras.—No. 17,564. Cameras. James Robert Wood.

Photographic Paintings.—No. 17.520. Process for producing photographic paintings. William Hanson Boorne.

Printing Mechanism.—No. 17,735. Mechanism for printing continuous sensitised photographic tapes. John Owden O'Brien for John Edward Thornton, United States.

Screens.—No. 17,771. Screens employed in connection with optical lanterns, cinematograph apparatus, and the like. Oswald Stoll.

Glazing.—No. 17,676. Device for producing a glazed coating on those spots of unglazed paper which are to receive the impression of a picture. Leopold Hirsch.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Photographic Lenses.—No. 22,157, 1910 (September 24, 1910). This invention relates to a lens for photographic purposes, in which the chromatic spherical oblique astigmatic and other errors are corrected by a novel method. The invention consists of the use of four lenses arranged in two parts, one combination comprising three lenses on one side of the diaphragm, the other part consisting of one lens on the other side of the diaphragm. The lenses have the following characteristics: the lens L1 nearest the view is a double convex positive lens of high refraction and low dispersion, the next lens, L2, is a double concave negative lens of higher dispersion and lower refraction, the other two lenses, L3 and L4, are both positive lenses of low refraction and low dispersion.

The airspace between lenses L1 and L2 is in the shape of a positive meniscus lens, that between lenses L2 and L3 is of the shape of a positive meniscus lens, that between lenses L3 and L4 is the shape of a negative lens.

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[*] The expression "focal volume" is a term unfamiliar both to the writer of the above answers and to ourselves. Presumably it is used by some writers to describe true depth of focus. In our view the question is too recondite for inclusion in an examination paper.—Eds. "B.J."

The lenses L3 and L4 are so mounted that either can be separately removed from the complete combination, lengthening the focus to a different amount, according to which of the two lenses is removed, and thus a lens giving three foci, known as a convertible three-focus lens, is formed. If a lens of one focus only is desired, the lenses L3 and L4 may be replaced by a single double convex positive lens made of a glass with low refractive index and also low dispersion.

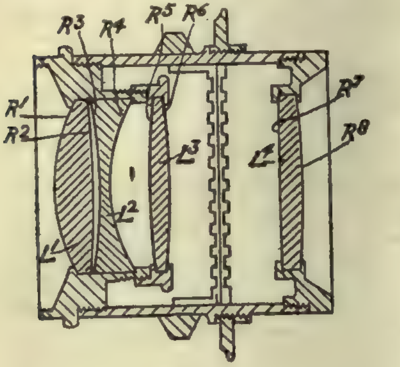

Fig. 1.

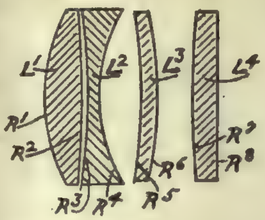

Fig. 2.

Fig. 1 is a drawing of the model of the four-lens form, and the optical data for a 10-in. focus lens are as follows :—

| Radii of Curvature | | Refractive Index μD | ν Value $\frac{\mu-1}{\Delta\mu}$ | Thickness in Centres |
|---|---|---|---|---|
| Lens 1 | R1 = +1·77 | 1·6128 | 58·3 | ·4 |
| | R2 = +9·71 | | | |
| Lens 2 | R3 = −5·8 | 1·558 | 45·5 | 4 |
| | R4 = −1·61 | | | ·105 |
| Lens 3 | R5 = +24″ 8 | 1·5289 | 58 9 | |
| | R6 = +24″·8 | | | ·15 |
| Lens 4 | R7 = +95″ | 1·5289 | 58·9 | |
| | R8 = +9″·1 | | | ·20 |
| Distances from | R2 to R3 | ·02 | | |
| ,, ,, | R4 to R5 | ·42 | | |
| ,, ,, | R6 to R7 | 1·05 | | |

The double convex lenses 3 and 4 may be made plano-convex or positive meniscus, consequently altering the shape of the air space between lenses 2 and 3.

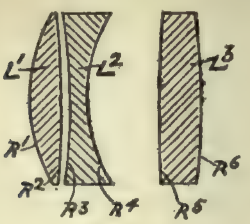

Fig. 3.

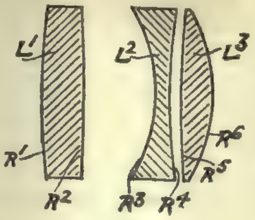

Fig. 4.

Fig. 2 is a drawing of the model in which lens 3 is a positive meniscus and lens 4 a plano-convex, and the optical data for a 10-in. focus lens are as follows :—

| Radii of Curvature | | Refractive Index μD | ν Value $\frac{\mu-1}{\Delta\mu}$ | Thickness in Centre |
|---|---|---|---|---|
| Lens 1 | R1 = +1·78 | 1·6128 | 58·3 | ·43 |
| | R2 = +10 03 | | | |
| Lens 2 | R3 = −5·9 | 1·558 | 45·5 | ·08 |
| | R4 = −1·64 | | | |
| Lens 3 | R5 = −5·3 | 1·5289 | 58·9 | ·17 |
| | R6 = +3·9 | | | |
| Lens 4 | R7 = +9·3 | 1·5289 | 58·9 | |
| | R8 = ∞ | | | ·25 |
| Distances from | R2 to R3 | ·03 | | |
| ,, ,, | R4 to R5 | ·41 | | |
| ,, ,, | R6 to R7 | ·33 | | |

Fig. 3 is a drawing of the modified form in which lenses 3 and 4 are replaced by one lens and the optical data for a lens of 10-in. focus are as follows :—

| Radii of Curvature | | Refractive Index μD | ν Value $\frac{\mu-1}{\Delta\mu}$ | Thickness in Centre |
|---|---|---|---|---|
| Lens 1 | R1 = +1·73 | 1·6128 | 58·3 | |
| | R2 = +9·72 | | | ·32 |
| Lens 2 | R3 = −5·81 | 1·558 | 45·5 | |
| | R4 = −1·60 | | | ·16 |
| Lens 3 | R5 = +36·8 | 1·5289 | 58·9 | |
| | R6 = +7·05 | | | ·40 |
| Distances from | R2 to R3 | ·03 | | |
| ,, ,, | R4 to R5 | ·87 | | |

In this form of lens, the equivalent planes being near the lens L1, the back focus is short—for some purposes it is an advantage to have the back focus long, in which case the lens can be reversed as shown in Fig. 4, slight modifications in the curves of the lenses being made. Conrad Beck and Horace Courthope Beck, 68, Cornhill.

**Daylight Cinematographic Projection.**—No. 16,104, 1910 (July 6, 1910). Under this invention is provided in front of a translucent projection screen, one or more rectangular or other shaped frames or laths situated in or in front of a pyramidal or other box open at both ends, these frames having stretched upon each of them a screen of gauze, the gauze screens being situated, one in front of the other, at any desired distance from each other, whereby the daylight, when the picture is being shown in the open, or the gas or other light, when the exhibition is being given in a lighted hall, is trapped by the gauze screen or screens, so that it does not reach the translucent projection screen upon which the pictures are thrown, and only that area of the picture screen upon which the pictures are projected is lighted up. The gauze screen or screens, which may be of any colour or material, may be adjustable in position and in relation to each other by means of screws, slides, racks, or otherwise, in order to suitably absorb the daylight or other light. Thomas Whitelaw Fairlie and Walter Draper, 38, Stockwell Street, Glasgow.

**Folding Reflex Cameras.**—No. 8,580, 1911 (July 6, 1911). This invention has reference to a folding reflex camera. In cameras of this type the mirror has either to be brought by a special device into operative position, or the mirror is so connected with the front portion of the camera that on setting up the camera the mirror is also brought into the operative position, or it is connected with the focussing-screen, which, on being brought into the operative position by turning the spindle connected with it, also automatically carries the mirror into the correct position for reflecting the image. Consequently after opening the camera, it is neither necessary to bring the mirror or the focussing-screen into the operative position by separate handles. It has been proposed to use a spring instead of a handle for the said purpose, but in such case a locking device must be provided, so as to hold

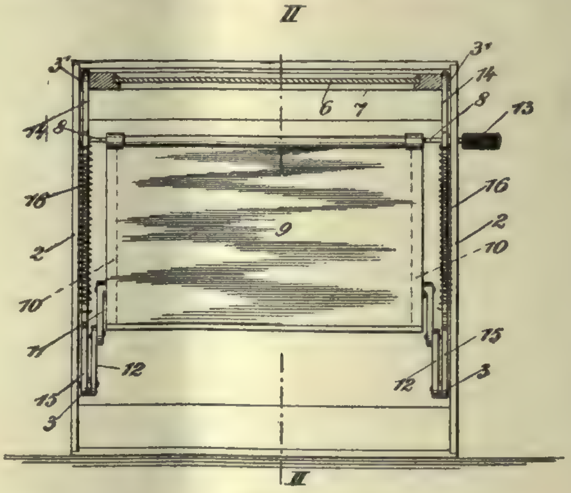

Fig. 1.

the spring-controlled part in the operative position, and, before folding the camera together, the locking device must again be released.

According to this invention, the mirror and the focussing-screen are brought into the operative position; when opening the camera, without the use of springs, by connecting one or both of the lower knee-levers of the camera positively with the holder of the mirror, and one or both of the upper knee-levers with the frame of the focussing-screen. The camera can thus be opened and folded by means of a single handle, and the position of the mirror and of the focussing-screen to each other and to the sensitive surface is assured.

In order to ensure greater reliability when setting up the apparatus, special knee-levers may be provided which hold the knee-levers of the focussing-screen, and the mirror in the stretched-position, and themselves are held stretched by suitable locking devices.

Fig. 1 is a vertical section on the line I—I of Fig. 2 through the camera in its operative position.

Fig. 2 is a vertical section on the line II—II of Fig. 1.

Fig. 3 is also a vertical section, but with the camera folded.

The four corners of the front portion 1 of the body of the camera and of the back portion 2, are connected by knee-levers 3 and 3¹, which, when the camera is folded, are situated above each other in the manner shown in Fig. 3, and in the stretched position are limited in their movement by the butt ends 4.

The frame 7, carrying the focussing glass 6, is mounted in the upper portion of the casing of the camera on the pivots 5 of the corresponding knee-levers 3¹, and is rigidly connected with the one member of the knee-lever 3¹. On setting up the front portion 1 of the body of the camera, the frame 7 will consequently be swung together with the focussing-screen 6 into the operative position as shown in Fig. 2.

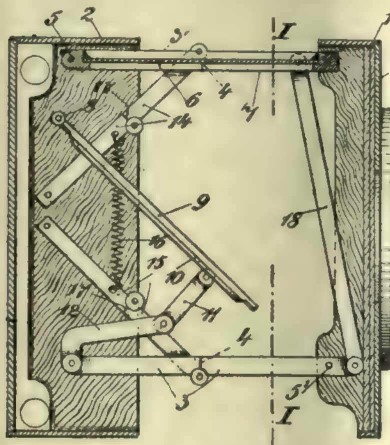

Fig. 2.

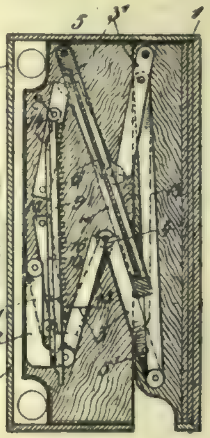

Fig. 3.

Both the bars 10 are rotatively mounted, at a distance from each other corresponding to the dimensions of the mirror 9 on a shaft 8 turning in the back portion 2 of the body of the camera. Each of these bars 10 is connected by a link 11 with a bell-crank arm 12 fastened to the corresponding arm of the knee-lever 3 pivoted to the back portion 2 of the body of the camera, so that it participates in all the movements of the arm. The arrangement and dimensions of the arm 12 is such that on pulling out the front portion 1 of the body of the camera, the bars 10 will be situated at an angle of 45° to the lens as well as to the ground glass 6.

The frame of the mirror 9 is mounted on the spindle 8, and rests with its back against the bars 10. It is evident that by this arrangement on pulling out the front portion 1 of the body of the camera, the mirror will be adjusted at an angle of 45° to the lens, as well as to the focussing-screen, so that the mirror can reflect the image thrown by the lens on to the focusing screen.

After having focussed the picture the mirror 9 can be swung out of the plane of the picture by turning the spindle 8 by means of the handle 13. The arrangement might also be such that on turning the spindle 8 a roller-blind or the like is released, and passes in front of the focussing-screen.

In order to obtain a perfectly reliable adjustment and sufficient rigidity of the adjusted mechanism, according to the form of construction shown in the drawing, each of the four knee-levers 3, 3¹, is pivotally connected by a knee-lever 14, 15 with the back portion 2 of the body of the camera. The levers 14, 15 on each side of the casing are connected by a spring 16, which tends to hold them in the stretched position determined by the butt ends 17. The knee-levers 3, 3¹ will thereby also be brought into and maintained in the stretched position determined by the butt ends 4. This arrangement consequently assures the exact adjustment of all the parts with respect to each other.

In order to facilitate the folding of the camera, the one arm of each of the two knee-levers 3 pivoted to the front portion 1 of the body of the camera is prolonged beyond its pivoting point 5¹, and at the end of this prolongation is pivotally connected with the one end of a link bar 18, the other end of which is pivoted to the arm of the corresponding upper knee-lever 3¹. If with this arrangement the camera is folded, the link rods 18 will facilitate and assist the movement of the knee-lever 3 from the stretched position. At the same time the mirror will be swung back and the focussing-screen turned down into the body of the camera.—**Willem Brandsma, 8, Spui, Amsterdam, Holland.**

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

REFLECTORS.—No. 16,271. Light transforming reflectors. **Hewitt.**

## New Trade Names.

ANTI-SCREEN (DESIGN). — No. 333,627. Photographic dry-plates. Wellington and Ward, The Elms, Shenley Road, Boreham Wood, Elstree, Herts, photographic material manufacturers. May 16, 1911.

### FORTHCOMING EXHIBITIONS

September 9 to October 21.—London Salon of Photography. Entries close September 1 (Britain), August 21 (foreign). Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.

October 11 to 20.—Bournemouth and District Camera Club. Entries close October 2. Sec., Miss Penrice, 41, Wellington Road, Bournemouth.

November 6 to 11.—Southampton Camera Club. Sec., C. M. Cooper, 203, Shirley Road, Southampton.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Vignettes with Grey Borders.

One drawback of the ordinary form of vignette with a white border (writes "T.W." in "Photography and Focus" for August 15) is that, by contrast with the blank white of the margins, the highest lights of the picture look duller than they should do. There is a form of picture known as an "Egyptian vignette," in which the vignetting shape is used, not in printing, but inside the camera, when making the negative. The effect of this is to give a negative with clear edges, which print dark, so that instead of vignetting into white, the picture vignettes into black. The result is distinctly funereal. An intermediate course would seem to be indicated, in which the picture vignettes into a grey. Although seldom attempted, this is not difficult to accomplish, the only materials required being a sheet of glass and some matt varnish. The glass receives an even coating of the varnish, and when this is dry a patch in the centre about the size the vignette is to be, or larger, is scraped clean with a knife. The boundary line of the patch is softened by being notched with the point of the knife, in a way that will be familiar to everyone who has ever made a card vignetter. This glass is then fixed over an opening in the bottom of a cardboard box—a bandbox answers very well—and is set up in front of the lens, which is directed into the mouth of the box, the lid of which is removed; by moving the glass nearer to or further from the camera, the size of the vignette on the plate can be altered to suit. The box must be adjusted until the picture on the ground-glass is seen vignetting into a light tint in the way required. The vignetting is done by the rays from the sitter passing to the lens through the clear patch on the glass. After exposure and development, a negative is obtained which will print a vignette with light grey edges. If the merest trace of yellow dye is added to the matt varnish the edges of the vignette will appear much darker.

### Plants which Disperse Flies from Studios.

The name of one plant—there may be many more—(writes Mr. W. Derwent to the "Amateur Photographer" for August 14, p. 157) is the castor oil plant. I have used this plant in New Zealand in my dining-room with splendid results. Another plant which flies have a great dislike to is the musk. In either case, it is important *to allow an escape* by means of a partly opened window or door. Another method of ridding a room of these pests, and which during the hot weather may be welcome to many of your readers, is to procure from a chemist sixpennyworth of oil of sassafras, smear some on a piece or pieces—according to size of room—of brown paper, and hang up under a gas bracket or anywhere convenient, partly darken the room, and again *allow an escape*, and in about half an hour there will hardly be a fly left. To a few the smell of this oil is not agreeable, but to the majority it is distinctly pleasant and refreshing.

## New Books.

Groups and Genre Subjects.—The latest of the useful manuals published from the office of the "Photo-Revue" deals with this subject, the author, M. J. Carteron, dividing his text about equally between questions of composition and artistic arrangement and matters of practice, such as apparatus and development. The brochure is published by Chas. Mendel and Co., 118, Rue d'Assas, Paris, price 60 c.

An Italian Photographic Year-book.—The third issue of the "Annuario Della Fotografia," edited by Professor A. Rossi, reaches our table. It contains several contributed articles, a selection of tables and formulæ, abstracts of papers and articles in the photographic press of all countries, descriptions of apparatus on the Italian market, and lists of photographic societies and periodicals, which latter might advisedly be made complete or omitted altogether. The "Annuario" is published from the office of our contemporary, "Il Corriere Fotografico," Milan, at the price of 2 lire.

Cassell's Cyclopædia of Photography.—Parts 8, 9, and 10 of this publication, edited by Mr. Bernard E. Jones, brings the alphabetical sequence of the articles to "Sensitometry." Among the more important articles in the three numbers are those on the Lippmann process, mounting, natural colour photography (largely historical), night photography, paper negatives, patents, phosphate plates and papers, photo-micrography, pinhole photography, platinotype, portraiture, pyro developers, retouching, and screen-plate colour photography. As in previous numbers of the "Cyclopædia," there is a vast number of paragraph articles which give much practical information in a few words.

### CATALOGUES AND TRADE NOTICES.

Griffin P.O.P.—An 8-page booklet which deals usefully with their P.O.P. has just been compiled by Messrs. John J. Griffin and Sons, Ltd., Kingsway, London. It deals with the production of the warm tones now popular. It will be sent free on application.

## New Materials, &c.

**"Professional" Plates. Sold by John J. Griffin and Sons, Ltd., Kingsway, London, W.C.**

Messrs. Griffin, who in their professional department have of late actively specialised in the design and supply of requisites for portrait photographers, send us samples of these plates issued by them specially for studio use. The plates are made in four speeds, of which that marked 350 H. and D. proved in our hands a very fast emulsion, suitable for shutter exposures as given in the studio. The character of the plate is to yield a soft yet brilliant negative when treated with a developer such as amidol or metol-hydroquinone, but those who wish for the more contrasty negatives suitable for carbon or collodio-chloride printing, can readily obtain them, best, perhaps, with the customary pyro-soda developer. The plates are of fine grain and extremely clean in working. They are quick both in development and fixing, and combine these various desiderata of a plate for studio use with the high general speed already referred to. Messrs. Griffin, who have taught professional photographers to turn to them for many useful requisites in the way of apparatus and accessories, may congratulate themselves in likewise supplying reliable products for negative-making and printing.

## Meetings of Societies.

### MEETINGS OF SOCIETIES FOR NEXT WEEK.

Saturday, August 19.

Halifax Camera Club. Ramble to Eastwood District.

Tuesday, August 22.

Hackney Photographic Society. Short Papers by Members.

Wednesday, August 23.

North Middlesex Photographic Society. Debate: Stand Camera v. Hand Camera. Louis Dick and H. W. Fincham.

## Commercial & Legal Intelligence.

### NEW COMPANIES.

H. J. Gover and Co.—This company has been registered with a capital of £1,000 in £1 shares, to take over the business of a photographic artist, photographer, dealer in photograph materials, etc., carried on by H. J. Gover, as H. J. Gover and Co. The subscribers are:—H. J. Gover, 53, Piccadilly, Hanley; Mrs. A. Gover, 3, Wilfred Place, Stoke-on-Trent; and G. T. Audley, 12, Church Street, Hanley. Private company.

## News and Notes.

Photo-Engraving Profits.—Addressing us in reference to the paper published in our issue of July 28, Mr. F. E. Ives writes:—"I note that in your abstract of my talk at the Photo-Engravers' Convention in Cleveland (p. 576), Crosscup and West are credited with a little more than one dollar of profit on a year's business. It would require very close figuring to arrive so definitely at the amount of profit on a year's business! The amount stated in my paper was 'a little over one thousand dollars.' That was considerably more than 100 per cent. profit on my year's work." We are glad to publish this amendment. The figure of one dollar was given in the advance type-written abstract of Mr. Ives' paper.

The "Henderson" Award.—The committee of the London and Provincial Photographic Association have fixed August 31 as the last date for the receiving of papers for the above award, read before other societies. Any papers submitted must have been read or published between the dates of July 1, 1910, and June 30, 1911. The award is of the value of five pounds, and may take either of the following forms: Cash, a gold medal, silver or bronze medal and cash or apparatus to value, as the winner desires. It is given for the best paper on a photo-chemical or kindred subject, and is open to the whole of the photographic world. All papers submitted should reach the Hon. Sec. of the L. and P. not later than the date named, at his address, 43, Whitta Road, Manor Park, Essex. The award for the year 1909 and 1910 was given to Mr. J. S. Teape for his paper upon the "Reversal of the Image."

THE CELLULOID INDUSTRY.—The following information relative to the celluloid industry of Japan has been furnished to the "Journal" of the Board of Trade by H.M. Vice-Consul at Osaka (Mr. E. H. Holmes):—Hitherto there have been no celluloid factories actually working in Japan. In 1908, however, two companies were floated and began the erection of factories with a daily capacity of one and three tons of celluloid respectively. Negotiations with a view to amalgamating the two companies have so far proved abortive. Both factories have been completed recently, and the manufacture of celluloid is to be begun at once. The compound known as celluloid is a chemical preparation of macerated tissue paper of fine quality treated with a mixture of nitric and sulphuric acid, and blended with camphor by the agency of rectified alcohol. Of these ingredients, camphor is produced at present only in Formosa, Southern Japan, South China, and the Dutch Indies, and 75 per cent. of the world's supply is grown within the Japanese Empire. Japanese camphor is a Government monopoly, the price being regulated by the Imperial Monopoly Bureau. Up to the present, Japanese consumers of camphor have enjoyed no advantage in price over those in other countries, the two celluloid companies, however, have succeeded in obtaining supplies of camphor at a price slightly below that at which the article is exported. As regards this, the most important ingredient in the process of celluloid manufacture, Japan stands, therefore, in a unique position compared with other manufacturing countries. With regard to other materials, however, Japan is not so favourably situated. Though paper-making takes a high place among native industries, Japanese paper makers have not hitherto turned out the fine tissue paper made from cotton fibre which alone is suitable for celluloid manufacture. A large paper mill at Osaka is making attempts in this direction, however, and, while the paper made by this concern does not, it is stated, as yet equal imported tissue paper, constant improvement is being affected. For celluloid manufacture nitric acid of at least 95 per cent. is necessary, whereas the best nitric acid of Japanese manufacture does not exceed 93 per cent.; but the new companies are taking steps to manufacture the material themselves. It has been found possible to obtain in Japan alcohol sufficiently pure for celluloid manufacture. The remaining ingredient, sulphuric acid, is readily obtainable in the country. The output of celluloid is naturally limited by the available supply of camphor, and there are at present in existence only fourteen celluloid factories, of which two are in the United States, seven in Germany, three in the United Kingdom, and two in France. The erection of two additional factories in Japan, therefore, with an estimated daily output of four tons, is a feature of considerable importance in the progress of the industry. Imports into Japan of raw celluloid, in rod and sheet form, amounted in 1909 to 239 tons, of a value of £60,353, and in 1910 to 270 tons, valued at £65,363. Deducting some 70 tons re-exported to China and other eastern countries in the form of celluloid wares, the domestic demand is found to be about 200 tons, of a value of some £40,000 per annum. Allowing a margin for the expansion of the demand in consequence of the manufacture of the article in the country, thus saving import duties, there remains a surplus, if the factories work to their full capacity, of at least 1,000 tons per annum, of a value of some £200,000. The demand for celluloid in the East is as yet comparatively small. The total imports into China of raw celluloid do not exceed £8,000 annually, and those of celluloid wares amount to perhaps some £12,000. Of the raw celluloid half the quantity comes from Germany, which country also does a good business in small wares. Inquiries as to the prospects of selling celluloid in India have not met with encouraging replies. It is to the United States that the Japanese manufacturers look for the bulk of their export trade. They hold that the demand in that country is very great, and is by no means met by the domestic output. The price of celluloid imported into Japan averages about 2s. 5d. per lb. It is claimed that the Japanese factories will be able to produce celluloid at an average price for all qualities of about 1s. 10d. per lb., thus enabling them to compete on favourable terms in foreign markets. It is probable that in view of the difficulties involved in the process and of the lack of properly trained labour, this figure is unduly low. Much, however, depends upon the price at which the factories are able to purchase supplies of camphor.

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertoke responsibility for the opinions expressed by our correspondents.*

### MULTI-SPEED v. FOCAL-PLANE.

To the Editors.

Gentlemen,—I am really very grateful to you for your generosity in considering my difficulty regarding efficiencies of shutters at such length. Anything which advances high-speed photography is always most acceptable to me, and it is the ventilation of such subjects in your columns which you always encourage so enthusiastically which makes for progress.

But I regret to say that in spite of your explanation, and the criticism that I have misread your various articles, I still cannot see that your "Ex Cathedra" notes on December 9, 1910, and July 21 of this year, are "precisely the same thing."

May I try your patience just a little longer and endeavour to emphasise what I mean by selecting the conflicting statements in the two issues? On July 21 you say "from its (Multi-speed's) construction it should be a shutter of rather low efficiency, and we believe that it can be shown to be so by actual measured test." One sees at once that "rather low" begs the question, but you must agree that our comparisons are with the focal-plane shutter or other shutters in existence, not with an ideal shutter of 100 per cent. efficiency. Now, on December 9 you said, "It seems that the apparent high efficiency and high speed of the Multi-speed always surprises, etc.;" of course, "apparent" qualifies. Later, after explaining why the Multi-speed excels other diaphragm shutters, you continue that "in the matter of efficiency the focal-plane shutter has been over-rated at high speeds" (and you give "only 50 per cent." as the efficiency); "if, however, we substitute a diaphragm shutter for the focal-plane one we can increase both the efficiency and the efficient exposure, and so a Multi-speed shutter of fair size relatively to the lens, may, when working at a high speed, give just as much exposure to the plate as a focal-plane shutter working at a rather lower speed."

The efficiency you give (47 per cent.) for the Multi-speed was, I believe, estimated some time ago, and a small shutter was employed. The shutter I have been using for the most part, was retimed as 55 per cent., and a friend who has had much experience in optics has estimated it as 60 per cent. as nearly as possible. A focal-plane shutter was retimed as 40 per cent. (at its highest speed). Take the ratio 60 : 40, and one sees that 1-1000 sec. with a Multi-speed should give as fully exposed a negative as 1-650, approximately, with a focal-plane, not so flattering a result as my experiments tended to show, but a sufficiently big difference to be markedly observable.

I notice that you express dissatisfaction with the ordinary methods of measuring efficiency with focal-plane shutters, and as you are not only eminent, but pre-eminent, authorities on the subject, it would be presumption to offer any criticism except that practical experience certainly accords with this estimation of efficiency obtained in the usual way. I fully appreciate your criteria for measuring the efficiencies of the shutters, and would finally remind you that the tests to which I allude were, of course, made with a lens.—Yours very truly,

ADOLPHE ABRAHAMS.

St. Bartholomew's Hospital,
August 11, 1911.

[We still fail to see the conflict between the statements in question, the whole point of both being why a shutter, that by itself obviously cannot be of high efficiency, gives a much more efficient exposure with a lens than does a focal-plane shutter. Size of aperture evidently affected the question, but this alone did not seem to afford sufficient explanation, hence we suggested that the focal-plane might possibly be of even less efficiency than is generally supposed. This supposition seems now to be confirmed by Dr. Abrahams' statement that his focal-plane at highest speed has an efficiency of only 40 per cent. With regard to measurement of efficiency with a focal-plane shutter, the usual method is to measure the duration of the exposure and then calculate the efficiency using aperture, width of slit and distance from focal-plane as data. A point missed here, as it appears to us, is the fact that the whole of the duration cannot be equally effective, and if critical measurements were possible, we should expect to find a difference between the efficiency given by slits of different formation. That is, we should expect a sharp-edged metal slit to give greater efficiency than a slit with thick cloth-covered edges.—Eds. "B. J."]

### THE LONDON SALON OF PHOTOGRAPHY.

To the Editors.

Gentlemen,—Will you be good enough to remind your readers that the last day for sending in pictures for the London Salon of Photography Show is drawing near (September 1), and that all pictures should be sent to Messrs. Bradley and Co., of 81, Charlotte Street, Fitzroy Square, W., with entry form and 2s. agent's fee? Entry forms and labels for parcels can be obtained on application to the hon. secretary, 5a, Pall Mall East. The exhibition bids fair to be a great success, and already some excellent work has arrived from abroad (last day for receiving foreign work is August 21). The Gallery is being redecorated, and will make a fine setting for the pictures.—With compliments, I am, yours faithfully,

Robert M. Cocks,
Hon. Sec., L.S.P.

5a, Pall Mall East, S.W.,
August 12, 1911.

### THE RELATIVE RAPIDITY OF LENSES.

To the Editors.

Gentlemen,—Marvellous as is the transparency of modern optical glass, even theorists will hardly claim that it passes *all* the light; it is obvious, therefore, that, other things being equal, the thicker the lens the more light absorbed. Many large lenses show a decided tint when placed on a sheet of white paper. No doubt there are also other more abstruse factors to account for absorption in lenses of long focus.

The point raised by Mr. L. Tennant-Woods, that of apparently increasing absorption when stopping down, is less simple. It has been a puzzle to me for some time, but I think I have found a satisfactory reason why in many cases the theoretical increase of time for a reduced aperture gives an under-exposed negative.

This effect is practically present only under the same circumstances as the loss by actual absorption would be noticed. These conducing circumstances are:—

(1) Slow emulsion; (2) poor light; (3) subject with dark parts; (4) small stop;

and two of these factors must be present to make the loss noticeable.

If none of these conditions occur, such a flood of light will attack the plate that it may safely be reduced and the loss made up by proportionately lengthening the exposure. That is to say, that *one* of these factors alone will not affect the ultimate result. But when two or more of them have to be contended with in greater or less degree we rapidly approach a limit at which the available actinic power of the light reaching the plate is so feeble that a proportionate increase of times does not compensate, and this is due merely to the inertia of the emulsion.

Anyone who will think out cases comprising any two of the four factors will see that the light in the shadows will be abnormally weak when it gets to the plate, and the reduction of lens aperture is only one of the things that brings about this result.

The tests made by Mr. L. Tennant-Woods seem to confirm my observations, and I think that if he had used a plate and reflected light of normal or low intensity he would have obtained a much greater discrepancy between the results from *f*/8 and *f*/6.4 in a degree increasing greatly as the light was reduced in power.—Yours faithfully,

D. Berlin.

71, Durlston Road, Kingston-on-Thames,
August 12, 1911.

To the Editors.

Gentlemen,—I beg to thank you for publishing my letter under this heading on page 617 of your issue dated August 11, and am pleased to note that we are in agreement.

Two errors, however, appear in the note, which I trust you will allow me to correct. They may have been slips of the pen, but I am inclined to blame the printers, and call them printers' errors. Anyway, the slips may confuse some of your readers, although to others the mistakes will be understood.

The word "smaller" in line eight from the bottom should be "longer," and in line thirty-seven "shutter" should read "amateur."

I much regret that squares Nos. 12 and 13 have not reproduced more distinctly, but your readers, I think, fully understand the idiosyncrasies of the half-tone process and its failure to reproduce very delicate half-tones in newspapers.—Yours faithfully,

L. Tennant-Woods.

### DAGUERREOTYPE MATERIALS WANTED.

To the Editors.

Gentlemen,—Can you give me the address of any old photograph or daguerreotype supply house (or their successors) who did business in 1865 to 1875, in France or England, who manufactured or sold the old-fashioned daguerreotype cases? I have a number of the cases *minus* the "mats" and "preservers," and I want to find an old firm with the hope of getting those supplies; also some more of the cases, which possibly they may have kept stored away since they became unpopular. Any information you can give me will be thankfully received.—Thanking you in advance, I am, yours truly,

J. E. Taulman.

The Taulman Photo Studio,
Hubbard, Texas, U.S.A.,
July 31, 1911.

### "SEEING BEFORE THE EVENT."

To the Editors.

Gentlemen,—Your correspondent "B. M.'s" remark that it is not of the least importance that I have not heard Dr. Abrahams' lecture applies equally to his own statement that he has heard him twice. When a person fills a good deal of space in telling you he has heard something one naturally asks him what he has heard. The major portion of "B. M.'s" first letter dealt with the photographic topic, though it certainly did not enlighten me. His knowledge is apparently very profound, but he keeps it up his sleeve.

If you said you thought a certain piece of work could not be done for much less than £20, and another person replied "I have made a careful calculation and find it can be done for exactly £62, which quite confirms your own estimate," I expect you would rub your ole peepers and ask whether you were awake. Anyway, you would be well within the bounds of courtesy in stating that you failed to find any agreement between the two estimates.

I can find no justification in "B. M.'s" first letter for the following sentence in his second: "When you yourselves put forward a figure of 20 yards I ventured to suggest that this distance was mere conjecture on your part, and without any more consideration you might as easily have said 200 yards or 15 feet." And if "B. M." thinks "not much under 20 yards" may mean 200 yards or 15 feet, I do not agree with him. It is too funny.

My object in inviting "B. M." to repeat the wedge experiment was merely to suggest, in the gentlest possible way, that the usual plan in scientific investigation is to begin at the beginning and not to do the finishing first. The first thing to be ascertained is how many out of a hundred average persons are capable of observing the phenomenon. Probably this little debate has filtered through the brains of a large number of your readers, yet not one of them has owned up to possessing this faculty. As we are not aware of the distance between the observer and the wedge. "B. M.'s" experiment proves nothing. I am not wedded to the sound theory for better or worse, but threw out that suggestion in order to draw the opinions of those qualified to estimate the value of evidence. I am afraid I have drawn a blank.—Yours very truly,

J. Osborne.

Wiveliscombe,
August 13, 1911.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photographs Registered:

R. Espley, 7, Lynton Avenue, Cadishead, Lancashire. *Photogroph of John Ashton of Cadishead.*

F. H. Cooper, 182a, Chamberlayne Wood Road, Willesden, N.W. *Photograph of the Park, East Knoyle.*

Detail.—What are the various disadvantages of ultra-rapid plates? —Hot Weather.

The chief, and about the only one, is greater tendency to irradiation (halation in the film), but this is not so with every make of plate.

Poya Meta.—We are entirely of your opinion. As plates vary in character, a developer stronger in pyro is needed in order to secure average density in the average time, and even if a longer time of development be given, some plates will require a stronger developer. We should consider 1 grain per oz. a somewhat weak pyro developer for portraiture, but if it gives you density there is, of course nothing against it.

Packing P.O.P.—In packing P.O.P. postcards purchased in bulk, I find the inside cards after a time become brown, starting from the centre of the card, while the outside cards are not affected. Would sheets of tissue paper interposed between the cards remedy this defect; and if so, why?—Veleda.

We should say that the cards, when received in bulk, are damp, and that the outer ones in your smaller packets, having a better chance to dry, keep better. The fact that the centres discolour first would also point to this as the cause.

Prymus (?) Lens.—You will oblige me if you will state in next week's "B.J." what you know about a Prymus Rec lens I have. It focusses sharp on ground glass, but on negative everything is fuzzy. Please say what you think about this.—Pyro.

The lens is probably one of the so-called "periscopic" rectilinears, and requires a correction to be made after focussing. Try shortening the camera extension by about 1-40th of the focal length of the lens—say 1-5th of an inch for a half-plate lens, or 1-8th for a quarter-plate—after getting a perfectly sharp image on the screen; the negative should then be fairly sharp.

Canada.—1. Will you kindly tell me in the "B. J." this week the name and address of a photographic professional paper which circulates in Canada? 2. If there is not one published in Canada, please let me have the name and address of the best American paper circulating in Canada. 3. Does the "B. J." circulate at all in Canada?—C. F. Watkins.

1. There is no Canadian paper now that the "St. Louis and Canadian Photographer" has ceased publication. 2. "Wilson's Photographic Magazine," 289, Fourth Avenue, New York, and "Camera Craft," 713-715, Call Building, San Francisco, Cal. 3. Yes, considerably.

Glazing Bromides.—I should be glad to know if you can suggest any method other than the usual French chalk way of cleaning glass for squeegeeing bromide postcards. I find, myself, that one cannot rely upon the cards leaving the glass when dry, at least, entire.—W. J. Howe.

You can use, instead of French chalk, a solution of beeswax (20 grs.) in turpentine (1 oz.), but if you cannot succeed with French chalk (which is the method usually employed in the trade), we doubt if you will with the wax. Do you alum the prints, or let them become bone dry before squeegeeing? You will find celluloid or ferrotype better to use as regards prints coming away easily.

Bromide Prints.—Can you tell me what is the fastest method of enamelling bromide and P.O.P. prints, drying either by methylated spirit or heat, and the shortest time it is possible to do it in?—Pond.

The quickest method that we know to be of practical use is to lay the prints down wet on the polished glass plates and dry in a current of warm air by means of a special cupboard. Time from squeegeeing, say, three-quarters of an hour. Prints should be treated with alum or formaline. We have never tried accelerating the drying of the squeegeed prints by putting them through a bath of spirit, and in any case, the spirit would require to be pure. Ordinary methylated spirit would certainly spoil the glazed surface.

Developer for Bluish Tones.—Kindly inform me in your next week's issue what developer you would advise me to use to be able to get a blue tone photograph; also the paper which you think would suit the developer. 2. Perhaps you will be able to tell me a suitable book in which I shall be able to have full details of different tones. I get my daily bread by taking and finishing black and white photographs, but no others.—Walter Davies.

1. There is no developer or paper for bright blue tones. In the case of bromide or gaslight papers, metol-hydroquinone will give you prints of bluish-black shade, but if you want a distinct blue you must tone the prints afterwards. 2. "Photo-Miniature" No. 103, "Toning Bromide and Gaslight Prints" (Geo. Routledge and Co., Carter Lane, London, E.C. 6d.).

Shellac Mounting.—I read in the current number of "B. J. of Photography" a reference to a solution of shellac used by the late Mr. Horsley Hinton for mounting photographs, a hot iron being also employed. As I have a number of holiday prints which I want to mount in an album (by super mounting), and as I have hitherto found other processes unsatisfactory, I shall be glad if you will kindly say: 1. If I can obtain the shellac solution through any of the dealers. 2. Can you give me directions for making up the solution myself? 3. A few hints as to the employment of an ordinary flat iron in the process will oblige.—W. L. Coates.

1. Yes, as we stated, from Messrs. W. Butcher and Sons. 2. Dissolve as much shellac as you can in methylated spirit, or better, in rectified spirit. 3. Simply apply a hot iron. The difficulty is to know when this latter is the right temperature. In the mounting appliance made by Messrs. Butcher this is certain. Why not get the outfit which we reviewed?

Premises.—I should be very glad of your expert advice concerning some premises I have offered me. You will see by the enclosed drawing that the buildings on either side are very close and run very high; the only daylight I should be able to get would be from the top. The room is a good size—about 30 ft. by 16 ft.—and there is only one flight of stairs. Have you ever known of a studio with only top light, or do you think it would not be a success, even if combined with gas or electric light, or would it be best to work with artificial light only?—Doubtful.

We do not think that you could obtain satisfactory lighting with a top-light only, sunk so deeply between other buildings. If you supplement it with an arc lamp at the side it should answer well. The arc lamp could be used alone on dull days. If you decide on gas, we should advise fixing the burners outside the studio, to avoid overheating the interior.

Acid Fixer for Bromides.—From what I have seen in the "B. J." I do not think that you recommend the ordinary acid alum bath for fixing gaslight and bromide paper. I suppose that there is a risk of fading with it, and I have seen some postcards done with it that have faded badly. In using hypo with potass. metabisulphite or plain hypo, I find that the surface is left very soft and sticky, and very liable to damage in washing, etc. What do you consider the best way to deal with it? Can formaline be used for it, and would it do to mix with the hypo solution? Your reply would be much esteemed in the "B. J."—Country Member P.P.A.

We have many times recommended a fixing hardening bath to be used when circumstances require it:—

| | |
|---|---|
| Water | 64 ozs. |
| Hypo | 1 lb. |
| Soda sulphite | 1 oz. |

When the crystals are dissolved, add:—

| | |
|---|---|
| Glacial acetic acid | 1½ ozs. |
| Potash alum (dissolved in 5 ozs. water) | 1 oz. |

Spots on Negatives.—Will you kindly examine enclosed negatives and let me know through your paper the cause of same? The makers of the plates write to say, the only conclusion they can come to is "that some foreign matter must have got on the plate, or in the developer, which has settled on the film." Well, if this be so, it is strange that all quarter-plates, though developed similarly, are free from such spots; same brand. I use pyro-soda developer. Can spots be removed by retouching, or how can I get prints off, as the sitter is a distance from here?—D. J. M'Loughlin.

These spots are undoubtedly due to foreign matter on the plate, as each has either a white or black centre. We should say you used an unfiltered developer containing ingredients that were not quite dissolved. In the case of the quarter-plates, probably the developer had stood longer, and so become completely dissolved, or else the particles had settled. Retouching will be difficult in a bad case like this, but we can suggest nothing else, if a new exposure is not possible.

Fixed Focus and Large Aperture.—I shall be grateful if you can enlighten me a little on a point on which I am at sea. I have read that if you have a fixed-focus hand camera you must use a lens in it of small aperture, about *f*/14 or *f*/15, otherwise you will not get sharp pictures. But lately I see that small cameras are being fitted with lenses of the large aperture of *f*/4.5, and are, nevertheless, not provided with focussing adjustment. How is it possible at such large apertures to obtain sharp pictures without the means of focussing? If you could give me some assistance in this matter I should be greatly obliged.—Constance A. Farquharson.

It depends on how short a focal length is used. If you look at a table of distances beyond which all objects are in focus, you will find that the nearest object in focus is much closer to the camera when using, say, a 4 inch lens than when using one of 6 inch focus, and it is therefore possible to employ a lens of aperture, say, *f*/4.5, if the focal length ranges from, say, 2 to 3 inches. This is the principle of the tiny cameras, such as the Verascope and Blocknote, but usually with these, when lenses of such large aperture are used, it is also customary to provide a focussing movement, which needs, however, to be only of a very limited extent.

Starting in Business.—Can you, through the medium of your valuable "Correspondents" Column, give me a little advice on the advisability of commencing professional photography in a small way in a medium-class, well-populated suburb of this city? I am a clerk with only a very meagre salary, and no prospect of advancement, and what with unhealthy surroundings and uncongenial work, fear a breakdown in health. I have taken a great interest in photography as an amateur for about fifteen years, and have now the offer of £50 as capital, but there appears to be no studio of any kind in the immediate neighbourhood. There is, however, land on which a portable building might be placed. Do you think a little business could be started under these conditions, or would it be advisable to try to work up a connection first from home for outdoor work and workshop (engineers', etc.) photography, with agency for half-tone blocks, etc.?—S. C. B.

You have probably plenty of evidence in your own town of the way in which prices are cut in portrait photography, and therefore we counsel you caution in exchanging your present position for that of a photographer. We doubt if dark-room work will prove more healthy than your present occupation. Certainly we should advise the latter alternative until you have had some experience of commercial photography.

Over-reduced Negative.—I have a rather particular negative of a friend, which came out too hard from the developer. Seeing a formula in the "Journal," given by some contributor of yours, I tried the formula (permanganate and sulphuric), and regret to find it was too quick for me, and has almost eaten the shadow side away entirely (this, of course, with corresponding reduction of the heavy lights). At present it is in a slightly stained condition. I suppose the sulphite and oxalic ("B.J.A." formula), should clear it. But what is my best next move? Can I redevelop after the foregoing processes satisfactorily—say, to regain the shadow side—and what developer would you advise, metol, or pyro-met.?—Pot.-Meta.

The stain will be removed by the bath you mention, but there is no way of redeveloping the material that has been removed by the permanganate and sulphuric acid bath, which is a powerful solvent of silver. If the density is too slight, we would suggest that Wellington's silver intensifier will probably improve matters. In any case, it is the only thing that can possibly help to recover some of the lost image. Permanganate and sulphuric acid, or bichromate and sulphuric acid, which we prefer to the other, are both powerful reducers, and require great caution in use. Very dilute solutions alone are safe.

Choosing a Lens.—I am debating the purchase of a lens of long focus, and am unable to decide to my own satisfaction regarding the degrees of excellence of the many good lenses at present on the market. I am not in a position to spend a deal of money, and consequently I desire to get value for my expenditure, and I thought it possible that you would be kind enough to give me some assistance. I use a hand (¼-plate) and a stand (½-plate) camera, and, were it practicable, the possibility of using the long-focus lens on both cameras would be an advantage to me, but the hand-camera is the one it is primarily intended for. I have had the Bis-Telar lens recommended and the Adon lens also (in case you favour this one please say which size). My ¼-plate camera is a Klimax double extension, and the lens at present fitted is an Aldis *f*/7.7. Please say whether there is any lens giving as good results which is cheaper in price, and please be kind enough to give hints as to any other makes you consider superior and their comparative handiness and simplicity in use.—Dry Plate.

It is contrary to our custom to draw distinctions between goods of different makers. In the present instance the two lenses you name are the best for your purpose; the Bis-Telar is of fixed focus, the Adon, in some forms, of variable focal length. You must consider which you prefer with regard to the fact also of use with the half-plate. If your work on this larger size is to be of fine detail we should advise you to give up the idea of selecting a telephoto, but to purchase a good R.R. or anastigmat specially for half-plate work, and of focal length about 9 or 10 inches. If the extension and size of your hand-camera allow of it, you could use this lens on the latter.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2677. Vol. LVIII. FRIDAY, AUGUST 25, 1911. Price Twopence.

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## SUMMARY.

The usefulness of a focussing scale on a stand camera is the subject of an article on page 642, where directions are given for making and fitting the scale. The scale is made by a method of practical outdoor trial, and is fixed permanently to the camera for use or not as necessity arises.

Mr. D. Berlin has devised two improvements in the focussing magnifier which make for readier arrangement of a dark subject on the focussing-screen, and at the same time for sharper focus. (P. 652.)

An appeal to photographic assistants, and incidentally to master photographers, is sent to us for publication by Mr. P. Jarrett. (P. 653.)

The place of women in professional photography was the subject of an address by Miss Mary Carnell, President of the Women's Federation of the American P.P.A., at a recent convention. (P. 654.)

A German inventor, Dr. W. Triepel, has patented a method of cold single-solution sulphide toning in which thio-urea is an active agent. (P. 657.)

Mr. A. Lockett, in a paper on page 645, describes stereoscopic methods by which evidence such as dimensions, distance, etc., may be deduced from photographs. In a note on page 642 we comment on certain precautions needed in the application of the method.

MM. Lumière and Seyewetz have published a paper on the development of gelatine plates *after* fixation. They find that a weak hypo fixing bath—not stronger than 2 per cent.—makes it unnecessary to give such a great degree of extra exposure as usual when developing after fixing. Their developer (in reality, a physical intensifier) is made of silver nitrate, soda sulphite, and para-phenylene-diamine. They have also used an intensifier (developer) of mercury. (P. 643.)

Mr. H. D. Curtis, in a paper before an American astronomical society, has published exhaustive comparisons of the various methods of silvering mirrors. (P. 646.)

## EX CATHEDRA.

**The Genesis of the Small Camera.** The first piece of apparatus designed to produce minute negatives suited to enlarging purposes seems to have been the Pistol camera, introduced by Mr. Skaife about 1858, which camera was soon superseded by his Pistolgraph, in which flat plates of about 1½ in. in diameter took the place of concave ones. These pieces of apparatus were, however, more or less of the freak variety, being built in the form of pistols, and the first instrument that may be considered to be the true prototype of the small modern camera appears to have been the Bertsch camera. This was called the "Automatic Camera," apparently because it was of the fixed focus variety, and therefore required no setting, the lens being fixed at such a distance from the plate as to render all objects sharp beyond a distance of twenty paces. It was constructed entirely of metal, and took a plate 2¼ in. square. The camera is described as being 3½ in. square, and the angle of view as 33 deg., which would appear to suggest the use of a lens of about 3 in. focus, and a camera of nearly cubic form. The lens is rather vaguely described as a single combination achromatised by dense flint of great dispersive power. A spirit level was included, and a view-finder consisting of a square opening crossed by threads. A folding stand that could be closed up to form a walking-stick was also provided, and so the resemblance of this little instrument to the modern small metal camera was very marked. It was, of course, designed to produce small negatives capable of enlargement, and examples up to 26 in. by 17 in. were shown when the camera was introduced to the public by M. Bertsch at a meeting of the French Photographic Society in 1860. We can find no description of a shutter, and though it is mentioned that figures in motion were photographed successfully, this may, of course, have been achieved with a lens cap. It is therefore doubtful if we may properly describe it as a hand-camera. The Pistolgraph was, however, undoubtedly a hand-camera, and it was fitted with a shutter of very ingenious design. This consisted of a pair of vulcanite leaves, arranged like folding doors and linked together so as to open and close simultaneously. The springs consisted of rubber bands, and the release was a trigger arranged very much like that of a pistol. The speed was regulated, also, by rubber bands. Both the Pistolgraph and the Automatic cameras were made of metal, but the use of metal for camera construction seems to have been started by Voigtländer. A. J. Melhuish also introduced a metal camera in 1859. A pocket stereo camera by Parry and a miniature camera by Otterwill both appeared in 1860, so the general idea of the small camera seems to have attracted inventors even in those early days. This being so, it is certainly remarkable that the idea should not have been brought to perfection for something like fifty years. It is only quite recently that the small camera has really become appreciated by the photographic public, and the reason for the long period of incubation is rather obscure. No doubt the lack of convenient and cheap enlarging apparatus, and of sufficiently good lenses, handicapped the small camera for some considerable time, but perhaps also its possibilities became discredited by the cheap rubbish that appeared from time to time.

* * *

**Stereoscopic Surveys.** The article by A. Lockett on the evidential value of stereographs points out several methods by which the distance of the object can be calculated from measurements taken from the photographs, but we feel it necessary to warn readers that while such methods of estimation are quite accurate in theory, yet the accuracy of the result is dependent on factors that cannot be determined with any close approximation to the truth unless very close and critical measurements are taken. The simplest method described is that in which the original negative is used for the purpose of taking one of the measurements, but if we try the process recommended when ordinary apparatus is used, we shall find in most cases that the separation of two corresponding points on the negative is so nearly the same as that of the lenses that without the aid of very critical measuring appliances we cannot determine the true difference, while also the exact distance from lenses to plate is by no means easily determined. In the formula given, $DD=\frac{NF}{N-L}$, the difference between N and L may be only a few hundredths of an inch, and an error of 50 per cent. may easily be made in arriving at it, in which case the final result may be in error to the same extent. An error in F will, of course, be less important, but still it may make a considerable difference in the result, seeing that the value of $\frac{N-L}{N}$, by which it is multiplied, must always be considerable. Practically such methods of estimating distances, excepting when used with special survey apparatus, are only comparable with theodolite surveys conducted very carelessly and with apparatus out of adjustment, and anyone familiar with the difficulties of measuring a base line and with the refinements necessary in using the theodolite, will fully appreciate the extent of the errors possible when the stereoscopic method is used. For survey purposes it is, of course, possible to apply it with accuracy, given all the necessary equipment, but it must not be expected that the ordinary stereo camera will give results of much use as bases for calculation.

## SCALE-FOCUSSING FOR STAND CAMERAS.

LEAVING reflex cameras out of the question, probably 99 per cent. of the exposures made with hand-cameras, even when used upon a stand, are focussed by means of a scale, while the proportions are about reversed with cameras made solely for work upon a tripod. In many cases a focussing scale or scales would be a desirable adjunct to the ordinary field-camera even of fairly large size, and would save time and trouble under trying conditions for visual adjustment of the focus. It must, however, be clearly understood that an inaccurate scale, or one so fixed that it cannot be relied upon, is worse than no scale at all, and is likely to prejudice the user against scale-focussing in general, so that it is necessary to determine the conditions under which a scale can be used with a fair degree of confidence. If we take a typical scale-focussing hand-camera, such as the Goerz Anschütz, we find that when the body is extended the front and back are perfectly rigid, that they are perfectly parallel, that the scale is clearly marked, and that there is no play or backlash in the focussing adjustment. These conditions must be repeated as far as possible in any apparatus which is to be scaled. It need hardly be said that, unless the swing-back is pivoted at its centre, as in the Watson Premier pattern, it must be carefully set at right angles to the baseboard and rigidly fixed. Where the back is supported by sliding struts, the notch or detent into which the clamping screw fits when the back is upright must be accurately fitted to the latter, as a slight looseness here will allow of a considerable variation in the position of the top edge of the plate, according to whether the back frame has been pulled back or pushed forward when tightening the clamping screws. With conical cameras fitted with the "wide angle movement," allowing the back to be slidden along the baseboard, special marks or, better still, studs, should be placed on either side of the baseboard, so that the same position can always be obtained quickly and accurately. The position of these marks or stops will naturally be governed by the focal length of the lens or lenses to be used, and if more than one lens is to be provided for it is better to have only the one position for the back, and for that to be suitable for the shortest focus, the extra extension for the others being obtained in front. Very long focus lenses are rarely used by scale, so that the question of balance need hardly be considered. The front of the camera must be overhauled as carefully as was the back, so that it will always come readily into its correct position and remain there. If the camera be of the "Premier" or "parallel bellows" pattern, the front will require no attention, and the back will only want adjusting to marks to ensure parallelism with the front. The scale and pointer are best made of blackened brass with the figures filled in with white, the pointer being quite blunt, with a white line in the centre. There should be as little distance as possible between the pointer and the surface of the scale, and the latter should preferably be set upon edge, so that the figures can readily be seen, and not laid flat upon the baseboard. The pointer should be of good size and fixed by at least two screws, placed as far apart as possible, so that it cannot be displaced without the employment of considerable force. Makeshift scales should be avoided; bits of card or celluloid film are not to be relied upon like a stout brass or ivory scale firmly screwed down.

Having got the camera into good order, the plain metal plate and pointer should be fitted into their permanent position, and properly screwed down, so that after marking off it can be removed for engraving and accurately replaced. The number of points and the distances must be decided by the owner, but in a general way a range of from fifteen feet to infinity would be a useful one, the markings being infinity, fifty, thirty, twenty-five, twenty, and fifteen feet. The marking of these distances must be done with great care, and temporary markings made in pencil upon the brass, the operation being repeated several times at each distance, and, if necessary, the mean taken between the markings for the same point, if any variation is seen. The distances should be accurately measured, infinity being at least 100 yards away, 200 yards being better for large lenses. A large printed card makes an excellent object for focussing, and a focussing eye-piece should always be employed. When the positions are finally settled, the scale should be carefully removed and handed to the engraver. Country photographers will find it easiest to post the scale to a London camera maker to be finished. This method of making a scale may appear rather unscientific, but is likely in ordinary hands to be more accurate than a mathematical one. There is also the advantage that the actual user will have had to measure the distances, and will therefore have a better idea of them in the future than he would have with a ready-made scale and guesswork distances. It is advisable when constructing a scale to work at the aperture with which the majority of exposures will be made, as in the case of any trace of spherical or chromatic aberration there will be no alteration of focal length following upon reduction of aperture. Scale-focussing is especially useful in the case of dark interiors and for flashlight work, as there is only the placing of the subject upon the plate to be considered. It is also valuable for street work where smart working is essential, as it permits of the slide being placed in position and the shutter drawn before holding up the traffic for the exposure.

In the case of round field lenses it is, of course, necessary to focus at a point about midway between the centre and edge of plate, so as to secure an average sharpness all over the plate. With anastigmats it is, as a rule, better to focus in the centre of the plate.

Another aspect of scale-focussing is to be seen when it is applied to copying. If the position of the lens is fixed, and a series of marks ranging from full size down to, say, 1-10 scale is made upon the bed carrying the copyboard, much time and trouble is saved, the only adjustment necessary being that of the screen, the distance from the original being already correct.

# DEVELOPMENT OF PHOTOGRAPHIC PLATES AFTER FIXING.

(A paper read before the French Academy of Sciences.)

By utilising a complex physical developer, the composition of which was first given by Neuhauss (Photographische Rundschau, 1898, p. 257; 1904, p. 34), the latent images can, as we know, be developed on gelatino-bromide of silver plates, after fixing in hyposulphite of soda.

This process has given satisfactory results only when greatly over-exposing the sensitive substances employed. When developing after fixing by the processes described, the time of exposure for development before fixing must, in fact, be multiplied by about 20.

We have endeavoured to remedy the inconveniences of the Neuhauss process, which involves too long a time of exposure, and is complicated and delicate in application. Moreover, the images are satisfactory only when development is done slowly.

We have also considered the possibility of replacing the silver salts in the developer by other metallic salts. Experiments soon showed that the conditions of the previous fixing play an important rôle in the final result. By employing more and more diluted solutions of hyposulphite of soda for this fixing, we found that over-exposure became less and less necessary; the maximum percentage of the fixing-bath seemed to be about 2 per cent. At this strength the co-efficient of over-exposure falls from 20 to 4 with slow plates, and 6 with rapid plates.

Saturated solutions of sulphite of soda, employed as fixer, gave us better results still in the case of fine-grain slow plates, but they are unsuitable for rapid plates, fixation becoming much too slow.

### Development with Salts of Silver

Amongst the numerous silver salts we employed, the double sulphite of silver and sodium seemed the best. We consequently replaced the complicated Neuhauss developer with the following formula:—

| | | |
|---|---|---|
| A. | Water | 1,000 ccs. |
| | Sulphite of soda, anhydrous | 180 gms. |
| | Nitrate of silver | 75 gms. |

(This formula was recently published by M. Chancz, to whom we sent it apropos of the development, after fixing, of prints obtained with X-rays ("Comptes Rendus," T. 152, p. 1576). M. Chanoz thus obtained good results in developing radiographic prints after fixing.)

| | | |
|---|---|---|
| B. | Water | 1,000 ccs. |
| | Sulphite of soda, anhydrous | 20 gms. |
| | Paraphenylene-diamine | 20 gms. |

For a plate 13 x 18 cm. take:—

| | |
|---|---|
| Solution A | 150 ccs. |
| Solution B | 20 ccs. |

The paraphenylene-diamine in the solution B can be replaced by the same quantity of one of the following developing substances:—Metol, hydroquinone, pyrogallic acid. Either of these allows of more rapid development than with paraphenylene-diamine, but the developer becomes turbid much sooner than with the latter, and deposits silver on the image.

Speed of development can be varied by increasing or decreasing the proportion of developing solution specified in the foregoing formula; the variations in time of development produce changes of colour of the final image. Moreover, the more rapid development, the quicker the bath becomes turbid.

### Development with Mercury Salts.

We endeavoured to replace the silver salt in the developer already described by other metals, the sulphites of which are soluble in excess of sodium sulphite. Mercury alone gave interesting results, and in certain cases the mercury salt seems even preferable to the silver salt, because it gives less dichroic and more opaque images.

Moreover, by prolonged development there is less tendency to fogged images.

Finally, mercury developers remain clear much longer than silver ones, and deposit no precipitate on the images, even after long treatment. On the other hand, the solutions with the mercury base act slowly, and give images with marked contrasts, especially in case of under-exposure. Our numerous experiments led to the following formula:—

| | | |
|---|---|---|
| A. | Water | 1,000 ccs. |
| | Sulphite of soda, anhydrous | 180 gms. |
| | Mercury bromide | 9 gms. |
| B. | Water | 1,000 ccs. |
| | Sulphite of soda, anhydrous | 20 gms. |
| | Metol | 20 gms. |

For a plate 13 x 18 cm.

| | |
|---|---|
| Solution A | 150 ccs. |
| Solution B | 30 ccs. |

are employed.

In any case, whether the developer be compounded with silver or mercury salts, fixation of the plates before development should be done in a 2 per cent. solution of hyposulphite of soda.

A. and L. Lumière.
A. Seyewetz.

# ROUGH-AND-READY FLASHLIGHT.

Every photographer at one time or another finds the need of flashlight facilities, yet comparatively few possess them. The necessity arrives quite as often in summer as winter, the work to be executed usually being quite unexpected and urgent.

Little used as this method is for studio portraiture, it can usefully be employed for occasional calls when the demand is insufficient to permit of an electrical installation. Otherwise impossible problems in at-home portraiture yield to flashlight, small groups of children, for instance, being taken with greater certainty in this way than attempting to use the restricted light of the ordinary dwelling house. One of the numerous forms of mechanically fired open lamps, together with the proper use of diffuser and reflector, is to be preferred for such work. Photographers taking large groups such as ball, reception, or dinner gatherings necessitating two or more sources of light to secure proper illumination, should have an efficient system of electrical ignition, which is really the only practical method when using more than one lamp.

Photographers possessing the ideal equipment are, however, a very small percentage, so that we hope the following rough-and-ready method will help some of our readers out of a difficulty. It does a very great deal of harm to have to refuse a job. In this work, if one has procrastinated until the unexpected need arrives, there is never time to provide the proper apparatus, so that it is a case of miss or risk.

Most chemists can supply or manufacture in a few minutes a flash-powder of some kind.

It is strongly advised that at least this is kept in stock to provide for eventualities. In a dry place it will keep good for years. If you get one of the proprietary powders, you are sure of a good flash, less smoke, a greater degree of safety and certainty. Moreover, an exposure can always be exactly repeated, the composition remaining identical.

One needs in addition to the powder a taper and some cotton-wool. The latter should be dried by placing a safe distance from stove. We usually do the same with the powder, using common-sense precautions.

If working in an ordinary room focus on subject by means of a lighted taper held close to main object. In the case of a group have lights at each end, spread some cotton-wool on an old metal tray, pull a strand to hang down over the edge to form a "touch." On the wool sprinkle powder. The amount required depends on stop, plate, distance from subject, and to a certain extent on colour of wall surface. We carry our powder in pill-boxes holding about 80 grains, using one, two, or three as required. This is a quick, safe, simple, and sufficiently accurate method of measurement.

Using plates 200 H. and D. stop *f*/8, one pill-box of "Ideal" powder is ample if used about 15 feet from subject.

The tray should be supported about 8 or 9 feet from ground, and be to the side, but not in front of the camera. In some rooms this height will be very near the ceiling. In such a room only small quantities of powder will be required, but lamp should not be less than 3 feet from top. We have not found the heavy smoke injure a white ceiling in any way unless the flames actually touch it.

Shade the lens as much as possible before exposure, and instruct sitters to look at some point away from the flash. When all is right, some pre-arranged signal, such as a cough, is given, when an assistant fires the flash by lighting the "touch" of cotton-wool with a taper. The wool is apt to be blown on to floor. This should be watched for, and extinguished to avoid damage.

Such a primitive method as above should only be used from necessity for important work, such as theatrical groups. This, however, is just the thing the unprepared man will fall in for.

The dress-circle is usually a convenient position for camera. If too far back, a high pair of steps can usually be obtained and used in the pit. A small hole bored in the top step for tripod screw will not hurt them. A tilting board is an advantage in all cases, and a necessity with turntable cameras.

Dress rehearsals are the best time for taking amateur theatricals. If that cannot be arranged, immediately after the audience has dispersed, when great expedition is necessary.

The powder, held as high as possible, may be fired from the circle, or, if the gallery is not very high, from there. A large quantity of powder must be used. With conditions as before, three ounces will not be too much. Spread it out into as long a trail as possible, and fire with a taper tied on to a long stick. With this method do not attempt to use two flashes. Perfect synchronism being impossible, the first flash will cause closed eyes and general movement, duly registered by the second. Do not uncover the lens until immediately before the powder is fired, as the stage lighting, barely sufficient as it is for focussing, will make a faint but easily developable image in a few seconds.

Taken with camera 20 ft. from subject; lens at *f*/8; plate, 200 H. and D.; powder, 80 grs.

Speed is essential, but keep cool, and check your preparations. It is annoying to find an expensive flash used with its corresponding smoke when the slide has not been drawn, stops not adjusted, or shutter not opened. Moreover, the loss of prestige is serious—more serious than refusing the work.

W. Foster Brigham.

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New Photo. Paper Works at Denver, U.S.A.—A subscriber to the "British Journal," Mr. F. E. Oiler, late of Chicago, notifies us that he is establishing a factory for photographic papers at Denver. According to a Denver newspaper, he has closed a deal for the building at 846, Broadway. He is having two machines made in Chicago for coating photo. paper, which will have a capacity of 2,400 dozen cabinet size photograph papers an hour. The initial outlay for the factory will be about $60,000, and within three months the stock and fixtures will be valued at $100,000.

# THE EVIDENTIAL VALUE OF STEREOGRAPHS.

STEREOGRAPHS might well be utilised to a greater extent than at present as evidence in judicial proceedings. Many of the monocular photographs produced in court for this purpose are, as any expert knows, practically valueless, since it is difficult to assert positively the absence of "faking," or to arrive at an unhesitating conclusion as regards the conditions that obtained when the exposure was made.

A stereograph, on the other hand, cannot be faked successfully. Any attempt to tamper with the negative or prints is at once betrayed on inspection in the stereoscope, since the alterations or additions will not coincide satisfactorily when the two pictures are made to coalesce. Besides this there might arise a dispute as to the relative positions of objects seen in an ordinary photograph, which cannot occur with a stereograph. In the latter case not only is everything seen in its exact relative position and at its proper distance, but these may be verified to an inch by a simple calculation based upon the measurement between corresponding points in the two images. This is a feature of great value, as yet little appreciated, although some effective use has been made of it in telestereography, notably by Dr. Pulfrich, the inventor of the stereo-comparator.

In criminology, too, it is obvious that a stereoscopic portrait would be of more value than an ordinary photograph. It would enable a far better idea to be obtained of the proportional size of the various features, and the real shape and modelling of the face; in addition to which the enforced absence of retouching would be a recommendation. The comparison of portraits in a police register, taken at different times and in sundry places, but suspected to be those of the same person, would become immensely easier if stereographs were employed.

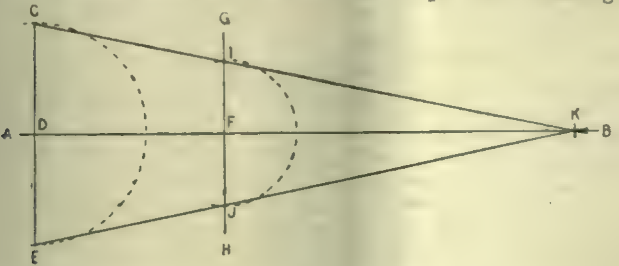

Fig. 1.

It may be useful to quote the formula adopted for calculating the distance of any object shown in a stereograph. It is as follows:—Let A = the separation of the objectives, or stereographic base; B = the distance of the objectives from the plate—i.e., the minor conjugate; $A_1$ = the separation between corresponding points in the two pictures; and D = the distance of that point, or of the object represented by it, from the objectives—i.e., the major conjugate; then

$$D = \frac{AB}{A - A_1}$$

Thus, suppose $A = 2\frac{3}{4}$ in., $B = 5$ in., and $A_1 = 2\frac{5}{8}$ in. Then the distance of the object from the lenses of the camera =

$$\frac{2\frac{3}{4} \times 5}{2\frac{3}{4} - 2\frac{5}{8}} = \frac{13\frac{3}{4}}{\frac{1}{8}} = 110 \text{ in.} = 9\text{ft. } 2\text{in.}$$

The above data would not be difficult to obtain, and prints to be used for purposes of measurement should be mounted with due regard to retaining the correct separation. With stereographs intended for inspection in any apparatus having a fixed viewing distance it is quite possible to provide that the lens separation shall equal the distance between the observer's eyes, and that the viewing distance shall correspond with the minor conjugate focus. But this is merely a convenient arrangement to secure appropriate conditions of inspection, and has no necessary connection with the use of the stereographs for deducing measurements.

A simple geometrical construction will enable short distances to be obtained graphically, without recourse to calculation, and will serve to show the principle underlying the formula. Thus, in Fig. 1 let AB be a horizontal line of indefinite length. At one end erect a perpendicular CD equal to half the separation between the objectives, and set off a similar distance DE on CD produced. From D set off a distance DF, equal to that between the objectives and the plate, and through F draw GH, parallel to CE. From F set off the distances FI and FJ, each equal to half the separation between corresponding points in the two pictures. Join CI and EJ, and produce the lines till they cut AB in K. Then DK is the required distance. In the foregoing diagram CE represents A of the formula previously quoted; DF represents B; while IJ represents $A_1$.

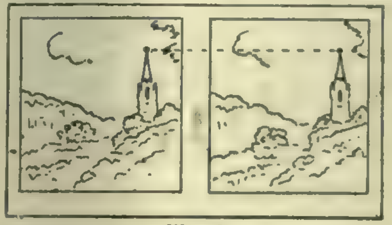

Fig. 2.

The proof of this construction may be given:—

The triangles CEK and IJK are similar,

$$\therefore IJ : FK :: CE : DK$$
$$(CE - IJ) : CE :: (DK - FK) : DK$$
$$DK - FK = DF$$
$$\therefore DK = \frac{CE \times DF}{CE - IJ} \text{ or } D = \frac{AB}{A - A_1}$$

As the distance increases, the angle of convergence diminishes, and, with an ordinary separation, may become too small for convenient estimation. The stereoscopic base has then to be lengthened to an extent dependent on the distance in question. Stereograms taken with an unusual distance between the cameras may still be mounted and viewed in the ordinary manner, but for any purposes of calculation the original lens separation must be ascertained, as also the original distances between corresponding points on the negatives, from which factors the angle of convergence is found.

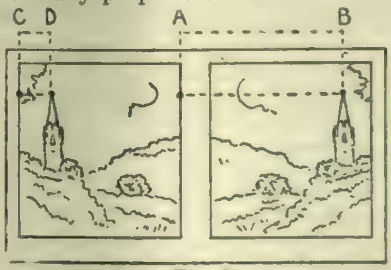

Fig. 3.

It is obvious that the larger pictures rendered possible by the advent of the Pigeon, or Dixio, stereoscope afford a better basis for such calculations; for with a small stereograph the details will not be so clearly distinguishable, and there is greater liability to error in measurement. With Dixio stereographs the reversal of the left-hand print must be borne in mind. In this case, instead of measuring from point to point across the two prints, as would be done with the old style stereograph (see Fig. 2), it must be done in two stages, as indicated by Fig. 3, adding the two distances AB and CD together.

It is better, if possible, to measure from the negatives rather than the prints, as there is then no room for inaccuracy due to expansion or contraction of the printing paper. Where the two negatives are on a single plate this is, in fact, the most convenient way, and allows no possibility of mistakes arising from incorrect separation in mounting. A different formula is here employed: Let N=the separation of corresponding points measured across the single plate; L=lens separation; F=actual focal length, or minor conjugate; and DD=distance of object from plate—i.e., major conjugate+minor conjugate; then

$$DD = \frac{NF}{N-L}$$

This may be worked graphically by the same diagram shown in Fig. 1, making CE=N, DF=F, and IJ=L. Then DK will give the distance DD. The proof is also identical.

Measurements other than those of distance—such, for instance, as the width or height of an object—may be deduced by the usual formulæ employed in photographic surveying. For example, let O=size of object; I=size of image; F=minor conjugate, or actual focus of lens at time of exposure; and D=distance of object from lens, or major conjugate; then

$$O = \frac{ID}{F}$$

F, of course, corresponds with DF in Fig. 1, and D to DK in the same diagram. When unknown, the major or minor conjugate may be found by the formulæ

$$D = \frac{OF}{I} \text{ or } F = \frac{DI}{O}$$

The deduction of vital facts from stereographs is a fascinating study, the possible applications of which are surprisingly numerous. Even with a stereograph of which no data regarding the lens focus and separation are to hand, it is sometimes possible to reconstruct the whole facts from very slight indications. A familiar object may chance to be shown the measurement of which can be confidently declared, and, from its scale in the photographs and its position with regard to other objects, all the essential and interdependent factors may, with a little thought and the suitable use of one or other of the formulæ that have been given, be gradually gathered together.

Nothing has here been said concerning the unrivalled facility with which the stereoscope can render evident slight differences of surface texture or structure, especially when allied with the microscope; nor has the subject of colour stereoscopy been alluded to. The evidential value of the colour stereograph is clearly on a much higher level than that of its monochrome relative. In the near future, no doubt, large-sized Dixio stereographs in colour will be extensively used for the elucidation or demonstration of facts in doubt or dispute.

A. LOCKETT.

# METHODS OF SILVERING MIRRORS.

[A paper in the "Publications of the Astronomical Society of the Pacific," Vol. xxiii., February, 1911.]

THE different processes which have been discovered for depositing a thin film of silver on glass are widely scattered in periodical literature and laboratory manuals. Some of these processes are now rarely employed, and even for the more modern methods which have proved most uniformly successful, the experience of those who have had extensive practice in silvering large mirrors will without doubt be of assistance to the amateur. The manipulation has been described by some as very uncertain and of considerable difficulty. It will be found, however, that by using pure chemicals and carefully following the directions, successful coats can nearly always be secured. Occasionally a failure will result for which no reason can be assigned. The writer has had one such experience, with the secondary mirror of the Santiago reflector, which was an absolute failure, though silvered on the same day, with the same process, and as far as was known with exactly the same manipulation which gave an excellent coat on the primary. I think that most manipulators will feel a tendency to echo the words of Quincke—written half a century ago, it is true, when silvering processes were much less reliable than at present:—"Uebrigens versagen zuweilen alle diese Methoden, oder liefern doch fehlerhafte Spiegel, ohne dass ein rechter Grund dafür auszufinden wäre."

Siemens is said to have expressed his disbelief that any process of depositing silver from a solution could ever be discovered. Many processes have been evolved since that date, practically all of them with an ammoniated solution of nitrate of silver as a basis, the differences lying in the character of the organic reducing medium employed. Glucose, milk sugar, acidulated levulose, the juices of berries, formaldehyde, Rochelle salts, etc., have all been used. Practically all to-day use either Brashear's or Lundin's methods, but some of the older methods will be given as well. The preparation of the mirror for the process is common to all methods, and will be treated first.

### Cleaning the Mirror.

The mirror should be carefully freed from dust, and the old coat removed with nitric acid, which is also the best medium for cleaning any glass surface to be silvered for the first time. A thick swab of cotton wool is formed about the end of a glass rod, so that there is no danger of the glass rod scratching the mirror. Provided the swab is thick enough, plenty of pressure may be employed. Swab *every* part thoroughly; when the coat is all off add a little distilled water to the nitric acid already applied and go over the entire surface again. Do not let any part of the mirror become dry during the process; if any part should get dry, swab and clean again. Then rinse off the nitric acid, for which ordinary water may be used at first, followed by distilled water. Finally leave the mirror standing with a covering of distilled water over its surface; no part should be allowed to become dry.

Small mirrors may be advantageously silvered face down, resting on three thin wedges of wood cemented to the bottom of a shallow pan. For mirrors eight inches or over in diameter, however, I generally silver face up. In the case of the mirror of the Crossley reflector, the preparation is as follows:—The mirror is removed from its cell and supported in a ring equipped with trunnions, which allows a free tilting motion, as it is essential that the solutions be kept in constant motion during the process. A strip of paraffined paper, about eight inches wide, is drawn tightly around the edge of the mirror, leaving about six inches above the mirror. This is tied tightly with a cord. Then the paper strip is cemented to the glass by running a hot soldering iron several times around on the outside of the paper, above and below the cord, and the overlapping ends of the paper band are cemented together in the same way. The Santiago mirror has a six-inch hole in the centre; this was fitted with a wooden plug provided with a central opening and glass stopper. The plug was cemented lightly in the hole in the mirror with Rowland's "Universal" wax (four parts beeswax, one part Venetian turpentine, plus a little best English vermilion). A tight joint was made with a soldering-iron, as in the case of the paper band.

After cleaning with nitric acid, many advise following with a second swabbing with a solution of caustic potash followed in turn with an application of French chalk. I have secured better results with the nitric acid alone, and have not used the potash or chalk in recent years. On this point Common states:—"With the most careful cleaning of a mirror, I have often found that the first application did not succeed, but the second on the surface just cleaned off with nitric acid was all right. The nature of the liquid other than distilled water last in contact with the surface of the mirror seems to be the determining thing." Dr. Common also preferred to silver face down when using Brashear's process, and used the Rochelle salts method when necessary to silver face up. He used a rather novel method to support the heavy mirror (37 inches in diameter, weight over 400 pounds) when silvering face down. The back of this mirror was polished. A large cast-iron cell was made, 30 inches in diameter and about four inches deep; the edge was turned flat and true and then grooved; a large rubber washer was interposed between this cell and the mirror. From this cell or "sucker," the air was exhausted with a small air pump to a pressure of about five inches of mercury; the atmospheric pressure was then sufficient to hold the mirror to the "sucker" when face down, or even when the mirror was placed in a vertical position. Considering the great weight of the glass, the method seems rather drastic. Professor Wright silvered the Santiago mirror (diameter 37½ inches, weight 562 pounds) face down on several occasions, but supported the mirror in a ring with trunnions. This mirror and that of the Crossley have a semi-circular groove about one-half inch deep around the middle of the edge, forming a safe method for support by a holding ring.

### Silvering Formulæ—Common's Process.[1]

Quantity used for 250 square inches (1,613 square centimetres)[2] of mirror surface:—

| | | |
|---|---|---|
| A.—Silver nitrate | 1 oz. | (31 gms.) |
| Water | 10 ozs. | (300 ccs.) |

Clear up completely with ammonia.

| | | |
|---|---|---|
| B.—Caustic potash | 1 oz. | (31 gms.) |
| Water | 10 ozs. | (300 ccs.) |

Pour into A and clear again with ammonia.

Add a weak reserve solution of silver nitrate, drop by drop, till the appearance is decidedly turbid again.

| | | |
|---|---|---|
| C.—Reducing solution:— | | |
| Glucose | ½ oz. | (15 gms.) |
| Water | 10 ozs. | (300 ccs.) |

Add C to the mixture of A and B, stirring well. "At a temperature of about 56 deg. a fine film was got in 45 minutes on a three-foot mirror. I have used some of the same solutions at various times to silver small surfaces, and I find I can get a good film in much less time, particularly if the temperature is a little higher. No doubt, for higher temperatures, some modifications would have to be made, but the use of glucose allows a more certain determination of the proportions proper for certain temperatures than any mixture of sugar and acid, the active properties of which, as a reducing agent, are uncertain and changeable."

### Martin's Process.[3]

| | | |
|---|---|---|
| 1.—Silver nitrate | 175 grs. | (11.34 gms.) |
| Water | 10 ozs. | (300 ccs.) |
| 2.—Ammonia nitrate | 262 grs. | (16.98 gms.) |
| Water | 10 ozs. | (300 ccs.) |
| 3.—Caustic potash | 1 oz. | (31 gms.) |
| Water | 10 ozs. | (300 ccs.) |

4.—Dissolve ½ oz. (15.55 gms.) sugar candy in 8 ozs. (150 ccs.) water; add 52 grains (3.37 gms.) tartaric acid; boil for ten minutes; when cool, add 1 oz. (30 ccs.) alcohol; make up mixture to 10 ozs. (300 ccs.) in winter, and to 12 ozs. (360 ccs.) in summer.

Mix equal parts of 1 and 2; mix equal parts of 3 and 4 in another vessel; combine when ready to silver; immediately on changing colour immerse the mirror.

### Rochelle Salts Process (James).[4]

| | | |
|---|---|---|
| 1.—Silvering solution:— | | |
| Silver nitrate | 48 grs. | (3.11 gms.) |
| Water, distilled or rain | 1 oz. | (30 ccs.) |

Add ammonia slowly till brown precipitate is nearly but not quite re-dissolved. Filter, and add distilled water to make 12 fluid drachms (45 ccs.).

| | | |
|---|---|---|
| 2.—Reducing solution:— | | |
| Rochelle salts | 12 grs. | (0.78 gm.) |
| Water, distilled or very clear rain | 1 oz. | (30 ccs.) |

Boil in flask, and while boiling add 2 grains (0.13 gm.) silver nitrate dissolved in one drachm water. Continue boiling five or six minutes; cool, filter, and add distilled water to make 12 fluid drachms (45 ccs.).

Take equal parts for silvering; temperature of 113 deg. to 122 deg. F. (45 deg. to 50 deg. C.) is best. When solution becomes clear, process is finished, taking twenty to eighty minutes; if left in longer bleaching begins.

### Method Used by Draper.

| | | |
|---|---|---|
| 1.—Silver nitrate | 337 grs. | (21.83 gms.) |
| Water | 10 ozs. | (300 ccs.) |
| 2.—Caustic potash | 1½ ozs. | (46 gms.) |
| Water | 25 ozs. | (750 ccs.) |
| Milk sugar in powder, pure and fresh | 1½ ozs. | (46 gms.) |
| Water | 10 ozs. | (300 ccs.) |

Pour nearly all of 1 into a vessel that will hold 160 ozs. (5,000 cs.)—the quantities given are for a 28-inch (71.1 cm.) mirror; add ammonia drop by drop till the grey precipitate clears; add 20 ozs. (600 ccs.) of 2, and with ammonia just re-dissolve the brown precipitate that forms. Make up to 75 ozs. (2,250 ccs.) with water, then add some of 1 till a grey precipitate that does not dissolve in three minutes is left. Then make up to 150 ozs. (4,500 ccs.) with water. Let it all settle, and pour off. When ready to immerse the mirror, add all of 3.

### The Crossley Process.

This was sent to the Lick Observatory by Mr. Gledhill. It was regarded as a trade secret at that time (about 1895). I find, however, that the essential part of the process was patented by Pratt in 1876, and is now generally known, forming a step in the method used by Mr. Lundin. There seems no longer, then, any reason why its publication should be withheld. The quantities are for a three-foot mirror.

No. 1.—The silver solution:—

Place 7½ ozs. (233 gms.) of nitrate of silver in a jug; pour on it 4½ ozs. (135 ccs.) of ammonia (.880); stir till dissolved. Add 2½ pints (1,200 ccs.) of distilled water; stir well. Filter into clean glass bottle with glass stopper. Keep in a dark place; this will keep.

No. 2.—The "salts" solution:—

½ lb. (250 gms.) of Rochelle salt and ½ gallon (2,300 ccs.) of distilled water. Mix and shake till dissolved. Filter. This will keep.

No. 3.—The "wash" solution:—

Dissolve ½ lb. (250 gms.) of crystals of protochloride of tin in 1 pint (480 ccs.) of distilled water. A milky solution is obtained, with white sediment. Shake up before use. This will keep.

To prepare the solutions for silvering:—For the wash take 2 drachms (7 ccs.) of No. 3 and 12 pints (6,900 ccs.) distilled water. Mix well.

For the silvering solution:—To each pint (litre) of distilled water add 1 oz. (64 ccs.) of No. 1, and stir; then add 2 drachms (16 ccs.) of No. 2 for each pint (litre) and stir.

In the use of this process all solutions should be somewhat warm. The mirror should also be warmed; this is accomplished by placing it in a large pan and pouring water into the pan a number of times, each time slightly warmer than the last, till a temperature of 100 deg. to 120 deg. F. (40 deg. to 60 deg. C.), is reached. The mirror is now tilted and the water thrown off its surface; while tilted, the jug of "wash" solution is poured on the surface at the uppermost point, so that a stream of the solution runs down and wets the whole of the surface. The mirror (still tilted) has now two or three eight or ten-pint jugs of warm distilled water poured over it, no parts being missed. It is then quickly levelled and about twelve pints (six litres) of the prepared silver solution are poured upon it. If the mirror be warm enough, the silver will be seen on the glass here and there in one or two minutes.

When the solution becomes discoloured, pour some fresh solution on (in the middle, or where any bare place is seen). Continue in this way till the coating is deemed thick enough. Then tilt mirror to throw off the discoloured solution; throw over the surface a few quarts of warm distilled water; wipe surface all over with a handful of cotton wool, and tilt into a vertical position to drain and dry.

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[1] "English Mechanic," 34, 464, 1882.

[2] In changing these formulæ to the metric system, the quantities have occasionally been rounded off when it seemed evident that no error would arise thereby.

[3] "English Mechanic," 30. 416, 1880

[4] James quoted in "English Mechanic," 28, 113, 1878.

This process is said to give a very good coat. I have personally seen no example of a fresh coat obtained in this way from which to judge as to its excellence and thickness, and the only trial of the method I have made (on a small mirror) gave very indifferent results, doubtless through lack of experience. When the Crossley mirror was shipped to the United States in 1895 the silver coat was found in excellent condition when the box was opened at Mt. Hamilton (silvered by the above process?). This particular coat was later used for all Director Keeler's nebular photography, and the mirror was not resilvered till about January, 1902. It is evident from this that the coat must have been one of unusual durability and excellence.

The function of the chloride tin wash in this process and that used by Mr. Lundin is obscure. It seems essential that only the merest trace of the chloride shall be left when the silvering solutions are poured on. Quincke found that the slightest trace of chloride would seriously impair the silvering process; he states that a millionth part of common salt in the silvering fluid is sufficient to make the resulting coat unfit for polishing, and advises that when only small amounts of solution are being used, great care should be taken to prevent the natural perspiration of the hands from injuring the mixture.

### Bottger's Method.*

1. Dissolve 5 gms. silver nitrate in distilled water; add ammonia till the precipitate almost entirely disappears; filter and dilute to a volume of 550 ccs.

2. Dissolve 1 gm. of silver nitrate in a little water and pour into 500 ccs. boiling water. Add to this 0.83 gm. Rochelle salt, and let the mixture boil for a short time until the deposit appears grey. Filter while hot. The solutions will keep for several months in a dark place. After cleaning the glass, pour over it equal volumes of the two solutions. The process is complete after one hour, and may be repeated to secure a greater thickness of film. The operation can be quickened by warming the second of the two solutions given above to 70 deg. C. before mixing the two. Best results secured from silvering face down. H. D. CURTIS.

(*To be continued.*)

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* Kohlrausch, Leitfaden der prakt Physik, 207.

# THE CITY AND GUILDS OF LONDON INSTITUTE EXAMINATION PAPERS IN PHOTOGRAPHY.

## III.

THE Process Section of the City and Guilds Examination, like that devoted to "Pure Photography," is divided into the Ordinary and Honours grades. The following are the questions (and answers thereto) set in the Ordinary grade:—

1. What are the constituents of a developer for wet collodion plates, and what is the part played by each in the production of the developed image? (20 *marks.*)

The constituents are usually iron sulphate, acetic acid, alcohol, and water. The water is to dissolve the chemicals so that they may be used as a solution of correct strength. The iron salt is the agent that reduces the silver contained in the silver nitrate solution remaining on the top of the film to the metallic state; the acetic acid is added to restrain the activity of the reduction which, without it, would be so vigorous as to take place over the whole surface of the plate and so cause fog. The alcohol is added when the bath has become at all greasy from long use in order to permit the developer to flow easily over the plate. In the case of a new bath the alcohol is not required as the solution on the plate is not sufficiently alcoholic to repel the developing solution.

2. A wet collodion plate, after removal from the sensitising bath, is thoroughly washed with water and afterwards exposed in the camera in the ordinary way. It is then treated with a developer of the usual composition for wet plates. Describe what takes place, and give any explanation you may think necessary. (20.)

Nothing would take place, since all the silver nitrate solution has been washed off the plate. The explanation of this is that the development of a wet plate depends for the image upon the reduction to the metallic state of the silver contained in the silver nitrate solution held on the film. The silver nitrate also acts as a sensitiser, so that if the plate were exposed for the ordinary time, as stated, it would be very much under-exposed, even if silver nitrate solution were supplied to the developing solution.

3. The collodion used in line work is iodised with cadmium and ammonium salts, and the sensitising bath is of the usual composition. After considerable use the bath refuses to work satisfactorily. State the defects you are likely to meet with, and name the impurities in the solution. Can you restore the bath to its original condition by any simple means? If not, what improvements are practicable, and how would you effect them? (50.)

The bath would become saturated with alcohol, some ether, cadmium nitrate, ammonium nitrate, and a quantity of silver iodide held in suspension. The defects likely to be met with are streaky plates due to the alcohol in the solution, and numerous little pinholes due to the silver iodide in the bath depositing on the plate during sensitising. The exposures would also be somewhat longer. The bath cannot be restored to its original condition by any simple means, but it is practicable to improve it by simply boiling it down to half its bulk. Then pour it into water to precipitate the excess of iodide, allow to settle, decant off, and make up to strength with the addition of the necessary amount of silver nitrate; or, if the bath is completely evaporated and the residue dissolved up again in requisite amount of distilled water, and acidified if necessary, it will work as well as originally.

4. Describe the difference you would expect to find in wet collodion negatives prepared with strong and weak sensitising baths respectively. How does the concentration of the developer affect the character of the negative? (25.)

With a strong bath one would expect to get shorter exposures and flatter negatives; with a weak bath longer exposures would be required and negatives of greater contrast would result. It is assumed that in both cases the strength lies within reasonable limits, as neither a very strong bath nor a very weak one will be of much use as a sensitiser. The concentration of the developer affects the character of the negative in the same way. The stronger the developer the less the contrast secured; the weaker the developer the greater the contrast, always provided that the limits are not unreasonable.

5. What is collodion emulsion and what advantages are claimed for it? In what way does the development of the exposed surface differ from that of a wet collodion plate? (30.)

Collodion emulsion is collodion that contains the silver salts already in suspension in it, instead of placing a collodion film containing certain iodides into a bath of nitrate of silver to form the silver salts. The advantages claimed for it are all those possessed by wet collodion, with the additional one that no silver bath is required, also that a plate can be more quickly prepared, that it is usually more sensitive than wet plate, and therefore in these two respects it is economical because of the saving of time. It is also readily susceptible to colour-sensitising, which wet collodion is not. It therefore possesses the advantages of gelatine dry-plates in this respect, together with the advantage of the "quality" of negative given by collodion, as well as admitting of rapid reducing, intensifying, and drying. It should be mentioned that all these claims are not always agreed to by everybody. Emulsion is cheaper than gelatine dry-plate because the same glass can be used repeatedly. As regards development, in the case of wet collodion the silver is deposited on the top of the film (so-called "physical" development), whereas in the case of the collodion emulsion the image is produced in the film as it is in the gelatine dry-plates.

6. Would you be able to make entirely satisfactory half-tone negatives upon rapid gelatino-bromide dry-plates? If not, what kind of difficulties would you expect to meet with? (25.)

It is not possible to make entirely satisfactory half-tone negatives on rapid gelatine dry-plates owing to the character of the emulsion being unsuitable. The chief difficulties met with would be a want of sharpness in the dot, that is, it would be surrounded by a fringe of fluffy deposit, and there would be a want of transparency in the spaces between the dots: both these defects are caused by the large grains of the emulsion allowing of more scatter, and its sensitiveness showing the effect of small amounts of light. The dot itself is also likely to be insufficiently opaque, especially in the shadows, as the ordinary rapid gelatine plate is not made to give the exceptional amount of density that is desirable in half-tone negatives. There might also be a difficulty in estimating the exposure if the plate was very sensitive.

7. Describe carefully a prism and a mirror, as used for negative making. What determines the excellence of both these devices? (20.)

A prism used for negative making is a triangular piece of glass, two sides of which are at right angles to each other, while the third is at an angle of 45 degrees to both. This last surface is usually silvered, for although such a prism is known as a totally reflecting one, it is only over a very small angle. The prism must be large enough to admit the full pencil of rays to or from the largest aperture of the lens with which it is used.

A mirror is a piece of glass or metal of sufficient substance to allow of being supported on edge without bending, having a very high and smooth polish on the surface. A prism or a mirror is used in negative making in order to produce a negative that is laterally reversed. Therefore it is so constructed and arranged as to reflect the image on to the plate at right angles to the subject. In order to do this a mirror must be placed at an angle of 45 degrees to the camera and the copy-board. The mirror must be of perfectly plane surface and supported free from any strain, otherwise the image will be distorted. The mirror must also be silvered on the surface if a glass one, or there would be a double reflection, one from the front of the glass as well as the silvered surface. The prism is a right-angled one, and when placed so that the hypotenuse is at 45 degrees it serves to reverse the image in the same way as the mirror. The excellence of both devices is determined by the character of the optical workmanship. This should be of the greatest accuracy as regards surfaces, the silvering should be substantial, and the deposit thoroughly homogeneous and as bright as possible. The glass in the case of the mirror should be of sufficient thickness, and in the case of the prism must be free from striæ or other defect, and also be free as possible from colour.

8. In spite of all care being taken when focussing, the negatives made are not sharp. How would you find out the cause of the defect? (30.)

The first thing to suspect is that the plate was not properly placed in the dark slide. Assuming this was correct, then the dark slide may not be in correct register with the focussing-screen. In order to test this, one would take the back of the dark slide and its shutter out, and place a piece of fine ground glass in the position of the plate and see if the image was as sharp as it appeared on the ground glass of the camera. If not, one would know that this was the fault, especially if, after focussing up on the ground glass in the dark slide and then exposing a plate, the negative was found to be quite sharp. If this were not the source of the trouble it might be caused by movement of the camera or vibration during exposure. One could put up a piece of white paper having some black lines drawn on it and give a minimum exposure at a large aperture. If result quite sharp, then careful examination should be made for causes of movement during long exposures. If, however, the result is still unsharp, then the lens might be suspected. To test for the visual focus being the same as the actinic it would be sufficient to slope the copy considerably, focus for the centre, and expose at a large aperture. If some other part of the image was sharper than the part focussed the lens suffers from chromatic aberration. Failing discovery with these tests another lens should be tried.

9. What are the methods which are usually adopted for producing "tints" upon line plates? How must the plate be prepared for receiving the tint? (30.)

Tints are usually either put down on to line plates by means of a transfer taken on Scotch transfer paper from a copper plate engraved with suitable line or stipple and inked with "plate to stone" ink, or by rolling up a "Shading medium" with photo-transfer ink, placing this on the metal, and rubbing down by means of a rubber roller, or they are sometimes secured by dusting on bitumen powder in a photogravure dusting-box. In the first case a press must be used to put the transfer down; in the other case a press is not required. The plate is prepared for receiving the tint by printing the line job on a piece of polished zinc by albumen process, inking up and developing just as usual, then slightly etching in a passing bath. Now the ink image is cleaned off, which leaves the outline of the work in shiny lines on a dull matt ground. Or if a black image is required, the zinc is first treated with a solution of antimony chloride to blacken it before coating with albumen solution, and then it is treated exactly as above. After the ink is removed the image will appear in black lines on the matt zinc. The parts that are not to receive the tint are now covered with a 10 per cent. solution of gum arabic, and after drying the tint is laid down as above. In the case of the dust tint the powder must be fixed by heating the plate. The plate is then washed, which brings away the gum and, therefore, any tint where it is not required. Plates having the ink tints must now be dried, warmed, dusted with resin or bitumen powder, which is removed from the ground of the plate, and the plate is heated to incorporate the resin with the ink, the object being to enable the ink to better resist the acid; then the etching is proceeded with as usual. The dust tint can be etched immediately after the gum has been washed away.

10. What are the causes of the following troubles in bichromated fish-glue printing and resist making:—(*a*) Insensitiveness, (*b*) scum, (*c*) spongy prints, (*d*) resist not remaining on the metal during etching? (50.)

The cause of insensitiveness in glue may be due in the first place to a bad sample of glue, to too little bichromate, or to too much bichromate.

Scum is caused by negative being too thin, exposure being too long, glue solution being insoluble owing to bad sample of glue or improper formula, or too long keeping, or scum may be caused by making plate too hot over the gas, or sometimes by drying face downwards over gas flame.

Spongy prints may be caused by poor sample of glue, improper formula, not sufficiently mixing glue with other ingredients in making up sensitive solution, or not sufficiently removing water from the plate when coating.

Resist may come off the plate during etching if the metal plate was not thoroughly clean, if improper formula has been used, if insufficient printing has been given, or if the plate has had too little or too much burning in.

11. Explain the working of any satisfactory method by which a combined line and half-tone block may be made. (30.)

One method of making a combined line and half-tone job is to make the screen negative and then the line negative separately, strip the negatives on to paper, cut away the line parts with a pair of scissors from the half-tone negative, and cut away the half-tone parts from the line negative, then lay down first one on to a piece of glass which has been previously flowed with weak gum solution, lift paper away, then lay down the second negative, registering up roughly by moving while looking through the glass and before taking the paper away; afterwards the negatives can be fitted up with great nicety. The plate is then allowed to dry, printed on to metal, etched until the half-tone is sufficiently deep; this is then thoroughly painted out with acid resin varnish, and the etching of the line part continued as usual until sufficient depth is attained.

12. How may vignetted half-tone plates be prepared and mounted so as to assist the printer to produce a softly shaded edge on the prints? (30.)

In the first place the etching of the dots near the edge should go as far as possible without actually over-etching them. An outline in varnish is made about one-eighth of an inch outside the edge of the vignette, and just outside this outline etching is done by means of a brush, gradually working in towards the picture in such a manner that the dots nearest the outside get the most etching. After the etching is satisfactory the plate is trimmed on the router and saw, and if a Mole's vignetter is at hand a small amount of metal underneath the vignetted edge is gouged away, so that on nailing the plate to the wood mount the edges are somewhat below the surface of the other parts of the block. The plate should also be interlaid—that is, paper is cut out and placed under the plate in the centre but not the edges before mounting, so that when the block goes on the printing machine there is more pressure given to the centre than the edges. Sometimes the edges are beaten down with a hammer the face of which is engraved with lines, sometimes the edge is engraved with a tool called a "many-liner"; but both these methods, unless very skilfully used, are not to be recommended.

13. What is the difference between a direct and a transfer photo-lithographic process? Describe either of these. Supposing considerable accuracy and fineness of rendering to be required, which process would you prefer, and why? (50.)

The difference between a direct and a transfer photo-lithographic process is that in the first case the negative is printed direct on to the lithographic printing surface, whereas in the second case the negative is printed on to some surface from which it is then transferred to the lithographic stone or plate. For the direct process the negative is made as usual, but it must be reversed. The stone or metal plate is coated with bichromated albumen solution as for a line block, the negative placed in contact, and exposure made; it is then rolled up with photo-transfer ink and developed by placing under cold water and gently rubbing with cotton-wool. The plate is then dried, powdered with resin, etched with acid gum, washed, and gummed up and allowed to dry. It is better to allow to stand for some time if possible; then the gum is washed off with water, and while the stone or plate is still wet it may be inked up with a lithographic printing ink and proved.

In the case of the ordinary indirect process the negative is made as before, except that it is not reversed. A piece of photo-litho paper—that is, paper coated with gelatine sold for the purpose—is sensitised in a solution of bichromate of potassium—generally 5 per cent., squeegeed on to a polished and talced piece of glass to dry in the dark, when, after stripping from the glass, it is placed in contact with the negative and printed as usual. It is now inked up thoroughly, but with a very thin film of photo-transfer ink, and allowed to remain for some time until all the solvent has evaporated from the ink. It is then developed by placing in cold water and rubbing gently with a wad of cotton-wool. After thorough washing to remove all the bichromate the print may be blotted dry enough to transfer, or if allowed to dry it must be redamped in a damping book. Some workers prefer to soak after exposure for, say, twenty minutes, and then blot off superfluous moisture and then ink up with a velvet roller. The transfer is now laid down on the stone and pulled through a lithographic press several times. The transfer paper is then removed, softening with water to allow it to come away easily, and the transferred image is treated as described above for the image printed direct.

For fine results the direct process is to be preferred, because the transfer process is liable to coarsen the work by reason of the operation of transferring tending to squash the lines.

14. Explain how it is possible to convert a bromide print from a line negative into a photo-lithographic transfer. (50.)

If a developed bromide print be soaked in certain bleaching solutions of which a type is simple bichromate of potassium, this will have the effect of considerably hardening the gelatine where the image is; that is to say, the combined effect of the reduced metallic silver and the bleaching solution will render the gelatine there practically insoluble. If now the bleacher is washed away and the superfluous moisture is blotted off the print can be rolled up with photo-transfer ink, which will adhere only to the image, or if it adheres to the other parts of the paper it may be easily removed by means of a wet sponge. The print can now be laid down on to the lithographic printing surface just like any other transfer.

15. What is a "pneumatic" printing frame, and upon what principle does its action depend? What are its advantages? (25.)

A pneumatic printing frame is just like any other printing frame in its object, and therefore, in its general construction. It differs from the ordinary frame in the way the pressure is applied; the back does not consist in a strong piece of wood which can be forced in contact with the negative and metal by wedges or screws, but instead this is made of a piece of stout rubber which is so fastened to the frame that when closed it makes an air-tight chamber of the interior of the frame. The frame contains a valve to which a pump is attached after the frame is filled to exhaust the air. When this is done extremely good contact is made between the contents of the frame. The principle upon which the action of the frame depends is the fact that our atmosphere exerts a pressure of fifteen pounds per square inch. The advantages of the frame are that an immense pressure is very easily and quickly secured with a very light frame, variations in thickness of negative or metal cause no trouble, and a number of negatives may be printed at once.

# THE EFFECT OF THE ALKALI IN PHOTOGRAPHIC DEVELOPMENT.

[The following is a translation made with some abridgment of a thesis describing an investigation carried out by M. Louis Bourgeois for the doctorate of science of the Lausanne University. The full text of the paper forms a volume of 116 pages, published by E. Lavanchy, Morges, Switzerland.—Eds. "B.J."]

The object of the present thesis has been to study the action of the alkali in photographic development, but, having in mind the great number of alkalies and substitutes therefor, the experiments have been made throughout with one only, and that the one in most general use—namely, carbonate of soda. It will be of service if at the commencement of this paper the question of the necessity of an alkali—at any rate, with most of the developers—be considered. The solution, in water or alcohol, of a reducing body alone may exert a certain reducing action on the latent image, but this action will be so slow as to be of no use in practice[1]. In presence of sulphite of soda, as used in developers as a preventive or restrainer of oxidation[2], the reduction of the silver salt, although still very slow, is appreciable.

In order that the experiments should be, as far as possible, on the lines of practice, we employed throughout the pure anhydrous soda sulphite of MM. Lumière. This was intentionally left unneutralised by means of bisulphite, in order, again, to allow the experiments to conform to practical working conditions.

M. Reeb, in the "Bull. Soc. Fr. Phot." 1904, p. 263, has described his method of development with hydroquinone by means of pure sulphite rendered neutral. We have employed the same form of development in the case of all the developers examined, using the pure anhydrous sulphite already referred to. Although M. Reeb admits that hydroquinone is not a chemical developer when used with sulphite only, that is, when the latter is free from carbonate, and although, on the other hand, the negative fixes slowly in the developing bath, yet we have obtained, using pure sulphite only, excellent negatives as regards half-tones and details with almost all the developers in common use, and particularly with hydroquinone and pyro. (See Tables I., etc., given later.)

It is also necessary to add to the developing solution an accelerator which reduces the time of development. This accelerator, or catalyser, is usually an alkali, the nature of the action of which is not fully known. The present writer has specially studied the influence of a regular increase in the proportion of the alkali upon the development of the latent image.

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[1] Also density is too small in the case of a normal time of development and the reducing substance oxidises too rapidly.

[2] The sulphite plays the part of a preservative.

As soon as the silver bromide has been reduced in the emulsion film the alkali neutralises the hydrobromic acid, which is formed by the hydrogen of the water and the bromine from the silver bromide. There is thus produced an alkaline bromide. Moreover, certain developers give rise, by their oxidation, to acid products which act as restrainers of the further development of the latent image. In order to prevent this reversing action it is necessary to neutralise the acids thus formed.

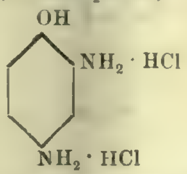
The action can be represented as follows, admitting for the sake of clearness the chemical hypothesis of the latent image:

$$C_6H_4(OH)_2 + H_2O = C_6H_4(OH)_2 + O] + 2H$$
$$2H + 2Ag\,Br = 2H\,Br + 2\,Ag$$
$$2H\,Br + 2NaOH = 2\,H_2O + 2Na\,Br.$$

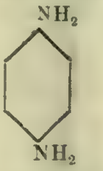
We do not support the theory according to which the action of any alkali whatever in a developer is similar to that of any other, provided that the one be replaced by the chemically equivalent weight of the other. Opposed to this, it must be recognised that the caustic alkalies possess certain qualities and certain defects which are not exhibited by the carbonated alkalies. In these latter it is very probable that the carbonic acid resulting from a partial hydrolysis of the solution of the sodium carbonate acts as a restrainer, but with a caustic alkali such action cannot take place.

Hydroquinone, pyro, and in general the phenols play the part of acids, and the alkali neutralises or saturates them. A caustic alkali will saturate diphenol, a carbonated alkali, pyrogallic acid.[3]

According to Reeb, developers containing a reducer of the amido class (basic bodies) should behave differently, that is to say, give a developing substance by combination with acids, such as oxalic acid, less strong than hydrobromic acid, and should not give rise in development to the opposing reaction. But this reaction is actually produced. Amidol, or better, diamidophenol,



to which is added oxalic acid is a developer of the latent image.[4] It is the same in the case of paraphenylene—diamine,

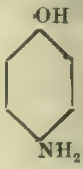


which in combination with hydroquinone forms an excellent reduced hydramine. These two bodies develop only in aqueous solution.[5]

It is known that the amide bodies are sometimes regarded as the result of the combination of ammonia with acids, a combination which causes one molecule of water to be liberated. Owing to this formation of water the amide bodies may be considered as true salts of ammonia.

$$CH_3{\cdot}COONH_4 = CH_3-CO-NH_2 + H_2O$$

Experience has shown that these amido-phenols play the part of base in the presence of strong acids and also the part of acids in the presence of strong bases. The paramidophenol developer,



which is the reducer dissolved in caustic lithia, is an example. According to this the part played by the alkali would be as follows:—To form a salt with the reducer which, while preserving its reducing properties, has the power of fixing hydrobromic acid.

We first set out to determine, in the case of each substance examined, the reducing power, that is to say, the quantity of substance necessary in order to reduce completely one gram of silver nitrate. This determination is of importance only in the fact that it serves as a guide for the drafting of the formulæ employed in practice, these latter invariably containing a considerable excess of the reducing body. Moreover, formulæ, which we may call theoretical, may be obtained in this way and serve for a comparison of the different reducers as regards their energy. Moreover, according to the present writer's knowledge, no one has yet determined exactly the reducing power of all the bodies mentioned below. M. Reeb[6] and MM. Lumière[7] have made this determination in the cases of hydroquinone, eikonogen, and paramidophenol.

In brief, the hypotheses most generally admitted up to the present as to the part played by the alkali in development of the latent image are as follows[8]:—

1. To neutralise the hydrobromic acid which is formed in development by the action of the hydrogen produced from the water decomposed by the reducer.

2. According to Reeb ("Bull. Soc. Fr. Phot.," 1904, p. 324) the alkali forms with the developing body a compound in the nature of a salt, and this compound is afterwards decomposed by the hydrobromic acid.

These two assumptions, resting, one on the neutralisation of the hydrobromic acid and the other on the decomposition of a salt-like body formed by this same hydrobromic acid, naturally represent equal quantities of alkali. Yet these assumptions are far from corresponding with what actually takes place.

The first work of verification was to fix the average quantity of hydrobromic acid produced in the development of a plate of given size. The following are the results of MM. Lumière on this point:—They found that in the case of a plate 13 x 18 cm. the quantity of hydrobromic acid formed was .0342gm., which corresponds to .0236 caustic potash according to the equation

$$HBr + KHO = H_2O + KBr.$$

This small quantity of caustic potash has been employed in a hydroquinone developer, which gave after one and a half hours' development, a negative "of small intensity and fogged." In the case of using caustic soda the results were almost the same.

It is known that the addition of increasing quantities of alkali (after having once increased the reducing power) is without action on the latter up to a certain quantity.[9] MM. Lumière have determined this quantity in the case of the caustic and carbonated alkalies.[10] They have found, moreover, that it is only the caustic alkalies which can be replaced one for the other in developers in the chemically equivalent proportions. The alkaline carbonates and their substitutes, excepting only trioxymethylene, should be employed in quantity considerably greater than the quantity of caustic alkali which is their chemical equivalent, in order to lead to the same developing result. In short, if *a* represents the quantity of caustic alkali, the necessary quantity of a carbonated alkali will be from 2*a* to 8*a*. These calculations are made for certain reducers (developers), excluding others with which the quantity of caustic alkali, which is very great, cannot be replaced by carbonated alkali, as the quantity of the latter would be far too great. (Presumably to dissolve in the water.—Eds. "B.J.").

In order to determine the reducing power, several methods, both gravimetric and volumetric, have been tried. In the end, the method laid down by M. Reeb[11] in his paper on hydroquinone, was adopted with some slight modification.

The experiments have been made on the following reducers:—

Hydroquinone.
Amidol.
Pyro.
Pyrocatechin.
Metol.
Eikonogen.
Paramidophenol.
Glycin.
Ortol.
Adurol.
Piral Hauff.

We have also experimented with certain other substances; in the case of certain substances, with different brands provided by the various makers.

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[3] "Bull. Soc. Fr. Phot.," 1904, p. 324.

[4] Lumière, "Bull. Soc. Fr. Phot.," 1893, p. 293.

[5] Lumière, "Bull. Soc. Fr. Phot.," 1895, p. 135.

[6] "Bull. Soc. Fr. Phot.," 1890, p. 256.

[7] "Les Developpateurs Organiques en Photographie," Paris, Gauthier Villars, p. 69.

[8] Lumière and Seyewetz, "Zeit. für Wiss. Phot.," 1907, p. 126.

[9] Apart from this action on the gelatine.

[10] Loc. cit.

[11] "Bull. Soc. Fr. Phot.," 1890.

M. Reeb's method is as follows :—"The method is based on the property of hydroquinone to reduce the whole of oxide of silver dissolved in soda sulphite solution. Silver nitrate, 1 grm., is dissolved in 30 ccs. of distilled water and precipitated by addition of a slight excess of caustic potash. The oxide of silver may be washed by decantation, the first washing waters being rendered slightly acid by addition of a few drops of acetic acid. The residual precipitate is then dissolved in 5 gms. of anhydrous soda sulphite. To this solution is added E/200 solution of hydroquinone until the oxide of silver is completely reduced. Experiments show that .08 gm. of hydroquinone is necessary and sufficient to reduce completely the whole of the silver oxide obtained in solution in the soda sulphite."

(*To be continued.*)

## TWO FOCUSSING HELPS.

When using wide-angle lenses in the case of interiors and other subjects of a dark nature it is difficult to focus anywhere but in the centre of the image, owing to the obliquity of the rays, and sometimes the base-board, especially in the so-called "Scientific" square-bellows cameras, will prevent one seeing any image at all in the lower portion of the ground-glass.

In such cases one cannot tell how much of the subject is included, but if a small piece of mirror is held as shown at A in Fig. 1, the image can be seen in it from above or from the side, but the exact position and angle must be found by experiment. A small piece of silvered sheet glass, say 2 in. by 1 in., can be bound up passe-partout fashion, and takes up scarcely any room.

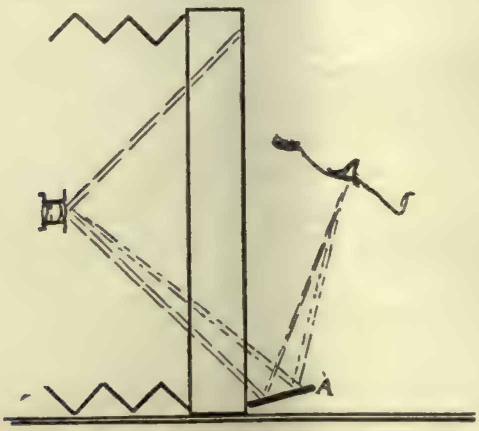

Fig. 1.

Dim as is the image in the parts we are able to view without a mirror, the application of a focussing magnifier in the ordinary way, as in Fig. 2, is no help, the light being still further reduced; but if we slice off, as it were, a part of the mount at the line B C, we can swing the eyepiece over so that its axis is in line with the rays forming the image, as in Fig. 3, and get the advantage of the full amount of light coming from the lens. The difference in brilliancy is a revelation to anyone trying it for the first time, even in ordinary subjects, and although the field of sharpness is not so large as when using the eyepiece flat, as in the centre of the ground glass, still there is a strip of perfect sharpness ample for all practical purposes.

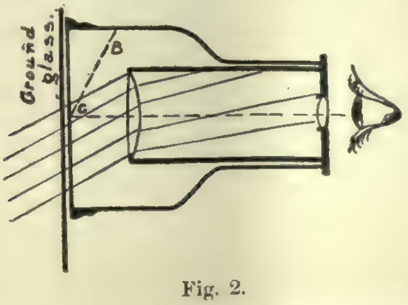

Fig. 2.

Cutting off part of the mount does not interfere with the use of the magnifier in the ordinary manner, but it is very necessary that we take off exactly half of the rim, that is, from the point C on one side of the rim to the corresponding point on the other side should be a true diameter of the circle, in order that the distance along the axis of the eyepiece to the ground glass shall remain the same whatever the angle in which it is held. The depth of the bevel matters little, so long as it allows the eyepiece to swing over to meet the rays from the widest-angle lens we have.

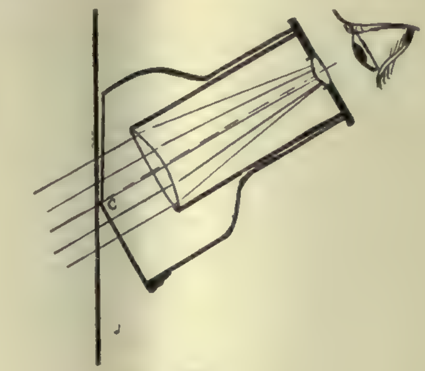

Fig. 3.

The way the points C were fixed in my magnifier is as follows: The glasses having been first unscrewed, a moistened piece of stiff white paper was stuck over the opening with fish-glue, and when dry it was trimmed round, forming a perfect circle. Across this disc a straight line was drawn, "anywhere"—say X X (Fig. 4). It was then a simple matter to find the centre Y of this line, and from that point to draw another straight line at right angles to the first, and "produce it both ways," as Euclid's translators would say, to the circumference at Z Z. A tiny mark was made with the edge of a sharp file at these points, and the paper stripped off.

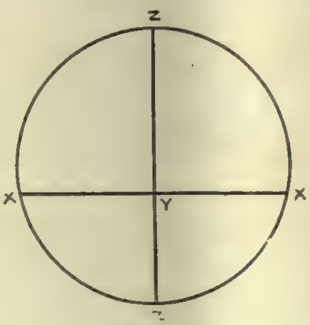

Fig. 4.

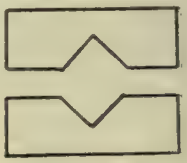

Fig. 5.

The mount was then held in a vice by means of two pieces of wood notched as in Fig. 5, and the brass tube bevelled off with a file up to the marks Z.

D. Berlin.

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Rajar Monthly Print Competition.—The prizes offered by Messrs. Rajar, Ltd., Mobberley, Cheshire, for the best prints on papers or postcards of their manufacture submitted for the competition for the month of July have been awarded as follows:—Class 1, open competition, to Mr. A. Bowes, 71, Short Heath Road, Erdington, Birmingham, for print on glossy P.O.P. paper, purchased from Mr. Wilton, chemist, Erdington; Class 2, for those who have never previously won a prize in any class of competition, to the Rev. A. R. Slater, Wesleyan Mission, Gubbi, Mysore State, India, for print on glossy P.O.P. paper purchased from Messrs. K. V. Iyengar Bros., photographic dealers, Brigade Road, Bangalore, India. Remittances for the prizes have been posted to the respective winners.

## AN APPEAL TO THE PHOTOGRAPHIC ASSISTANTS, MALE AND FEMALE, OF GREAT BRITAIN.

Fellow Workers,—I want to talk to you about the formation of a union. I think you will all agree with me when I say that a photographic assistants' union is a thing which is badly needed at the present day. You will remember some five years ago a gentleman from the South, Mr. Doust, appealed to you through the "Journal," and offered to put a union on a workable footing, entirely out of his own pocket. That the project failed is to be regretted, but fail it did. At the same time, the attempt showed that there were a number of assistants who were strongly in favour of such a course, and there can be no doubt that if there was a necessity for a union five years ago, there is a greater necessity for one to-day. I know there are a number of assistants and masters who, at the mention of a union, will shake their heads and say the thing is an impossibility. Well, I will ask those of that way of thinking to look at quite a recent event, the sailors' strike. It came as a surprise to many people that the sailors had got a union, and could present a united front. Yet, if a moving fraternity like sailors can organise, why cannot photographic assistants? The greatest difficulty in the way is the fact that there are so small a number in each town, but the difficulty is one which can be overcome.

It will be as well, then, if we look at the cause of the previous failure. Mr. Doust asked for, I believe, the names of ninety assistants who were willing to help him, but failed to get above seventy, with the result that the project fell flat. Now, it seemed to me that the first cause of failure was the fact that Mr. Doust was a master photographer. Let me show you what I mean. I was, at the time, one of about seventeen assistants on a firm in a Lancashire town. When Mr. Doust appealed for names I sounded several of my fellow workers, with the idea of sending the names up in a bunch. Yes, they were willing to support a union, but, strange to say, the same question was asked by each of them: "What is he going to get out of it?" There was the rub; they could not understand why a master photographer should be solicitous for the welfare of the assistants.

Now, I firmly believe that Mr. Doust was acting from a purely disinterested motive, but it was quite another thing to convince the assistants that it was so. You see, the photographic assistant is trained in rather a narrow school, is rather given to suspicion, and will not be caught napping if he can help it. Here, then, we have the first cause of failure—lack of confidence and support. It was this same reason which prevented the assistants' branch of the P.P.A. from being a success. For it stands to reason that the assistants are going to look askance at any proposed union which would be presided over by master photographers.

The next reason for failure in both the attempts of Mr. Doust and that of the P.P.A. was the fact that they relied on one channel only to reach the assistants, that through the "British Journal." You cannot build a union in this trade unless you reach the assistants through other channels than this paper. The "Journal" is the primary channel through which you reach the interested assistants, but you have got to reach the disinterested ones also, and to this end there are other ways and means. Where those other means lie I have my own ideas, and it would not do to state them here. Let us look at the present. A few weeks back an assistant signing himself "Too Old at Forty-three" wished to know what were the reasons he could not obtain a decent situation. I want you to note, he explained he *had* held situations at two or three pounds a week. Well, I think the fault with him is that he has fallen into a rut, and the rut he is in we are all of us in danger of falling into. Pick up any week's "Journal," and you will not have to look long to find an advertisement couched in these terms: "Operator-retoucher, must be smart, able to assist generally; wages £1 per week. Apply, etc." I know that you will say that an advertisement of this sort is rather an exception, but I say it is these exceptions which are the starting-point of our troubles. This point is pinning us down until we shall become, if we have not already done so, the poorest paid section of brain workers in the kingdom. But there are other questions vital to us assistants which require attention: the overcrowding of the trade by female workers, the permanency question, the question of railway fares, and the Sunday working question.

With regard to the question of the female workers, well, they are a necessity to the trade, and have got to live; but it is quite time it was defined where their place in photography is. This is a matter which is stirring other trades besides our own, and it is one which will have to be tackled if photography is to remain a means of livelihood for the male worker. When things have come to such a pass that we have on one hand "Too Old at Forty-three" saying he cannot get a decent place, and on the other hand a master photographer like Mr. Frank Brown, of Leicester, asking *re* Sunday trading, "How long will it be before we all have to fall into line?" I think it about time that photography began a general turning about.

But you assistants must not think you have all the grievances; the masters have quite as many on their side, and I think the lack of really good assistants is one of them.

But the masters are to a great extent to blame for this one. They know quite well that in scarcely any other trade is there so much need for brains in an assistant as there is in photography. If an assistant is to do his or her work properly, it is brains from starting in the morning till leaving at night. In spite of all the efforts of the manufacturers to make photography a mechanical trade, it still is, and always will be, one in which the personal element is a predominant feature. An assistant who takes an interest in his work may go on learning until the grave claims him. And what do they offer him to keep up his interest in photography, what inducement is there for him to go on learning? It just about amounts to the wage of a navvy. Except in the highest walks of photography the tendency is to press the assistants' wages down to a point which is infinitesimal. Only the other week I was surprised to find that a photographer in the Midlands, whose name and work are known throughout photographic ranks, was offering but 25s. for an assistant, and his *was* a place where brains would have to be used if ever there was one. I also know a good-class photographer close to London who pays his assistant the princely sum of 19s. per week. The masters will say that the present state of the trade will not allow of big wages. Well, perhaps it won't, I am sorry and all that, but the fact remains, that the money-grubbers among them will never pay decent wages until they are forced to.

There are many other grievances on the masters' side which require attention, and which there is not space to discuss here, notably the Sunday opening, the cut trade, and overriding by the illustrated press. It is scarcely my place to champion the masters, although I must say that at the present they seem a helpless lot, and could do with someone to stick up for them. That the master photographer has grievances which are very real and difficult to tackle no assistant will deny. Some of their troubles, such as that with the press, will not be settled until test cases are taken into the courts. But a test case would cost much money, and even if one of the hurt ones had money for it to spare, he would not spend it that way, because it might be of benefit to other photographers. Now it does seem strange that you masters, unlike the assistants, have a power in your hands to settle your grievances which the majority will not make use of. I refer to the P.P.A. At the present time this excellent society certainly lives, but is like a sickly child. I am not forgetting that you had a real live convention last May. But what good came of it? It was a nice holiday for you who attended it, and you had your photograph taken. But I think the wholesalers did the wire-pulling. They were about the only ones who gained any practical result from it, or some of you who attended wouldn't have had the need to start grumbling so soon after. That it is not a very effective force no one will deny. If it were, many of your grievances would be things of the past. Why is it not effective? Its leaders are good business men, who know every phase of the trade. Well, it is ineffective because it is not representative. To be a representative body it must have three-fourths of the photographers at its back. The present membership is a few hundreds, and the number of bona-fide photographers is several thousands. Therefore it needs more support. Given this support by the necessary three-fourths, there is no question affecting photographers which could not be successfully tackled by this body. But you, the majority, don't see why you should become a member of an ineffective body. No, and you will continue to be blind until we assistants give you the lead by forming a union. Then, I venture to say, you will do a double to get your subscriptions up to the P.P.A. For the formation of a union will teach you what you won't take in at present—that if you are to be the principal voice in the control of the trade you must combine.

This is where the matter of a union directly affects the masters. Until they are forced to combine they will not do so, and until that combination takes place, and, instead of each being a unit working in his own selfish sphere, until they become members of one body working for the common good of the trade, so will photography go from bad to worse. I do not think there is a master photographer in these islands but ought to heartily support the formation of an assistants' union.

And now I will say a few final words to the assistants themselves. You will see that if we are to have our grievances listened to it is time we studied ourselves. We may go on pleading our cause through the "Journal" in individual fashion from now to the crack of doom, and it will avail us nothing. It is time we ceased to sit and bemoan our lot and got up and acted. We may be sure that if we will not make an effort to fight our own battles no one will fight them for us. With the formation of a union on our side, greater support of the P.P.A. on the masters' side, and some sane and sensible discussion and arbitration between the two, our grievances will cease to hurt us, and we shall be doing our bit towards the raising up of the trade to a profitable profession.

It is useless letting month after month and year after year pass without making an effort to improve our lot. It is far better to set into it and see what we can do.

Now, how many volunteers are there who have the grit to make this effort. Don't run away with the impression it is going to be an easy job. It will be a lengthy and arduous task if we are to put it on a firm foundation, and its foundation must be firm if it is to be a telling force. It will require workers, stickers, and "die-hards," and please don't ask that narrow-minded, five-year-old question, "What are you going to get out of it?" I hope to get a better value for my services. Remember, I am an assistant myself, and what you stand to gain or lose by it, so do I stand similar.

I am ready, willing, and eager to co-operate with any of you who is in sympathy in this matter of a union.

Having now finished my appeal to you I will leave the issue in your hands. It is for you to say whether we shall make a combined effort to improve our lot or continue to drift towards the gutter.

Before closing I must thank the Editor for having published this letter. We ought all to be thankful that in him we have an impartial friend, ever ready to help the cause of master or assistant.

PHIL. JARRETT.

6, Salisbury Road, Watford.

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## WOMEN IN PROFESSIONAL PHOTOGRAPHY.

THE National Convention of Professional Photographers, just held in St. Paul, Minn., U.S.A., has emphasised nothing more strongly than the firm place taken by women in the profession—not merely as receptionists, retouchers, etc., but as owners of successful businesses. The American conventions attract public attention in a way that no British gatherings of photographers have yet succeeded in doing, and their work is chronicled by newspapers scattered all over the huge country. For instance, such a staid old journal as the "Philadelphia Public Ledger," published thousands of miles from the scene of the Convention, gives it a full page, with many portraits of the leaders, and it is significant that of the eleven people thought worthy of portrayal, five are women—Mary Carnell, of Philadelphia; Mrs. Stevens, of Toledo; Belle Johnson, of Monroe City, Mo.; Gertude Käsebier, of New York; and Mina Diez-Dührkoop, of Hamburg and Berlin.

The recognition of woman's real place amongst the profession is largely due to the efforts of the Women's Federation, formed within the Professional Photographers' Association nearly three years ago, with Madame Käsebier as its first president, and with Miss Mary Carnell as president for the current year. Miss Carnell has been very successful in arranging a show of women's work, and the appreciation with which it was received encourages her to urge that next year there shall be an attempt to represent the women of the European countries as adequately as their American sisters were treated this year.

Even in the exhibition just closed, there were a few invited pictures, England being represented by Miss Warburg and Mrs. Catharine Weed Ward, Sweden by Miss Anna Backelund, and Germany by Frau Diez-Dührkoop. Next year Miss Carnell wishes to represent not only the British women workers of to-day, but also, and particularly, that great pioneer in pictorial photography, Mrs. Julia Margaret Cameron, and she asks that readers of "The British Journal of Photography" will communicate with the Editor if they are willing to lend prints by, or from the negatives of Mrs. Cameron. She also asks that any women photographers who would contribute their own work to a representative British collection, should communicate with the Editor.

Amongst the speakers and demonstrators at the Convention, women have been very successful. Mrs. Käsebier's demonstration of pictorial photography at Rochester last year was almost ruined by its very popularity, for the great hall was so crowded, and in such torrid weather, that it became almost insufferable for lecturer and for audience. Miss Carnell is always a welcome speaker, and this year Mrs. Nina Spalding Stevens, a member of the Women's Federation, and assistant-director of the Art Museum of Toledo, gave one of the addresses.

Miss Carnell's subject at St. Paul this year was "The Limitless Camera," illustrated by the work of both women and men, amongst them being some fine Egyptian exploration pictures by Sophie Steel, of Philadelphia, and views in the American South-West by Elizabeth and Mary Bonsall.

In speaking of the work of the Women's Federation, Miss Carnell stated that it now has two hundred members—just about one-eighth of the women in America who are making independent livings with their cameras, for these are known to be just over sixteen hundred. Many of them have inherited businesses founded by fathers or husbands, but still more have made new businesses for themselves. Amongst the members are Madame Käsebier, Miss Jessie Tarbox Beals, Miss Frances Benjamin Johnson (a pioneer in fine press-photography), Misses Virginia Prall, Frances and Mary Allen, Florence Maynard, and Mathilde Weil, to mention only those who have some international reputation through their exhibition work and their illustration of some of the leading American magazines.

In her address to the Convention, Miss Carnell spoke for "equal rights, equal responsibilities, and equal opportunities," and in an interview with a newspaper man she said:—

"Photography in certain branches seems naturally fitted to be women's work. What more natural, for instance, than for a woman to photograph a mother and child? Granted her technical knowledge, who could sympathise more with that exquisite relationship than she? Women like to photographed by a woman, too. They feel far less constraint as a rule, and it is easier to get from them natural and unaffected poses. Much clever advertising work has been done by women, bright, snappy ideas, which appeal to the business man. Miss Florence Maynard, whose artistic work is so well known, has been remarkably successful also in this very difficult line, carrying off large money prizes repeatedly in the Eastman Company's competitions. We have not wanted to compete with the men, to emulate or rival them in any way, but to work side by side with them for the same ethical and professional standards. And I think our attitude is becoming thoroughly known and respected."

Frederic Gutekunst, now the oldest professional photographer in the United States, says:—"I would rather see a dainty, refined woman before the camera, as sitter, than working with disfiguring chemicals in a dark-room. But if she has such desire and aptitude for the work that she cannot keep away from it, then the photographic profession is the very place where I would be glad to see her, and where she ought to be."

William H. Rau, the president of the Professional Photographers' Association of Pennsylvania, and one of the lecturers at the National Convention, is heartily in favour of the entry of women more fully into photography. He says that: "With the exception of outdoor work, which requires the carrying of heavy outfits, women have mastered the photographic business. The attitude of the men was at first tolerant, but is now acceptable. I know of no feeling of jealousy nor doubt as to women's adaptability to fully meet the requirements of the profession. *She can sell pictures at higher prices than the average man,* and is especially successful in the picturing of children." Among others, Mr. Rau mentioned Mary Carnell and Mrs. Price, Mary McGarvey, of Bellefonte, Pa.; Helen

Ball, of Lancaster; Amy French Wright, of Wilkesbarre; Katherine Jamieson, of Pittsburg, and Mary Sunderline, of Flemington, N.J., as clever women who had succeeded in the art.

The point made by Mr. Rau, that women can (and do) get better prices than the men, answers the only real objection that the profession has ever raised to the entry of women into the ranks—the fear that they would cut prices and lower the commercial standard.

## THE PROPOSED OPTICAL CONVENTION, 1912.

A MEETING of the Organising Committee of this Convention was held in the library of the Royal Society of Arts on Thursday, July 20 last, when a report was presented by the Executive Committee as to the steps which have been taken in furtherance of the project and the stage which, down to the present time, the movement has reached. It thus appeared that a Guarantee Fund had been subscribed, with the assistance of three City companies, among the members of the Organising Committee and Executive Committee and their immediate friends, to the extent of £822 4s. 6d. It is understood that further guarantees will be forthcoming, and it is intended that the scheme shall be floated on a guarantee fund of not less than £1,000.

With a view to making the Convention widely known, especially to the scientific public particularly interested in optical instruments, the Executive Committee have put themselves into communication with the Councils of the principal scientific societies in London and the Provinces. Their communication has taken the form of a request to these bodies to nominate representative members on the Organising Committee, and in some cases, where it was thought that the interest of the society addressed would be of a somewhat direct and special character, a further request has been made to the president of the society to accept nomination as vice-president of the Convention. A considerable number of very influential gentlemen have responded to this invitation, and have joined the Organising Committee under these conditions. The following accessions to that body were reported at the meeting:—His Grace the Duke of Northumberland, K.G. (Royal Institution); Sir William Turner, K.C.B. (Royal Society of Edinburgh); The Astronomer Royal (Royal Astronomical Society); Dr. Baker, F.R.S. (London Mathematical Society); Professor Frankland, F.R.S. (Chemical Society); Dr. Dickson (Royal Meteorological Society); Mr. E. B. Knobel, F.R.A.S. (British Astronomical Association); Dr. G. T. Beilby, F.R.S. (Institute of Chemistry); Mr. E. B. Ellington (Institution of Mechanical Engineers); Dr. Glazebrook, C.B., F.R.S. (Faraday Society); Mr. H. G. Plimmer, F.R.S., F.R.M.S. (Royal Microscopical Society); the Right Honourable Lord Sanderson, G.C.B. (Royal Society of Arts); Captain H. G. Lyons, F.R.S. (Royal Geographical Society); Mr. Chapman Jones, F.I.C. (Royal Photographic Society); Mr. E. Walter Maunder (Victoria Institute); Mr. R. G. Shadbolt (Institution of Gas Engineers).

Some of these gentlemen, having been original members of the Organising Committee, have added a representative capacity to their private membership.

The Organising Committee felt it expedient in these circumstances to proceed forthwith to the consideration of the question as to what should be the scope of the Convention, particularly with regard to the papers to be read and the objects to be included in the exhibition which it is intended to hold during the Convention week. The point of greatest difficulty which fell to be considered was whether the Convention should be organised as an international Convention, or on what may be called a national scale. This question has been under discussion in committee meetings from the first, and was decided at the meeting after much deliberation, but eventually upon considerations of an eminently practical character. It was established to the satisfaction of the committee that the organisation of an international exhibition would be beyond its power, because it would demand for successful carrying out the establishment of foreign agencies to represent the committee in the principal foreign capitals, and to supervise upon the spot the work of collecting and choosing suitable objects for exhibition. As no such agencies exist, and it was clearly seen that they could not be improvised, the committee felt itself compelled to forego this suggestion. The decision ultimately arrived at accordingly was that the exhibition must be organised as substantially a British exhibition, but in order that the committee might not be prevented from getting the benefit of exhibits of educational or scientific interest, whether they come from this country or from abroad, it was decided to add to the trade exhibition a loan collection of such apparatus.

In accordance with this view the committee adopted the following definition of the objects of the Convention:—

1. To ascertain and demonstrate the various modes in which
   (*a*) Theoretical science can be utilised to further industrial development;
   (*b*) The study of practical problems can be employed to give direction to theoretical teaching and investigation;
   (*c*) The practice of experiment can be usefully employed in the teaching of optical science.
2. To bring to the knowledge of the purchaser of optical and other scientific instruments, by means of the exhibition in London, and by means of the catalogue in the provinces, in the colonies, and in foreign countries, what are the resources of British manufacturers.
3. To collect, to ventilate, and to subject to efficient criticism, such proposals as have for their object the better organisation of the British optical industry, and the improvement, in any way, of British optical manufactures.
4. To ascertain and make known existing wants and deficiencies.

In pursuance of these objects the committee next proceeded to regulate the organisation of the Convention by the following resolutions:—

1. That the exhibition shall be essentially a British exhibition, and shall comprise, in addition to a trade exhibition, confined to British manufacturers, a loan collection of instruments and apparatus of historical and scientific interest, which may be of British or foreign manufacture, and which shall be selected with a view to subserving the educational and scientific objects of the Convention.
2. That guarantors of £5 and upwards, and donors of £1 and upwards, be enrolled as founder members of the Convention, and entitled as such, in addition to the other privileges of membership, to receive presentation copies of the proceedings and catalogue.
3. That the subscription for ordinary membership be 5s.
4. As to privileges of membership, that membership shall confer in all cases the right—
   (*a*) To attend all meetings of the Convention, and to vote on all business submitted to the vote of any such meeting.
   (*b*) To purchase the volume of proceedings and the catalogue at half price.

Professor Silvanus P. Thompson, D.Sc., F.R.S., has accepted the presidency of the proposed Convention, the secretary for which is Mr. J. W. Gordon, 113, Broadhurst Gardens, Hampstead, N.W.

# Photo-Mechanical Notes.

### Block-Making for Amateurs.

The French publishers, Charles Mendel, have published a little book (60 centimes) called "La Photogravure simplifiée," which describes in detail how an amateur can set to work to make line and half-tone blocks. The formulæ given are all satisfactory, and the operations are correctly described, though some of the expedients recommended would strike the professional expert as fantastic. Thus in order to avoid the expense of purchasing a cross-line screen and a special slide to hold it, the author recommends one should be made, among other means, by photographing a piece of tint in the sky of a large half-tone print! or to remove the film from one of the "Omnicolore" colour plates, and enlarge the remaining screen! The process recommended for making the metal print is a similar one to Dr. Albert's cold enamel method. The zinc is first coated with bitumen, then with the usual enamel, the print exposed and developed in the usual way, put into a hardening bath, slightly burned in, and then the bitumen removed by means of turpentine from the spaces between the dots. The publishers state that M. Tranchant, the author, is a conscientious experimenter who has tried all the manipulations that he recommends, and we have no doubt that this is so, but no examples are given of his results. What an inventor and experimenter himself thinks good enough, and which really may be quite remarkable considering the means employed, will often be very disappointing to everyone else, and we are afraid that few amateurs will get any satisfaction from attempting to make line and half-tone blocks without suitable equipment.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between August 8 and August 12 :—

Flashlight.—No. 17,976. Flashlight mechanism. Francis John Boucher.

Developing Tanks.—No. 17,989. Developing tanks. Hugh Hamilton Gregory.

Cinematographs.—No. 18,006. Cinematographs. Robert Rigby and Richard Philip Myers.

Colour Cinematography.—No. 18,100. Apparatus for taking and projecting animated pictures in natural colours. Walter Harold Speer.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Carrier for Sensitised Plates or Cut Films.—No. 20,909, 1910 (September 8, 1910). For the purpose of this invention a carrier is provided consisting of a case in which the front is hinged at the bottom to the back, this front having an aperture of nearly the same size as the plate or film. Connected by hinges to the base of and inside the back is a metallic frame, with an aperture approximately the size of the aperture in the front of the case.

For the purpose of holding the plate a light-proof envelope is used, consisting of a light-proof paper frame with an aperture rather less than the plate or film required. This frame is mounted on a cardboard frame, in which is inserted the plate or film; a light-proof paper back is secured to the frame; an opening is left at the top of the light-proof envelope, and a light-proof cardboard shutter is inserted therein, the opening being covered by a light-proof paper flap attached to the back. The cardboard shutter has a black back, and the front may be utilised for register purposes.

The envelope with the plate and cardboard shutter is placed in the case hereinbefore described, and the envelope is secured by the metallic frame in the case before the case is closed, which is then fastened by spring clips so as to exclude all light from entering the top of the envelope whilst the flap is turned back from the top of the envelope; the case is then closed. When an exposure is required, the top of the front of the case, which is connected to a slide in the case, is drawn up, and a clip on the back of the top engaging with the cardboard shutter, said shutter is drawn up, and the plate is exposed. When the exposure is complete, the shutter is placed down over the plate and released from the clip, and the light-proof flap replaced over the top of the envelope, when the envelope, with the plate or film, may be removed from the case and replaced with another envelope and plate or film. The spring clips are placed at the top of the case to keep the envelope containing the plate or film rigid, and a spring may be fitted at each side of the base of the frame and connected by a bar across the aperture, the front of the case when closed pressing on the bar for the purpose of keeping the envelope in position when the shutter is withdrawn, and also to act as a guide to the bottom of the shutter when it is being returned to its position after exposure. George Pritchard, 303, Barton Road, Stretford, Lancaster.

Cinematographic Pictures in Colours.—No. 29,586, 1910 (July 6, 1911). The three methods most commonly adopted for projecting coloured cinematographic pictures are the following :—

1. Red, green, and violet primaries are successively projected on the screen, it being left to the observer to fuse the colours together. For this method, the picture is taken through a rotating filter with sectors of the three colours. The projected image flickers very strongly.

2. Red, green, and violet primaries are synchronously projected, to make a composite picture. It is very difficult to make the primaries in this case register with even a moderate degree of accuracy.

3. Two colours are used, instead of three, in order to simplify the process, the projections being successive or synchronous. The flickering is slight, but the resultant colours are not true.

The object of the present invention is to combine the advantages of these three methods, and avoid their disadvantages, and the invention substantially consists in using two film strips, one of which bears pictures representing only one colour-element, say red, whereas the other bears pictures of two colour-elements, say green and violet, alternating with each other, these strips being used synchronously, to produce a composite picture. A stationary red filter is used in front of the objective of the first film, and a rotary filter, part green and part violet, is placed in front of the objective of the second film, so that green and violet images are alternately projected in exact register with the red image.

The work thrown upon the eye in regard to fusing the three colours is thus simplified, as compared with the first method described in this specification. The registering of the images is simplified, as compared with the second method, and three colours are used, instead of two as in the third method.

Synchronous movement of the strip may be obtained by moving same by means of two toothed feed drums fixed to the same spindle.

The single-colour film is not necessarily that showing the red element; it may, for example, show the violet element, with orange and green alternating on the other film, the film pictures being in each case produced by exposure through filters of the appropriate colours, said filters being stationary and alternating respectively. Serge Prokudin-Gorsky, Fontanka 133, and Serge Maximowich, Fontanka 144, St. Petersburg, Russia.

Starch-grain Screen-plates.—No. 8,153, 1911 (April 7, 1910). The invention relates to an improved method of manufacturing screen-plates of the kind forming the object of Patent No. 22,988, 1904.

In the method of making these screens, the transparent particles of starch, etc., are dyed by means of equally transparent colours in as many colours as the screen is to contain, then the particles are mixed in suitable proportions and projected on to sticky layer spread on a supporting plate.

It is also known to project the coloured particles on to the support in succession of colours, first the red particles, then the blue particles, etc.; to fill in any interstices between the particles on the support it has been proposed to dust on appropriately coloured powder of a similar material to the particles or to flatten the particles by means of pressure and heat so that their edges unite.

In the new process, the mixture first projected is formed of coloured particles of all the colours except one which are to appear on the screen, the last colour being obtained by the projection of finer particles dyed with the colour omitted in the first projection; these last particles lodge in the interstices left by the larger particles, assuring the complete covering of the plate by the properly coloured elements, and thus complete the chromatic absorption properties of the screen.

If a three-colour screen is to be made, the plate is firstly covered to the extent of about two-thirds of its area with a mixture of orange and green elements, for example. The finer particles, coloured violet, are then projected on to the plate so as to cover the remaining third of its area.

The continuity of the coloured surface can be further secured by causing the union of the edges of the particles either by means of a suitable solvent or by partial fusion by means of heat. Société Anonyme des Plaques et Papiers Photographiques A.

Lumière et ses Fils, 21 to 25, Rue Saint Victor, Lyon-Monplaiser, France.

**Enlarger Negative-carrier.**—No. 25,352, 1910 (November 1, 1910). The invention relates to carriers for negatives and lantern slides to be used with enlarging or reducing lanterns, having means whereby any portion of the picture to be enlarged or reduced may have the light shut off therefrom.

The carrier is made with four flexible moving screens, two of which act to shut off the light at the top and bottom, whilst the other two act to shut off the light at the sides.

In one method of carrying the invention into effect, at the upper and lower parts and at each side of the camera or fitting a flexible screen wound upon a roller is mounted, so that it can be drawn to any required extent over the picture to be enlarged or reduced, or it can be completely wound upon the roller, thereby avoiding screening any part of the picture.

The screen-carrying rollers may be mounted in fixed bearings and be provided with springs capable of winding up the screens thereon, in which case means are provided for drawing off the screens therefrom to any desired extent and for retaining them so drawn, suitable releasing means being provided. Frederic Hook, 21A, Store Street, Tottenham Court Road, London, W.

**Printing Machines.**—No. 20,798, 1910 (September 6, 1910). The invention relates to an apparatus of the kind in which the means for controlling the light for printing are automatically operated, such means being adjustable to vary the time of exposure and operating simultaneously with a platen, which holds the sensitised paper in contact with the negative. The apparatus comprises a timing bar, which is released when the platen carrying the sensitised paper is swung into contact with the negative, and falls by gravity to operate the light-controlling means. The timing bar is provided with two trips, the lower one of which is pivoted and actuates a switch to close the circuit and start the exposure, and when the timing bar has descended a predetermined distance, according to the adjustment of the upper trip, adjustable for this purpose, the latter actuates the switch to open the circuit and terminate the exposure. The platen controls the movement of the timing bar by means of a slide connected to a cord operated by the platen. Gustave Reuben Olson, Plattsmouth, Nebraska, U.S.A.

**Cold Single-solution Sulphide Toning.**—No. 24,378, 1910 (October 20, 1910). The method is carried out by, for example, first transforming the silver images of the prints into silver haloids or silver ferrocyanide by one of the numerous known methods (for instance, with potassium ferricyanide and potassium bromide, mercury bromide, copper bromide, potassium permanganate and hydrochloric acid, etc.), after which they are washed and then treated with solutions of such organic compounds of silver as do not give off any sulphuretted hydrogen in the air or in aqueous solution, whilst exerting a sulphuretting action on silver haloids, preferably in presence of alkalis. Such organic compounds of sulphur include thiourea and its derivatives, such as thiosinamine; thioamides, such as thiobenzamide; and salts of thiocarbaminic acid, such as ammonium dithiocarbamide; or other compounds which behave in a similar manner.

By using such agents for halogenising the silver as are also effective in presence of alkalis, such, for instance, as potassium ferricyanide *plus* potassium bromide, the transformation of the silver into the haloid, and the combination of the same with the sulphur can be carried on simultaneously, by treating such a solution (consisting, for example, of potassium ferricyanide, potassium bromide, thio-urea and alkali) with such bodies as have an absorbent action on sulphur—for instance, sulphites. The simultaneous addition of colloids, glycerine, or carbohydrates has also a favourable effect.

Hence in this manner a cold sulphur toning can be obtained in a single bath. Both the separate and combined sulphiding baths may be treated, for modifying the tone, with salts of such metals as form hydroxides which are soluble in alkalis or do not precipitate in the presence of organic compounds (Seignette salt or the like).

The following example will serve to explain the method :—

The print, well washed, is placed in the following solution :—

| | |
|---|---|
| Potassium ferricyanide | 15 gms. |
| Potassium bromide | 10 gms. |
| Sodium sulphite | 4 gms. |
| Thio-urea | 2 gms. |
| Sodium hydroxide | 2 gms. |
| Water | 1,000 ccs. |

In this way prints with reddish-brown to brown tones are obtained, which tones may be modified by varying the amount of alkali used, or by selecting a certain alkali, as also by using a suitable halogenising method (copper bromide, mercury bromide).

The composition of the baths may vary within the widest limits, according to the properties of the paper that is to be toned.

The use of caustic alkali gives the best results by the method described above. It is therefore advisable to take care that this alkali is not transformed into carbonate by the carbonic acid in the air, and thereby destroyed, as may happen, for instance, when the chemicals are made up in the form of tablets and are stored for some time in that condition. In such cases, where the production of stable tablets is in question, lithium oxide is preferably taken as the caustic alkali, since the tablets made therefrom do not melt readily, and lithium oxide is not so easily transformed into the carbonate as the other caustic alkalis. Dr. Wilhelm Triepel, of 11, Pragerstrasse, Berlin, Germany.

**Density Measurements of Negatives.**—No. 1,365, 1911 (January 18, 1911). The claim is for apparatus for measuring the "permeability" to rays of light of photographic negatives, in which the negative is placed between a constant source of light and a selenium cell, the electric resistance of which is maintained at a constant value by means of a diaphragm having a variable aperture placed between the negative and the selenium cell. The measuring is effected by measuring the opening of the diaphragm. Richard Leumann, Monthey, Switzerland.

**Daylight Development Apparatus.**—No. 17,879, 1910 (July 27, 1910). The apparatus consists firstly of a dark-slide provided at one end with a slot fitted with a flexible light-tight fabric extension, terminating in a metal frame, through which the plate may be inserted or extracted. The metal frame carries two arms, one at each end, which are fixed to the frame and pivoted at the other end to the side edges of the dark-slide, forming a hinge. The plate can be inserted or extracted through the slit and the cloth extension turned over the back of the slide like the flap of an envelope, making a light-tight joint.

The second part of the apparatus consists of a developing dish, provided at one end with a flexible black rubber tube connected at one end with a socket formed in the bottom of the dish and at the other end provided with a funnel. A clip is provided on the dish, so that the funnel can be hung thereto, forming a loop in the rubber pipe to exclude light. The dish is also provided with a removable light-tight cover having at one end a flexible bag-like extension similar to the one arranged on the dark-slide, but made so that the metal lip of the same will fit over and make a light-tight joint with the extension on the slide.

In use, the plate, having been exposed in the slide, is transferred to the developing dish by joining the two extension pieces together, and allowing the plate to slide through into the developing dish by gravity. The light-tight extension is then turned over on its pivots to exclude the light, the slide removed, and the chemicals introduced and emptied out through the funnel and flexible tube in their proper order.

The third part of the apparatus consists of a light-tight paper envelope fitted with a folding-over extension similar in form to that fitted to the slide and developing tank, but not necessarily so substantially made, so arranged that the plates may be supplied packed in these envelopes, the folding extension being made to fit the dark slide. The plates may be transferred in daylight into the slides from the envelopes, and if necessary transferred back again to the envelopes if not to be developed at once. Sir Charles Stewart Forbes, Bart., 68, Holland Park, London, W.

**Combined Exposing and Letterpress-printing Machine.**—No. 18,971, 1910 (August 12, 1910). The bromide or gaslight paper is fed from the reel or web, and is automatically brought up, by two nipping rollers carrying the paper automatically at a measured distance between an impression bed and rocking platen (or equivalent), which carries the type, inking table, and rollers for letterpress printing. While paper is stopped for letterpress printing it simultaneously prints above from negative on reverse (sensitised) side of card. Negatives are exposed by incandescent gas, or electric lamps which are switched on and off automatically in an enclosed chamber, while outside is a red lamp as pilot light, connected with lights inside, to indicate whether they are on or off. After a number have been printed and exposed, the paper is automatically cut off (without waste of card) into convenient sized sheets, which drop into a tray ready for hand development, etc.

The objects are to render photographic and postcard printing machines more perfect, and to enable them to be worked rapidly, and with unskilled labour. Also, the machine can be worked in conjunction with any automatic developing, fixing, toning, and washing machines. The machine can be worked by hand, foot, or power. Ellis Graber, 16 and 38, Newton Road, Tunbridge Wells.

## New Trade Names.

M. D. (Device.)—No. 331,548. Chemical substances used in manufactures, photography, or philosophical research. P. D. Mitchell, Ltd., 108, Commercial Street, Dublin, oil merchants. March 2, 1911.

Regalia.—No. 335,086. Prepared paper for photographic purposes. Ilford, Limited, Britannia Works, Ilford, London, E., manufacturers of photographic plates, papers, and films. July 18, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Preventing Hairs Coming Out of Mounting Brush.

It is a regretted fact known to all amateur photographers (writes C. F. S. in "The Amateur Photographer" for August 21, page 192) that when mounting prints the hairs of the paste-brush are continually coming out, which means delay in freeing the print of loose hairs.

After experimenting, I find that if the base of the brush is thoroughly soaked with French polish and allowed to get quite hard before using, no amount of pulling will draw out the hairs, which will be set quite hard and solid.

The better mode of doing this is to pour the polish, drop by drop, into the brush—of course, taking care not to touch the end with which we do the pasting—letting each drop soak in until the base is full, then stand the brush by for the night or until it is quite dry. Of course, all photographers know that if a good price is paid for the brush, the hairs will not work loose so easily, but in some cases a cheaper brush must be made the best of; but whether it be a cheap article or a more costly one, it will be found that this method will lengthen the life of the brush five or six times.

## New Materials, &c.

**The "Campbell" Cold Dry-Mounting Outfit. Supplied by Colin Campbell, Whytehouse Mansions, Kirkcaldy, Scotland.**

The need of expedition in mounting, and the facility of using all grades, even the thinnest, of mounting boards, may be said to be the chief desiderata in a mounting process of practical service to professional photographers, and hence the claims put forward on behalf of his process by Mr. Colin Campbell must necessarily attract attention to this lately introduced method. The receipt of a complete outfit has enabled us to put the process to a practical trial, as a result of which we feel fully justified in bringing the inventor's method before the notice of our readers.

In brief, the Campbell process consists in the use of a special mounting preparation, supplied in fluid form in bottles from 20 ozs., this quantity being found sufficient for the mounting of 1,000 cabinet prints, and costing 4s. The mountant is a highly adhesive milky mixture of agreeable odour. Exposed to the air in a thin film it quickly sets to a tough, elastic, white substance. The mountant is applied, not with a brush, but by pouring a little of the mixture on a clean glass plate and distributing it over the surface with a gelatine roller. This latter is then passed over the back of the print to be mounted, and at one passage coats it with a strongly adhesive layer. Thus, although a liquid is employed in the process, the manner of its use does actually constitute the mounting method a dry one. Thus coated, the print is laid in position on the mount, and with little delay—say, as soon as half-a-dozen prints have been coated in like manner—subjected to pressure in a press or under a heavy weight. Under this pressure it is firmly fixed to the mount without the application of heat. We have found that, doubtless as a result of the flexible nature of the mountant, the prints hold with extreme tenacity; exposure of mounted prints for over twenty-four hours in the hot direct sunshine of the recent drought gave no sign of their separation from their supports. It should be understood that the prints should be perfectly dry before applying the mountant, and Mr. Campbell lays particular stress on having the backs concave, this inward curl being readily secured by laying them for a short time prior to mounting in a glass or cardboard tube. For use when mounting a large number of prints all of the same size, the outfit includes a mounting block, by means of which the print is readily held (while applying the mountant with the roller) so that none of the adhesive gets on to the face of the print. In mounting odd sized prints they are laid on clean newspaper. The one or two other minor precautions which are necessary in the working of the process will be found duly itemised in the instructions sent out with each outfit. Our trial of the materials has been sufficient to prove to us the speed and ease with which the process is worked, whilst the cold and moderate pressure which is all that is necessary to attach prints to mounts means that the characteristic surface of a print is retained to the maximum in the final mounted result. Such a process as this, which is both effective and economical, deserves more than passing notice at the hands of photographers of all classes. The complete outfit, including press, is sold at 35s., whilst for 7s. 6d. Mr. Campbell sends 20 ozs. of mountant as well as the other requi sites (exclusive of press), for putting the process into practical everyday use.

## Meetings of Societies.

### MEETINGS OF SOCIETIES FOR NEXT WEEK.

Saturday, August 26.

Hackney Photographic Society. Excursion to Chenies and District.
Darwen Photographic Association. Excursion to Turton.
Southport Photographic Society. Excursion to Hesketh Bank.
Handsworth Photographic Society. Excursion to Sutton Park.
North Middlesex Photographic Society. Outing to Waterford and River Beane

Monday, August 28.

Southampton Camera Club. Print Competitions.

Tuesday, August 29.

Hackney Photographic Society. "Lantern Slides." A. D. Fort.
Bradford Photographic Society. Excursion to "Beck Foot."

Wednesday, August 30.

North Middlesex Photographic Society. Technical Evening.
Sale Photographic Society. Monthly Meeting.

Thursday, August 31.

Liverpool Amateur Photographic Association. Up the Weaver on a barge.

### FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Entries close September 1 (Britain). Sec., Robert M. Cocks, London Salon of Photography, 5A, Pall Mall East, London, S.W.

October 11 to 20.—Bournemouth and District Camera Club. Entries close October 2. Sec., Miss Penrice, 41, Wellington Road, Bournemouth.

November 6 to 11.—Southampton Camera Club. Sec., C. M. Cooper, 203. Shirley Road, Southampton.

# Commercial & Legal Intelligence.

Legal Notices.—The partnership between John Richard Western and William Arthur Franklin Lovegrove, photographers, carrying on business at 212, High Road, Wood Green, under the style of The West Grove Studios, has been dissolved by mutual consent. All debts due to and owing by the late firm will be received and paid by J. R. Western.

# News and Notes.

Make it a point, writes E. Oudry, in "Wilson's Magazine," to show your best work and finish first, as you can recede to something less expensive if necessary, as it is next to impossible to get them to take a better grade after once having shown the cheapest you have. Thousands of dollars slip through the fingers of an order taker, people who work mechanically, not mixing brain stuff with their work. I maintain that by judiciously and tactfully calling the attention of customers to other styles than the one they call for, higher prices can be obtained. Many clerks act as if they doubted the customer's willingness or ability to pay the price. If the salesman thus doubts, the customer is very apt to doubt himself. Be positive. A bride and groom intending to be photographed will want the best, and rarely anything smaller than Paris panels, and often more than a dozen. Never ask, "How many will you have?" but, "Will a dozen be enough?"

Fatal Case of Acute Mercurial Poisoning.—A case of poisoning by corrosive sublimate is reported which is remarkable because the large amount taken did not immediately prove fatal. Shortly after partaking of the mid-day meal a woman, aged twenty-six years, swallowed 44 grains of corrosive sublimate in the form of soluble tablets. She was seen about one hour afterwards, and presented a cyanosed appearance, with cold, clammy hands and feet. Vomiting began almost immediately, and soon afterwards there was severe abdominal pain, with violent diarrhœa. The patient lived for seven days, and the symptoms were probably modified to a considerable extent by the adoption of prompt and appropriate treatment, which consisted in early lavage of the stomach, the administration of antidotes and stimulants and attempts to assist elimination of the poison, together with the treatment of the various symptoms as they arose. The poison was taken shortly after a full meal, and was, therefore, so far diluted that its irritant action on the digestive mucosa was not quite intense enough to prove rapidly fatal. The end, however, was only delayed until the poison quickly dissolved in the stomach, and, freely absorbed into the circulation, had time to produce general systematic mercurialism in a very intense degree.—A. W. Burton, M.B., Ch.B.Edin.—"Pharmaceutical Journal," from "Lancet," July 29, 1911.

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

### SUNDAY CLOSING AND CUT PRICES.

To the Editors.

Gentlemen,—In reply to "An Observer," I am afraid nothing can be done to stop those parasites (who exploit the public with the cheap rubbish, and employ cheap labour as well) from opening on a Sunday. It is time Parliament passed an Act forbidding shops to open on Sundays, excepting those tradesmen who supply the forced necessities. The photographic trade is now about at its lowest ebb, principally through the fault of some manufacturers, who must find an outlet for their goods on a most rapid scale, and therefore competition is severe. No respectable photographer keeps his assistants all hours, and no Sundays off. I find that my clients are not to a shilling or two when I can give them satisfaction, but I am not going to be drawn into the game of other photographers offering six cabinets for 2s. 6d. If the assistants in each town could only demand eight hours a day, excluding meal times, more wages, weekly half-day holiday, Sundays off, and do their best for the employer, much good will be done. Good lessons are now being learnt from recent strikes. The artisan classes are now getting more money, why not photographic assistants? The public dislike buying anything cheap if they are not satisfied. The prices charged here are disgraceful, and how a photographer obtains a good living I do not know. The cheap photographers do a great deal more harm than the amateurs, and they are bad enough.

"From Hull."

### LIQUID LIGHT-FILTERS.

To the Editors.

Gentlemen,—In the article on "Safe Lights for the Dark-Room" in the "Journal" of August 18, it seems to me that M. Trivelli does not do justice to liquid light filters, which I believe to be better for practical use than colloid filters, except, of course, that they cannot be used with two or more dyes that react on each other.

A liquid light filter to be practical must be made of one piece of glass, with a neck like an ordinary bottle, not an open trough or one cemented together. Some ten years ago I had bottles of this sort made by the glassworks of Malky and Jahnske, Deuben, Dresden. They are discs eight inches in diameter and an inch thick, with a short cylindrical neck as thick as the bottle. The liquid has a minimum thickness of about a centimetre, which is twenty to a hundred times the thickness of a gelatine filter. I use a red dye called "Neucoccin Red," made by the Agfa Company in Berlin, which is so cheap that one can afford to throw away the solution when moving about with the lantern in a trunk. To prepare the filter it is only necessary to put 15 grains of the dye into the bottle and fill it with water, about 16 ounces.

The lantern is shaped like an American clock, with the oil-well below and quite outside of the lantern, and a chimney sticking out at the top long enough to take the glass chimney of a small lamp with a ⅜ inch flat wick.

The lantern does not smell or smoke, and the liquid will not boil, and keeps cool, except at the very top. I keep the bottle closed with a cork with a pewter screw, and I have not found that the solution evaporates or decomposes, nor have I ever spilled any of the solution or broken a bottle in ten years. The lantern can be carried about and even be swung over the head to show doubting friends how handy it is. It gives less light with this red dye than with an orange, but it gives enough light to work by comfortably in diffused light, avoiding the unpleasant irritation of direct red light, while both ordinary and orthochromatic plates can be developed safely in the full glare, although they will fog in half a minute if not wet.

If the bottle is filled with a saturated solution of ammonium bichromate, the whole dark-room is so well lighted that one can work anywhere in it, which is a useful illumination for bromide paper, and one that can be used for developing ordinary plates if they are kept out of the direct light of the lantern.

Möltenort by Kiel, W. S. Davenport.
August 19, 1911.

### "FAKING AS A FINE ART."

To the Editors.

Gentlemen,—In reply to your correspondent of July 21 issue, under the above heading, I beg to say that I am the gentleman he refers to.

As he points out, the process is entirely my own, which I would not publish on any account, but I take it that your correspondent is a professional, and if he would care for me to substantiate my claims with proof, I should be pleased to do so; and also if he would care to take up this particular branch of work professionally, I would be pleased to make the negatives for him at a nominal charge per negative, as I have done, and am doing, for other professionals.

He asks if it is done by the aid of films, and where could they be obtained. Allow me to say, gentlemen, that no films of any kind are used, and I have also done away with the old-fashioned style of "double-printing," so that a negative when it leaves us is complete in every detail.—Thanking you, yours faithfully,

Louis Hayward (and Sons).

Whitehill, Bordon Camp, Hants.
August 17, 1911.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1*s.* 7*d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photographs Registered:

R. Burgess, 143, Milton Road, Gravesend, Kent. *Photograph from Oil Painting of Richard Burgess.*

E. Dickson, 53, Avenue Parade, Accrington. *Photograph, Panoramic View of Accrington Town*

S. H. Greenway, 27, Abington Street, Northampton. *Photograph of the Northampton Town Football Club, Season* 1911-1912.

Sulphide Toning of P.O.P.—Please give quantity of sulphide of ammonia in proportion to water for sulphur toning of P.O.P. I wish to test method with hypono.—A. B.

About 5 drops strong commercial ammonium sulphide solution to 20 ozs. water. We have sent you the "B.J." containing about the best method for this process.

Canada.—Could you let me know what paper or papers to advertise in to get a berth in Canada, in, say, Winnipeg, Toronto, Montreal? I hear of one man getting £300 a year as manager of a studio in Winnipeg. Are prospects better for photographic assistants there than here?—E. P.

Of the photographic papers, "Wilson's Photographic Magazine," 289, Fourth Avenue, New York, or "Camera Craft," 713-715, Call Building, San Francisco, Cal., as recommended a querist (C. F. Watkins) making the same enquiry only so recently as last week. But we also advise you to buy the "Toronto Globe," the leading daily paper in Canada. On the whole they are, inasmuch as new businesses are constantly being opened with the growth of the towns towards the Pacific Coast.

Copyright.—1. Can I obtain a list of all photographs that have been registered copyright during the past five years? If so, to whom do I apply? 2. If not, can I make a personal inspection of the list at Stationers' Hall, and are there any regulations and fees? My reason for asking the above queries is as follows: Some time ago a customer brought a photograph of a well-known local public man, taken in a local studio, and asked us to copy it to match some others we were doing for a presentation. He assured us that the copyright belonged to the sitter. We are now being threatened with proceedings by the photographer who took it—a competitor of ours—who claims that the copyright is his. Before we do anything in the matter we wish to find out if the copyright has been registered. If you will inform us how to obtain this information we shall be obliged.—Information.

1. There is no list published. 2. Yes, inspection of the registers at Stationers' Hall is the only method. The fee for permission to examine the registers is one shilling.

Non-return of Negatives.—I would be glad to have your opinion on the following: On July 13 I attended the Investiture of the Prince of Wales, having an excellent position inside the castle at Carnarvon. I had previously notified a press agency that I was doing so, telling them to expect my plates, which I should send on by rail undeveloped. This I did, wiring them at the time to meet the train. I had previously supplied this agency many times, with satisfactory results. Now, however, I can get no account as to sales from these negatives, nor the return of the negatives themselves, which, when I first commenced to do business with them, they undertook to return next day. They have since sent me passes for important functions and telegrams to secure negatives of current events, but simply ignore my repeated requests for information and return of the Investiture negatives. I appear to be under the necessity of taking legal action for damages. Can you suggest any other course?—Reflex.

Before taking any action we would suggest your employing a London solicitor to approach the agency. Probably a telephone conversation would settle the matter.

Finger Prints.—Is there any text-book published on the above subject? Can you say what is the usual method applied, and what plates are most suitable, for this work? Suppose a person enters a house and leaves finger prints on a piece of glass (window) which cannot be taken out and must be photographed in its position. Would you use lampblack to dust over the impressions and back it with white paper to give contrast, and what exposure would be necessary with a *f*/44 stop for Wellington Speedy plates at noon; moderate light; cloudy day; August 22, 1911?—A. Elkins.

Suitable illumination, aided by dusting-on expedients, requires to be used in this delicate work. You will find some methods briefly described in the "Almanac," 1910, p. 511. Recently M. Stockis, in an article in the "B.J." for June 16 last, has described a simple method of illumination. It is impossible to give any useful data as to exposure, but a slow plate should be used, best one of the photo-mechanical type, since the chief aim is to secure the utmost contrast. We know of no book which deals with the practical photography of these subjects.

Bromide Toning.—We have been experimenting with Schlippe's salt in an endeavour to get red chalk tones on bromide paper. The enclosed prints were toned according to instructions on page 604 of the "Almanac" (1909). This is the nearest approach to red chalk we have got, but most of our results were merely a warm brown, and every print as it left the Schlippe's salt bath was stained a bright yellow, both back and front. Accidentally we found that an old bath of developer (rodinal) took out most of the stain. Prints developed with metol-hydroquinone gave a golden brown colour, and the enclosed, except one print, were developed with rodinal. We shall be pleased if you can give any information regarding this toner. Do you think we have really got Schlippe's salt, to begin with? If so, does it usually stain the whites of a print? What can we do to prevent or take away stain?—Weir Bros.

We do not think this method of toning is a very satisfactory one, as the stain is always a trouble, and the colour seldom quite satisfactory. You will see in the article in the "Almanac" that exposure is mentioned as a factor in obtaining a good red. As regards the stain, an alkali bath should assist in removing it. The colour of these toned prints can be further modified by gold toning, but if you want a true red chalk tone, we fear you will not get it by any toning process. We do not know any way of imitating the colour of a red chalk carbon.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2678. Vol. LVIII. FRIDAY, SEPTEMBER 1, 1911. Price Twopence.

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## SUMMARY.

As a business proposition, there is much to be said in favour of a photographer employing only one printing process. Some notes on this topic, in which the relative advantages of current printing methods are weighed, will be found in a leading article on page 662.

Some letters on the proposed Union for photographic assistants are published on page 674. Several others, which reach us as we go to press, must be held over until next week.

A number of practical matters, among which are the cementing of prints to celluloid, sharpening wheel trimmers, avoiding halation, stripping glazed prints, etc., are dealt with by a correspondent. (P. 673.)

The production of an unsharp enlargement when using the enclosed arc as an illuminant is referred to in an editorial note on page 662.

Charges for commercial photography, the rights of a photographer to undertake "while-you-wait" portraiture in twelve feet of salt water, the eikonogen developer, etc., are matters which are the subject of "Answers to Correspondents." (P. 675.)

Some further practical advice on tank development is given by Mr. Phil M. Riley in a recent issue of the "Camera." The author gives formulæ for pyro, metol, and pyro-metol tank developers. (P. 663.)

A note on the desirable uniformity in the numbering of dark-slides will be found on page 661.

The use of a bichromate bath as the bleach in sulphide toning and a test for telling when prints are sufficiently washed form two items under "Analecta." (P. 672.)

Further methods for the silvering of mirrors are contained in the paper by Mr. H. D. Curtis. (P. 664.)

Answers to the questions set in the honours grade of the "process" section of the City and Guilds examination are given on page 666.

The employment of the Mertens intaglio rotary printing in the decoration of fabrics and the manufacture of wall papers is the subject of a note on page 671.

### "Colour Photography" Supplement.

M. Leon Gimpel has published a note on the use which can be made of the commercial screen-plates in preparing copies of one upon the others. (P. 53.)

The experiences of a number of correspondents on the frilling of Autochromes will be found on page 55.

The conclusion of the theoretical notes by Dr. K. Gebhard on the bleach-out process is given on page 54.

## EX CATHEDRA.

**The Photographer's Holidays.** Although the historic example of the 'bus-driver who spent his solitary day's holiday on the top of another omnibus is not one to be recommended for general imitation, the portrait photographer may do worse than practise a little "snapshooting" while on his vacation. He may at little cost acquaint himself with the characteristics of plates and films with which he is not familiar, and will hardly fail to learn much concerning the capabilities of lenses and shutters by hazardous experiments which he would not dare to make in the way of business. In the early days of the gelatine dry plate the late Mr. H. P. Robinson took a batch with him on a yachting holiday, and the account of his experiences and his realisation of the new power which he found had been placed ready to his hand, makes pleasant reading to this day. We do not recommend the "resting" photographer to take a camera with him with any idea of commercial gain, although other people, not in the profession, sometimes succeed in making a holiday tour pay its way. The whole charm lies in working under unfamiliar conditions, and not caring whether the results are worth printing. The sporting spirit should be cultivated, and the reward will follow in the form of fresh ideas, some of which may be fruitful. *En passant*, it may engender a feeling of sympathy not unmixed with respect for the amateur brother, and conduce to a better comprehension of his troubles when he seeks assistance and advice.

* * *

**A Timely Hint.** It is very usual to recommend a thorough clean up and redecoration of shop and studio when the bright light of spring makes dirt and dinginess unpleasantly evident; but it is no less necessary, now that the summer is waning, to make things fresh and bright in readiness for dull days to come. In most large towns the regular clients of the photographer are away at the seaside, on the Continent, or on the moors, and there is time to look round and see to the repair of the leaky roof which the last storms found out, to renew the faded hangings, overhaul the heating appliances, and get the studio arc lamp into going order (even to get a new one if necessary), so as to be ready in good time for the autumn and winter campaign.

* * *

**Numbers on Dark-Slides.** A point in regard to which uniformity among the makers of dark-slides would be welcome concerns the arrangement of the placing of the odd and even numbers fixed outside the slides. The most convenient numbering, in our judgment, is that 1, 3, or 5 (the odd numbers) should correspond with the plate which is first loaded into the slide. In slides which are provided with a hinged metal division, this will almost invariably be the plate which is enclosed under the division, yet in many dark-slides we find that this is No. 2, 4, etc. At any rate, whatever system is adopted, it is most desirable that a maker should adhere to it throughout the series of dark-slides which he supplies, yet it is not uncommon to find that mistakes are made in affixing the numbers to the outsides of the slides. Of four slides fitted to a modern half-plate camera of our own, of quite recent date, we find that the numbers are transposed in the case of one, with the result that in making a series of exposures where marked plates are loaded into the slides, it was difficult, until re-marking the defective slide, to avoid confusion.

* * *

**Chemical Focus in Enlarging.** It is not infrequent for us to receive queries from users of enlargers who find that, though sharp focus has been obtained on the enlarging easel, the bromide paper, when developed, shows an out-of-focus image. This defect is noticed even when the lens is used at quite a moderate aperture, such as that of *f*/16, a fact which points to the cause of the trouble being the result of a difference in the "chemical focus." The condition which appears to be common to the cases where this defect is experienced is the use of an enclosed arc-lamp as the illuminant. The first assumption is that the richness of this light in the ultra-violet rays is the cause of the difference in focus, though we must confess that the explanation is somewhat difficult to reconcile with the absorption of ultra-violet light by the thick glasses of the condenser, to say nothing of the objective. The trouble is apparently independent of the construction of the projecting lens, and we have been informed by enlargers, who had at their disposal a large number of objectives of the highest class, that the want of register in focus made itself evident with all of them. One would suppose that the trouble could be completely got over by the use of a filter for the ultra-violet rays, placed near to the condenser, and we would suggest that it would be to the interest of makers and vendors of enclosed-arc enlarging lamps to prescribe a formula for a filter which would be effective for this purpose.

## ONE PROCESS, BUT WHICH?

The professional photographer who has to carry on his business with little, if any, assistance will find that his labour is lightened and the quality of his work improved by adopting one printing process to the exclusion of all others. This method has worked well in more than one instance which we could mention, and is, we believe, not uncommon in the United States, where many photographers restrict their output to either bromide or platinum prints. Its advantages are many and manifest. Instead of a multiplicity of solutions and dishes to be prepared and cleared away for every few prints, one set of solutions with the necessary vessels can always be kept in readiness for immediate use. Under these circumstances even carbon printing, with its alleged difficulties, becomes as easy and simple as any other. The vital question is, "Which is to be the chosen process?" To help to anwer this question we give the principal points for and against the best known methods of contact printing.

Platinotype naturally suggests itself for a good class of business: where the work is mainly portraiture, and a fair price can be obtained, it will be found extremely satisfactory. The introduction of Japine has greatly increased the scope of the process, prints upon this grade being suitable for commercial and press purposes; while the other grades, ranging from heavy, rough-toned paper to thin, smooth white, in black and sepia, will satisfy all tastes in every class of picture.

The solutions required are few and simple, and that bugbear of the photographer, hypo, is dispensed with, thereby avoiding the necessity for long and careful washing: a very moderate amount is necessary in the case of the platinum print, the permanency of which is unquestionable.

The principal drawbacks to platinum printing are the expense of the papers and the necessity for protecting them against humidity both before and during the process of printing. The latter is not, however, a serious matter when proper pads are fitted in every printing-frame, and suitable calcium boxes provided for the storage of the prints.

Probably few photographers would have the courage to adopt carbon as their sole printing process; but if the manipulations are once mastered, there is no process capable of giving so great a range of colour and surface with absolute uniformity of tone. The rapidity with which prints may be made and the power of local control in development are especially valuable to the artistic portraitist. It is, however, hardly suitable where a number of large prints, say, 12 x 10, are required, unless worked on a factory scale, a considerable amount of room being necessary.

For a busy middle-class or cheap business bromide paper is beyond all possible doubt the one and only material which will fulfil all the demands which are made upon it. Practically any surface and colour can be obtained with the same developer, the sulphide method being used when warm tones are desired. Enlargements may be made and run through with the contact prints. Postcards are usually printed in bromide, so that no special arrangements have to be made for these. Practically all the effects obtainable with platinum may be got upon bromide, the only deficiency being that of guaranteed permanency. Still, bromide prints properly *fixed* and washed will show little change in the lifetime of one person, which is more than can be said of any printed-out silver image, or even some forms of platinum prints. Any surface, from the roughest "Tiger Tongue" to the glossy "Enammo," and any colour from cold black to warm sepia, or even red chalk, can be employed to suit the subject or please the customer—which is not always the same thing. On the whole, this process, including, as it does, the slower or gaslight papers, seems to meet all-round requirements more perfectly than any other. Even if P.O.P. effects are required, a fair imitation is made by using a glossy paper with hypo-alum toning. Care should be exercised in the selection of a brand of paper, as some which yield excellent results with sulphide toning will not give good colours with hypo-alum and *vice versâ.* Not the least advantage of bromide printing is the power it gives the photographer in keeping faith with his customers. Summer or winter, wet or dry, the output can be calculated upon and promises kept.

Printing-out processes such as gelatine-chloride, C.C., and self-toning papers are not well adapted for exclusive use, except in special cases, as it is not possible to obtain really good matt-surface black prints with them. Still, a small worker making a feature of warm-toned prints might find them convenient, especially if a phosphate or borax toning bath be used.

We have in our mind actual instances of two photographers each employing one assistant and doing much the same class of work. One, using bromide exclusively, can afford to pay £150 a year rent, and still make a good income. The other, a more skilful worker, although at much less expense, is always up to his neck in work, because every day he has three printing processes to look after, and sometimes four, and all for a bare living. This recalls the fable of the fox and the cat who were pursued by hounds. The fox had many tricks, but was caught; the cat but one—to climb a tree—which saved her life. Moral: One process well carried through is worth many dabbled with.

# MODIFIED TANK DEVELOPMENT.

[Following the recent article in our issue of August 18 by Mr. Gordon Chase it may be of interest to emphasise further the convenience of tank development by reprinting the following practical paper on the same subject from a recent issue of the "Camera." It will be noticed that the author, Mr. Phil M. Riley, although addressing himself to the amateur worker, lays stress on the same points referred to by Mr. Chase as of advantage to the professional.—Eds. B.J.]

Tank development for plates and films seems to have come to stay. It can no longer be considered in a questionable or experimental stage, since its efficiency, reliability and time-saving qualities have been proven beyond a doubt. Both professionals and amateurs are benefited by its adoption; the former, by the uniformity of results and the fact that other work may be done during the period of development; the latter, by both of these advantages and also by the fact that, when films are used, it ensures good negatives by a purely mechanical method which requires no dark room, thus making development possible any time, anywhere.

The very nature of the dilute solution employed is of distinct benefit to both professional and amateur in the usual sort of work done by each. A dilute developer always tends to produce greater softness than one of normal strength, because in such a solution density in the high lights builds up slowly, giving time for detail to be coaxed out of the shadows. Softness and detail are just what the portrait photographer desires, but he must, nevertheless, give short exposures in order to catch characteristic expressions, and this tends toward contrast. Slow tank development enables him to give quicker exposures and still retain the desired degree of softness and shadow detail.

This latter quality is the thing most wanted by amateurs. Softness, in itself, is not so important to them until a certain degree of artistic perception and appreciation has been attained. Now, in the getting of shadow detail the beginner in photography has rather a hard time of it; he has much to learn. Nearly every photographic writer has, at some time in his career, stated that the tyro is prone to underexpose. Without a doubt there is much truth in this, yet the real cause of the trouble is that camerists are literally forced to underexpose because of the inadequate shutters provided by the manufacturers of small cameras.

The beginner buys a hand camera, folding or box as the case may be, which his dealer has told him is all it should be for all sorts of work done in an amateur way. Immediately he notices the lack of shadow detail in his pictures, and, upon inquiry, learns that he has underexposed. He is told that to get shadow detail he must expose for the shadows alone, disregarding the high lights, and that for a view in which shadows are prominent the actual exposure must be three or four times as long as would be the case if the shadows were very few. How to give such an exposure next occupies his attention, and he soon discovers that his shutter gives only one speed of fixed duration, which may be anything between 1-25 and 1-50 second; also that such quick exposures are suitable only for scenes in bright sunlight and having no near shadows or heavy foregrounds. Unless he buys a new shutter, at considerable expense, his only recourse, therefore, when photographing the many beautiful scenes of contrasted light and shade, is to use a tripod and give a quick bulb exposure of very uncertain duration, stopping down the lens to prevent overexposure and thereby losing atmospheric perspective.

Now, the average beginner will not use a tripod, and, having gone into photography in a small way and not very seriously, procrastinates and evades the expense of another shutter which would give a greater variety of speeds. Meantime he either continues to underexpose or else gives up photography altogether in despair.

Tank development has been a great boon to manufacturers in bettering the quality of negatives resulting from the use of the cameras they furnish. Any small camera can be fitted with a shutter giving several different instantaneous speeds at comparatively small increase of expense to manufacture, yet the increase in the retail price is about one-quarter the price of the camera itself. The very fact that cameras, as ordinarily sold, are fitted with cheap shutters would seem to indicate that the average beginner will not pay this increase, yet the number of those who abandon photography every year because of ill success must be considerable. It would seem as if the increased sale of plates, films and papers which is sure to result from more satisfied users of hand cameras would more than compensate manufacturers to supply better shutters at little or no addition to present prices.

However, the point to be considered here is how the user of an ordinary small camera can secure the best possible results. Tank development supplies the means, provided a properly compounded solution is employed. Mere dilution of a pyro developer does not necessarily give the best tank solution, and, for this reason, the standard pyro developer advocated for such work, while suitable for full exposures, is not quite all it might be for normal or under-timed exposures, and, therefore, not the ideal thing for most amateurs to use.

In my own practice I noticed that longer exposures were necessary to produce well gradated negatives if developed in the standard pyro tank solution than if treated in my favourite A B C pyro developer, which works in approximately six minutes. If very full exposure were not given there was too much density in the high lights, yet not enough detail or density in the shadows. Not long ago I made inquiries among several successful advanced workers who use the tank constantly, and found that a large measure of their success was due to a modified tank formula. About this time I also learned that a prominent Boston photo-supply house had discontinued the use of the standard pyro formula in its finishing department in favour of a metol-hydroquinone-pyro developer, which yields softer and more detailful negatives.

Influenced thus to consider modification, the necessary changes were easily determined upon. Everything seemed to indicate too much pyro, and careful experiments showed this to be a fact. My reasoning was in accordance with the well-known methods of increasing softness and treating underexposure. Softness is usually obtained by dilution, but as the tank solution is itself a very weak developer, and as it yields none too much detail in the shadows, the addition of more water is not advisable, especially with pyro as the reducer. In treating underexposure surface development must be forced to bring out detail in the shadows before the high lights have acquired much density. This is usually done by increasing the alkali and decreasing the pyro without using any bromide.

For tank development there was reason to fear fog, because of great dilution, if the alkali were increased more than one-twelfth. Enough sulphite is provided by the standard formula to prevent too much oxidation in twenty minutes, so no alteration was necessary. The amount of pyro was reduced one-tenth. Careful tests seem to indicate that the changes are wise ones, since the results are of even better quality than similar exposures treated in the six-minute A B C developer. The modified formula is as follows:

| | |
|---|---|
| Water | 48 ozs. |
| Sodium sulphite, anhydrous | 90 grs. |
| Sodium carbonate, anhydrous | 65 grs. |
| Pyro | 27 grs. |

It is very inconvenient to weigh and dissolve chemicals every time one wishes to use the tank. A much better way is to mix a large quantity of stock solutions, which may be drawn from quickly at any time and water added. Only a few minutes is required once a month or so to prepare these solutions, and when one wants to develop a batch of exposures it may be done without delay. The following developer in two stock solutions gives approximately the same proportions as the formula above:

PYRO SOLUTION.

| | |
|---|---|
| Water to | 29 ozs. |
| Sulphuric acid | 20 min. |
| Pyro | 392 grs. |

SODA SOLUTION.

| | |
|---|---|
| Water to | 29 ozs. |
| Sodium sulphite, anhydrous | 3 ozs. |
| Sodium carbonate, anhydrous | 942 grs. |

For use as a twenty-minute developer at 65 degrees F., take one ounce of each solution and add 22 ounces of water, or two ounces of each and 44 ounces of water.

While the modification just described is of great value to prevent excessive density of the high lights, it brings out only a little more detail in the shadows than this standard formula. Unquestionably the best way to bring out such detail is to prolong development in a very weak solution, but pyro, because of its propensity to stain, is not suitable for such a purpose. It is, however, a very economical agent to use, and if one decides to employ it, an excellent idea is to combine it with another agent possessing some of the qualities which pyro lacks.

Of all the agents advocated especially for bringing out shadow detail none has so convincingly proved its worth as metol, and it works exceptionally well in combination with pyro. The characteristics of the two are entirely different, and therein lies the advantage of combining, for, by varying the proportions of each, a solution may be obtained which will produce any degree of contrast desired.

Metol is one of the soft-working agents which produces detail very quickly in both high lights and shadows. This is only surface detail, however, and density is built up quite slowly. Slight overexposures treated with this agent yield flat negatives without sufficient snap.

Pyro is one of the hard-working agents which do not bring out detail in the shadows until considerable density has been acquired in the high lights. In other words, development is in the film rather than on its surface. Slight underexposures treated with this agent yield dense high lights and little detail in the shadows.

A good combination of these two reducers will, within a reasonable time, develop a negative rich in detail and with plenty of snap. For the beginner it will probably produce a greater average of printable negatives than any other possible combination. A formula which has given good results follows:

| | |
|---|---|
| Water | 48 ozs. |
| Metol | 15 grs. |
| Sodium sulphite, anhydrous | 90 grs. |
| Sodium carbonate, anhydrous | 60 grs. |
| Pyro | 19 grs. |

If stock solutions are desired, the same proportions may be obtained from the following:

PYRO-METOL SOLUTION.

| | |
|---|---|
| Water to | 29 ozs. |
| Metol | ½ oz. |
| Potassium metabisulphite | 120 grs. |
| Pyro | 275 grs. |

SODA SOLUTION.

| | |
|---|---|
| Water to | 29 ozs. |
| Sodium sulphite, anhydrous | 3 ozs. |
| Sodium carbonate, anhydrous | 2 ozs. |

For use as a twenty-minute developer at 65 degrees F., take one ounce of each solution and add 22 ounces of water, or two ounces of each and 44 ounces of water.

PHIL M. RILEY.

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# METHODS OF SILVERING MIRRORS.

[A paper in the "Publications of the Astronomical Society of the Pacific," Vol. xxiii., February, 1911.]

## II.

### Brashear's Process.[*]

THE REDUCING SOLUTION.

THIS should be made up in advance; the older it is the better it will work. If necessary to use a freshly made reducing solution, the action may be improved by boiling it, adding the alcohol after it has cooled. The formula is as follows:—

| | |
|---|---|
| Rock candy | 90 gms. |
| Strong nitric acid (spec. gr. 1.22) | 4 ccs. |
| Alcohol | 175 ccs. |
| Distilled water | 1,000 ccs. |

THE SILVERING SOLUTION.

(The quantities are as used for the Crossley mirror.)

| | |
|---|---|
| A.—Distilled water | 3,000 ccs. |
| Silver nitrate | 250 gms. |
| Strongest ammonia, as may be needed. | |
| B.—Distilled water | 1,000 ccs. |
| Caustic potash (purified by alcohol) | 125 gms. |
| C.—Silver nitrate | 25 gms. |
| Distilled water | 200 ccs. |

In solution A, after the silver nitrate is all dissolved, add ammonia gradually; the solution at once turns dark brown. Keep on adding ammonia, in quite small quantities toward the close till the solution just clears up; avoid an excess of ammonia. Then pour in solution B. The mixture will again turn dark brown or black. Again slowly add ammonia, as before, till the solution just clears. The solution should now be a light brown or straw colour, but transparent.

Now add as much of the reserve solution, C, as the mixture will take up without turning too dark; add this reserve solution rather slowly, stirring constantly. If 25 gms. is not enough, add more, for it is important that the nitrate be as much in excess as is possible. It is best to add this reserve solution till there is quite a little brown suspended matter which the solution refuses to take up. Filter through absorbent cotton to remove these suspended particles.

Operations should be performed at a temperature of 55 deg. to 73 deg. F. (17 deg. to 23 deg. C.). If the solutions are much warmer than this, the resulting coat may be very soft, and there is, moreover, danger of the formation of some light gray silver fulminate, very explosive. Dr. Brashear uses ice to keep the temperature below 70 deg. F. in warm weather. If the solutions are too cold, it will be difficult to secure a coat of sufficient thickness.

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[*] "Astrophysical Journal," 1, 252, 1895.

Clean several drinking glasses or beakers with nitric acid, rinsing with distilled water. Make several tests of the completed solution, taking of the reducing solution one-fifth or one-fourth of the quantity of silvering solution employed. Note approximately the time required to get a thick coat and what proportions of reducing solution works best. Too much reducing solution gives a black dirty coat. I generally find that about 800 ccs. of reducing solution is best for the amounts given above for the Crossley mirror, and that the process is completed in from five to ten minutes.

The mirror, fitted with a band of paper as described earlier, and cleaned, has about four litres of distilled water standing upon it. Pour 800 ± ccs. of reducing solution into the silvering solution, and pour at once into the water already on the mirror. Keep the solution in motion by rocking the mirror, but avoid letting any part of the mirror be exposed to the air for longer than a second or two to observe progress.

The great trouble with the Brashear process is the formation of much sediment, and the solution should be kept constantly in rapid motion so that this sediment does not remain long in any one spot. For this reason some have preferred to silver face down. Dr. Common on one occasion very successfully silvered his five-foot mirror face up by this process, omitting the potash, when the silver was deposited from a nearly clear liquid, leaving no mud on the surface. This procedure, however, has been very uncertain, in my hands, and the coat thin. For avoiding the sediment I find the following procedure better: Two persons provided with rubber gloves stand on opposite sides of the mirror, and each has, on a clean sheet of paper within easy reach, four or five good-sized handfuls of absorbent cotton. About one minute after the solution is poured on, and as soon as a bright coat begins to form, each person takes a handful of the cotton and swabs his half of the mirror very rapidly, but very lightly. No pressure is exerted, but the wet cotton is allowed to move over the surface with only its own weight. *Every* part of the mirror must be touched by the cotton. By this process the solution is kept in rapid motion, and most of the sediment is taken up by the cotton. Every half minute or so the used cotton is slightly squeezed, thrown away, and a fresh handful taken.

A difficult point is the decision as to when the process should be stopped. If the solution is thrown off too soon, the coat will be thin; if left on too long, a whitish bleach deposits, and no amount of burnishing will make such a bleached coat as brilliant as one correctly deposited. One may be guided by the time taken for the preliminary tests made on beakers, or tilt the solution slightly to one side and look through from beneath at a window or other opening. A thick coat is better in every way, particularly from its ability to stand repeated burnishings.

When completed, get the spent solution off as quickly as possible, tear off the paper strip, dash with ordinary water and then with distilled; swab the surface lightly with wet absorbent cotton if there is much "bloom" on the surface (I generally omit this); turn on edge to dry. After an hour the coat is ready for burnishing.

### Lundin's Method.*

The mirror is cleaned in the usual way with nitric acid. After the nitric acid has been rinsed from the mirror, the surface is then ready to receive a thorough rubbing with a saturated solution of tin chloride, which can best be done by making up a large wad of cotton, and holding the same in the hand so that the fingers cannot come in contact with the glass surface.

To test the surface for freedom from grease spots, etc., rinse off the tin chloride solution, rubbing the surface all the time; first with the same wad of cotton, and lastly with one or two clean wads. This will prevent the tin chloride from leaving a hard, thin film, which might otherwise form on the surface and give a granular appearance to the silver coat.

If the cleaning has been properly done, the surface after rinsing should not shed water as does a greasy surface, but should be able to retain a film of water over the entire surface when slightly inclined, and care should be taken to keep the entire surface covered with water; otherwise the silver will not deposit properly on those parts that have been exposed to the air.

A dish is formed with the mirror as bottom by wrapping tightly around the edge a strip of bandage cloth three inches in width that has previously been saturated with melted beeswax, and carefully pulled while hot from the beeswax between metal rods to remove the excess of wax which would otherwise prevent a watertight contact with the edge of the mirror. The rim of waxed cloth can be held sufficiently tight to the edge of the mirror by a few turns of strong string, and, after tying securely, wetting the same.

Having completed the above preparation, attention may be turned to preparing the silvering and reducing solutions, at the same time occasionally pouring off the water from the mirror and replacing it with a fresh supply. The total amount of solution required for silvering can now be ascertained by measuring the amount of rinsing water that it takes to cover the surface in its highest part by about three-quarters of an inch.

Silver solution: Dissolve 10 grs. (2.16 gms.) of silver nitrate for each ounce (100 ccs.) of silver solution used; add strong ammonia and clear up fully.

Reducing solution: 20 minims (4 ccs.) of Merck's formaldehyde in five times its volume of water for each ounce (100 ccs.) of silver solution used.

The solutions having been prepared, the water covering the mirror is now poured off, the silver and the reducing solutions are mixed quickly but thoroughly, and poured into the mirror as evenly as possible. Rock the dish slowly in different directions and watch for the appearance of black grains similar to gunpowder. When the solution is clear with the exception of these particles and they seem to deposit on the silver coat, pour off the solution and rinse with running water. Remove the waxed band, all the time keeping the surface flooded with water. The remaining particles and the dull-looking deposit on the silver may now be removed with a clean wad of cotton, trailed over the wet surface without pressure.

The advantages of this process are the practically complete freedom from the troublesome sediment of the Brashear process, and the possibility of using ordinary water instead of distilled. Mr. Lundin states that the water from the mains at Cambridge is equal to distilled water for the purpose, and would advise others to test their water supply on a small mirror before securing distilled water. The water for the cleaning should be lukewarm, and a trifle less for the solutions; should the silvering solution turn a muddy brown colour when poured on the mirror, the temperature of the mirror is too high. Dr. Parkhurst writes that he finds the Lundin process more convenient and reliable than the Brashear or the Rochelle salt method. In his opinion, the most important step appears to be the rinsing off of the chloride of tin with warm water, as all traces of the chloride must be removed to give a good film.

HEBER D. CURTIS.

(*To be continued.*)

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* Extracts from a letter from Mr. C. A. R. Lundin, Jr., of Alvan Clark and Sons to the writer.

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ULTRA-VIOLET RAYS FROM QUARTZ LAMPS.—M. Victor Henri, in a recent paper before the French Academy of Sciences, has studied the influence of various physical conditions on the ultra-violet radiation of quartz mercury vapour lamps. Using the citrate of silver method for measuring the intensity of the ultra-violet radiation, the author has made determinations of the activity of a Westinghouse Cooper-Hewitt lamp under varying conditions of cooling. It was found that the ultra-violet radiation of the lamp is more intense as the temperature of the luminous tube increases. Cooling the tube with water gives only one-fourteenth of the ultra-violet radiation obtained when the lamp is in air, the watts consumed remaining the same. A study of the activity of six lamps of different makes and ages showed that for experiments in photochemistry a quartz mercury-vapour lamp may be relied upon as a constant source of ultra-violet rays, the radiation being defined when the voltage, amperage, and length of the tube are known.

# THE CITY AND GUILDS OF LONDON INSTITUTE EXAMINATION PAPERS IN PHOTOGRAPHY.

## IV.

We now conclude the papers of the questions and answers thereto set in the last examination of the City and Guilds Examination by publishing below replies to the questions set in the Honours grade of the Process or Photo-Mechanical section of the syllabus.

1. You are required to make a photographic picture of a fine lace curtain by means of the line zinc process. Describe exactly how you would proceed, drawing particular attention to difficulties you would expect to encounter. (50 marks.)

Supposing the curtain is 144 in. long by 58 in. wide, which is not an uncommon size, and that all the curtain is required, then the chief difficulty to be met with is to light it evenly. If the curtain is white, as is presumed, it is mounted on a perfectly even black background, consisting of cloth (best material is black velvet) stretched on a wooden screen, or the wall of the studio. The curtain is now stretched on this and fastened by means of numerous pins, so disposed that they are as little conspicuous as possible. For such a large object, daylight is the only satisfactory form of lighting, and reflectors must be arranged wherever necessary to make the lighting as even as possible. Thus, if the lighting was mostly from the top and sides, a white sheet or sufficient white paper would be placed at the side opposite the window at a suitable angle, and another reflector on the floor. The lighting must be as direct as possible, to avoid all shadow; a line block being required, no texture is needed, but the lace is to be photographed as a white design against a black background. Care must be taken in placing the camera so that it is parallel with the curtain. The exposure should be made on a plate capable of giving a maximum of contrast. If the lighting is even and the background is quite black (*i.e.*, velvet), the exposure may be a full one. If these conditions do not hold, then the exposure must be on the short side, and further density obtained in the negative by intensification. The negative after development must be examined for defects—*e.g.*, if any part is weak, or if the pins show. Such defects may often be retouched out after the negative is dry. If the design is similar on either side of the curtain, it may be printed direct on to the zinc plate. If, however, the design is such that it cannot be reversed, the negative must be made reversed in the first place by using a prism when photographing it, or an ordinary negative may be stripped afterwards, or, what is more commonly done, a print may be made from the negative which has as much contrast as possible. From such a print another negative is made in the reproduction studio as usual for any piece of line copy, first retouching the print if necessary. There is no special difficulty in making the line block. If the etcher can keep enamel on zinc it is possible to get a somewhat sharper result by the enamel process than by albumen-ink; if the design is very fine there will be no difficulty about it, as the depth will be sufficient in one etch only, though care must be taken not to carry the first etch too far, otherwise the lines will spread and the design thereby be coarsened.

2. Describe any devices and methods with which you are acquainted for accurate focussing. (20.)

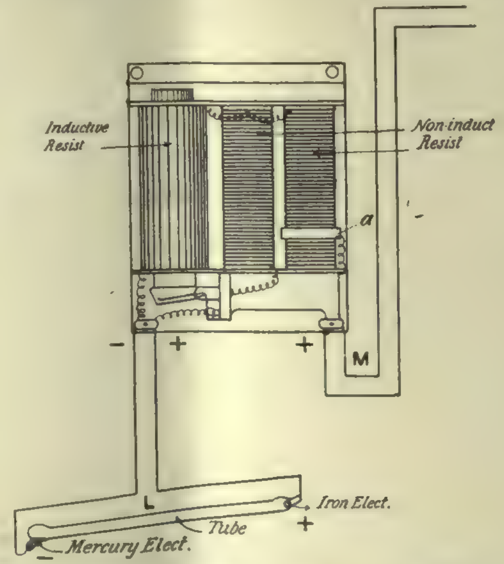
The simplest method is to have a high-power magnifying glass which is carefully set to focus on the under side of the ground glass. The ground glass is provided with a clear space either in manufacture or by cementing a microscope cover glass on it by means of Canada balsam. A piece of type matter is now placed in the plane of the copy, and its image on the clear space of the ground glass examined under the magnifier. The back of the camera is now racked in or out until sharp focus is obtained. Another method is the parallax method. A clear space is required on the ground glass having a sharp edge, or a line, on it. The eye is now withdrawn to a little distance back and the head moved to and fro while looking at the mark on the clear space. If the image moves in relation to this mark, then the focus is altered until it is stationary when the eye is moved.

3. What are the chief difficulties to be met with in three-colour work, so far as the making of the negatives is concerned? (50.)

The object of the three-colour process is to reproduce faithfully the coloured original, and this is the difficulty that comprises all others. To do this we have to take three negatives which are records of the correct colour regions only. This means that the filters and plates must be in absolutely correct adjustment for this purpose. Generally speaking, the photographer must make the best of the materials at his command, and they do not always fulfil all the requirements. The gradation of the three negatives must be alike in order that mixed colours are correctly rendered, and particularly greys. This means that the same sort of plate should be used for all three exposures (*i.e.*, not only the same sort of plate, but from the same batch of manufacture), that the exposures are exact, and also in accurate ratio with each other, a condition that is by no means easy to fulfil. In order that the contrast may be the same in all three negatives the development must be the same for all, as regards time and temperature. Then the images of all three negatives must be of exactly the same size, so that they register correctly with each other, and very slight errors are sufficient to disturb this. Thus want of register may be caused if one of the plates is not correctly placed in the dark slide, if the camera is shifted slightly between or during the exposures, if the original warps under the heat of the lamps, or the apparatus expands or contracts. The lens also must give equal-sized images for all colours, and none of the filters must disturb the equality of size. The lighting of the copy must be the same both as regards quality and evenness throughout the three exposures, and as sometimes the exposures are very long, this also constitutes a difficulty. If all the conditions mentioned can be complied with the chief difficulties will be overcome.

4. What is a mercury vapour lamp? Give a rough sketch of the system required and name the essential parts. For what class of work undertaken by process houses can such a lamp be satisfactorily used? (50.)

A mercury vapour lamp is a form of electric lamp from which the light is emitted by mercury vapour in a state of incandescence.



A glass tube containing a small quantity of metallic mercury is exhausted to a high degree of vacuum. The mercury forms the negative electrode, the positive one is of iron. The current, which must be continuous or direct, is of a voltage of from 50 or 60 to 100 volts usually, so that if the voltage is higher a series of more than one lamp is installed. The circuit is made and the lamp lighted by flowing the mercury from the negative to the positive electrode. The mercury stream then breaks, and a small arc is formed, which vapourises a certain quantity of the mercury; this vapour then forms a conductor for the current. The installation of the mercury vapour lamp requires a rheostat, including inductive and non-inductive coils, designed to keep the light maintained; these coils vary according to the particular type of the lamp and the voltage on which it is to be used. The chief use of such lamps for process houses is to make photographs of objects in relief that are intended for catalogue illustrations, as the shadows of such objects are softer and show more detail than when the objects are illuminated by any other source of artificial light. They can also be used for making ordinary process negatives, both with and without the screen, from black-and-white originals (only), and also to make the print on the metal. They may be used as well to illuminate negatives or transparencies that have to be enlarged or reduced.

5. Occasionally artificial line negatives may be found useful. Describe very briefly some ways in which such negatives may be made. (25.)

Presuming that by "artificial line negative" is meant one that is made by hand instead of in the camera, then a simple way would be to smoke a piece of glass thoroughly by means of holding it over wool burned in turpentine, and then scratch the design on this. This ground, however, would be very fragile, so that a better way would be to take a plate (wet collodion is better than gelatine, though the latter will do), expose to light, develop, intensify, dry, and scratch the design through the film. Or a piece of glass can be coated with black varnish and the design scratched through this. A good varnish that dries quickly and scratches without tearing is made as follows:—

| | |
|---|---|
| Benzole | 1 to 1½ oz. |
| Bitumen | 4 drams. |
| Ivory black | 5 drams. |
| Beeswax | 2 scruples. |

Another excellent way that enables the design to be made as a positive is by the use of the "Norwich" film. This is a film of grained gelatine on which one draws with a lithographic crayon. The whole is then flowed over with a non-actinic varnish, and after this is dry the film is rubbed over with turpentine or benzole. The result of this is to dissolve the lithographic crayon, and this brings away the varnish on top of it, so that one then has a negative of a design in transparent gelatine on a ground of non-actinic varnish.

6. How would you prepare flat tint plates for use with half-tone blocks? What means would you adopt for "keying" so that the tint portions were true to size and register with the corresponding portions in the half-tone block? (30.)

In order to prepare flat tint plates to register correctly with a half-tone block one would print enamel prints on zinc from the half-tone negative, making as many plates as there were tints required. These prints would not be burned in but only dyed up, as they are simply to serve as a guide to position. The part on each plate that is required as a tint is now painted out with acid-resisting varnish, great care being taken to see that the edge is correctly followed. After drying, the plate is placed in the acid bath and the part not required as a tint will be etched away. The plate may be etched to sufficient depth, or after a slight depth is obtained the resist can be cleared off and the plate deepened on the routing machine. It is then mounted in the usual manner.

7. Describe the Levy powdering machine, and explain how it works. (30.)

The Levy powdering machine is one that places and fixes the acid-resisting powder (such as dragon's blood) against the shoulders of the lines or depressions of the design to be etched to protect the lines during the process of etching.

In the Levy machine a plate having a design on it that has been made in the usual way and already received one etch, is placed face upwards on a table where the plate is engaged by a carrier which moves the plate beneath a hopper, which then drops the powder upon it. The plate is now moved underneath a series of revolving brushes, moving in an opposite direction to the plate, which serve to pack the powder against the sides of the lines of the plate and to remove the surplus powder. The plate is next carried over a series of gas jets which heat it strongly and so cause the powder to fuse. The plate then moves along to receive blasts of cool air to expedite the cooling. The plate has to be treated like this four times, once from each edge: it is then ready for again etching. All the movement of the machine is automatic after the plate is laid on the end table, the motive power being generally a small electric motor.

8. Explain what is meant by *off-set* printing, and discuss the possible advantages of this method of printing from the standpoint of the photo-engraver. (50.)

Off-set printing is that which is done by means of the impression first being taken on one surface and from that "off-set" on to the final printing surface. Off-set printing has been used for many years to print lithographs upon tin, as it is obviously impossible to present the hard, unyielding tin to the equally unyielding stone and expect to get a satisfactory printing. The difficulty was overcome by first printing from the stone on to a rubber sheet and from this off-setting it to the tin. Latterly the same principle has been applied to printing on to paper—that is to say, a plate or stone has been prepared as a printing surface and the print taken on to rubber and then from this on to the paper. Up to the present the method of printing the original surface has been planographic, lithographic stones or aluminium or zinc plates being used for flat bed machines, and the metals mentioned used for rotary presses. There is, however, a German press—the "Heureka"—made to print relief surfaces by the off-set principle, and no doubt the same method will be generally available sooner or later for relief work. The advantages of this method of printing are that it enables half-tones to be printed on a rough-surfaced paper, or, indeed, any surface. When printing direct from the block the printer is restricted to paper, and if he wants to get the maximum effect from the engraving he must use a clay-surfaced paper which is not only offensive æsthetically and more or less painful to the eyes, but is not in the least durable. Thus the method enables the scope of photo-mechanically produced printing to be indefinitely extended by using surfaces hitherto impracticable, and, more immediately, to have half-tones printed on pleasant, durable paper. These are the chief apparent advantages from the standpoint of the photo-engraver.

9. State what you know of any recent advance in the printing of illustrations in newspapers. (30.)

The most notable advance recently in newspaper illustrations is the adaptation of the photogravure process for this purpose. At present the rotary photogravure process of Dr. Mertens is used by three German newspapers, viz., the "Freiburg Zeitung," the "Frankfurter Zeitung," and the "Hamburger Fremdenblatt," but it ought to be added that these illustrations are only so far used for illustrations in supplement issues, and not to picture topical news as are ordinary half-tones in the English newspapers. The method is really inverted half-tone—that is to say, a half-tone positive is made and etched in intaglio on a copper cylinder. This is then attached to a press which can be coupled up with the ordinary rotary press for the text. The illustrations are first printed in a similar way to that of wall paper, and then the web of paper travels on to the text machine. The process gives a picture much richer because more and better ink is used than can be used for the text, and also the method enables a much finer screen to be used, and therefore the picture is much more detailed. Another improvement is the setting aside one cylinder of the ordinary rotary printing machine for the printing of illustrations only, thereby enabling a better ink to be used. The original plates, or electros from them, are thus used instead of stereos, and also a more careful make-ready. Examples of this (which is not a new principle) are to be seen in the "Magdeburg Anzeiger." Generally, newspaper illustrations show much improvement recently, due to the greater experience of the workmen concerned in their production.

10. Give a short account of the method of production of an intaglio printing plate, by the Talbot-Klic and inverted half-tone processes respectively. How do these methods compare, so far as regards the means employed for the rendering of tone, with that adopted in the rotary intaglio process? (50.)

An intaglio printing plate is produced by the Talbot-Klic method as follows :—A piece of copper of the required size is taken and thoroughly cleaned, usually with ammonia and whiting. It is then placed in a dusting-box and grained with bitumen or resin dust, which is fixed by heating it. Meantime a positive has been prepared from the negative, and from this positive a "carbon" print is exposed and developed on top of the grained copper plate, giving thus a negative on the copper in gelatine of varying thickness according to the light and shade of the original. After thoroughly drying the plate is etched in perchloride of iron. Usually a series of baths are used, the mordant only penetrating the gelatine in proportion to its thickness, or according to the dilution of the iron perchloride After etching the resist is cleaned off and the plate proved in a copper-plate printing press. The rendering of tone is here obtained by differing thickness of printing ink according to the depth of the plate, which is progressively deeper as the tones are darker. An inverted half-tone is a plate made in the usual way by the enamel process, using a positive instead of a negative to print on the metal, so that an intaglio results, which is proved as above. The rendering of tone in this case is afforded by the varying size of the dots; the thickness of the ink is the same, but its distribution in area in relation to the white paper differs according to the size of the ink-holding dots, which are large in the shadows and small in the high-lights. There is more than one rotary intaglio process, but one about which details are published, viz., Dr. Mertens', is quite similar to the latter process, and therefore the rendering of tone is also the same. But other rotary photogravure processes use the carbon process to obtain the resist, using a screen only to get a grain on the plate which will stand wear well. This grain is, however, all the same size, therefore the rendering of tone does not depend upon it, but is similar to the Talbot-Klic process in this respect.

11. How may the sensitiveness of bitumen to light be increased? State what you know of any recent investigation in this direction. (30.)

Ordinary bitumen has three constituents, denoted by Alpha, Beta, and Gamma, the last of which is the most sensitive. If the former can be removed then the Gamma bitumen remaining is far more sensitive. It has been found that the two first constituents of the bitumen can be dissolved out by treating with ether, pouring away the solvent, and using the residue. Recent investigations have been devoted to converting the whole of the bitumen into the sensitive kind, which, it has been found by Valenta, can be done by the incorporation of sulphur. At first this was done by prolonged boiling; latterly Valenta has suggested that the bitumen should be dissolved in bisulphide of carbon, and chloride of sulphur added, and the mixture distilled at a relatively low temperature (about 50 deg. C.).

One hundred grammes of bitumen is dissolved in 500 to 600 c.c. of bisulphide of carbon. After solution there is added about 6 to 8 grammes of chloride of sulphur previously diluted with 20 c.c. of bisulphide of carbon, adding only small quantities at a time, and shaking vigorously after each addition. The retort is now connected to the condenser, placed on a water bath, and brought to the boil. Hydrochloric acid and a little sulphuretted hydrogen are released. After about one-third of the bisulphide is evaporated, if the distillate is clear and no more hydrochloric acid comes off, the operation is stopped and the contents of the retort put in a bottle and diluted with 2 litres of benzine. This solution is ready for use and found to be highly sensitive.

12. What is an "overlay," and why is it considered necessary? How does a printer usually produce an overlay? Give an account of any practically useful process which will furnish a result quickly and economically suitable for half-tone block printing. (50.)

An "overlay" is something laid on the part of the press giving the impression to lighten or increase the impression in certain parts. It is considered necessary in order to heighten or even retain the contrasts of the picture. If the picture is not overlaid there is a tendency for the high-lights to print too dark; if the shadows are dark enough, or if the high-lights are right, then the shadows will be too light. This is assuming the machine is in thorough order and the block quite good; sometimes overlays are necessary to correct imperfections in the machine or in the block. An overlay is usually produced by taking impressions from the block to be overlaid on several pieces of paper of different thickness, and then cutting away the lights and middle tones progressively, so that when these papers are pasted on top of each other the result will be a gradually increasing thickness towards the darkest shadows of the picture, and, conversely, a gradually increasing lightness towards the lightest tones of the picture, the lightest of all being cut away altogether. An impression is now taken from the block on to a platen or cylinder, and the overlay pasted on it in register. It is now covered with some sheets of smooth packing, and the job is ready to print so far as the overlaying is concerned.

The chalk relief overlay process is the most practically useful process that will furnish a result quickly and economically suitable for half-tone printing. Paper is purchased, thickly coated on both sides with chalk. The block is placed in the machine and well inked, and an impression made on the cylinder. There must be sufficient ink taken off on the cylinder to off-set again. The block is again well inked, and the piece of chalk paper now laid on and pulled through the press. The result will be that it will be printed on both sides, from the block and off-set from the cylinder. The paper is now put in a weak solution of hydrochloric acid, which has the effect of dissolving away the chalk in proportion as it is unprotected with printing ink both from the back and front of the paper. The result is that one has a relief in proportion to the weight of tone of the subject. This is now affixed to the cylinder as in the case of the common paper overlay.

13. A drawing in black outline with simple gradations of colour is to be reproduced in five printings to half scale, using hand work for the production of the colour plates, four in number. Describe how you would produce the outline block from the drawing and the necessary blocks for the colours, true to register. (75.)

The method of procedure would depend on the nature of the drawing. If the outline was very definite and the colour very faint, there would be no difficulty in making a negative that would serve to print the outline on the metal to form the black block. This negative can sometimes be made with full exposure by means of wet plate; more frequently it must be made on an orthochromatic plate with a filter, or it has been suggested that if the operator has a set of three-colour filters that register perfectly, he can expose on the same plate through each of these filters successively, thus cutting out all the colour in the original, and leaving the black outline only. But it will usually be found in practice that a considerable amount of hand work is required on the negative in order to block out all traces of the coloured ground and get a clean outline plate. The outline block would then be made exactly as an ordinary line job on zinc. The colour plates would be produced by printing four more plates from the same negative as the outline on polished zinc, and then giving them a slight etch. When the resist is cleaned away one has the outline for the job in shiny metal on a matt ground, and this shiny outline is for the purpose of maintaining register, by serving as a guide for the painting-out hereafter described. These plates are now grained in a dusting-box and the grain fixed by heating, or suitable tints from stipple and line plates, or "shading mediums" laid down on them. The next operation is to carefully paint over with acid resist varnish the parts that are to be printed in the particular colour for which each plate is respectively to serve. Only the parts that are required solid are painted out at first, and then the plate is etched for a suitable time to give the next darkest tone; then the part representing the latter is painted out and the plate is again etched, and so on until the lightest parts are reached, when all those parts of the plate representing that particular colour are covered in. The remainder is now taken away, either deep etched or routed, and the plates mounted and printed. If the work has been carefully done it will be found to register.

14. You are required to make a reproduction of an illuminated MS. in which gold work in relief occurs. How would you reproduce this gold work so as to render the effect of the original? (30.)

A negative is first made of the gold work, so that a zinc block may be made of it in the usual way. Generally a certain amount of retouching will be found to be necessary on such a negative, as it is difficult to pick out the gold sharply by purely photographic means. This block is printed in gold, either with a gold ink or with varnish, and then dusted with bronze powder, or gold leaf may be laid or rolled on to the varnish. A reverse is now made of the block, either by making a positive from the negative and printing that on the metal, or by transferring an ink impression to the metal plate, or making a "Vandyke" print and reversing, in either case so that the final result is a negative on the zinc plate. This is then etched in intaglio, and the plate so produced is used to emboss the previously printed gold work. A matrix to put on the platen and force the print into the hollows of the embossing plate, if necessary, can be made from composition sold for the purpose, or one may use blotting paper to make such a matrix, the embossing can then be done on any substantial platen press.

If the work is of great importance it may be advisable to etch the plate in brass instead of zinc, and have the gold put on in pure gold leaf on a gold blocking press.

15. Describe briefly the machines used for carrying out the following operations :—(*a*) Cutting plates into ovals and circles, (*b*) lining and bevelling, (*c*) trimming, (*d*) surfacing wood mounts. (50.)

(*a*) A machine for cutting ovals and circles has a flat table, on which the plate to be marked out is laid. This table is overhung by a bar, on which a cutter can be moved along, and then fixed in any position, according to the size of oval or circle required. The table revolves on an eccentric, and the nature of the oval will be determined by the position at which the axis of the table is fixed to this eccentric. An indicator on the machine shows where the table must be clamped to get ovals of any required length and breadth. When this is set, the plate is clamped down in the exact centre of the table, and the cutter so weighted that it permits the plate to move underneath it while still making a cut; the table is now turned with the hand until a complete revolution is made.

(*b*) The machine for lining and bevelling consists of a flat table running on a machine slide. At the edge of the table is fixed a revolving disc, which contains two cutters that are so shaped at their cutting edge that one of them makes a flat cut and the other, coming on the outside of this, makes a deep groove. The combination of the two cuts makes a bevel on the piece of metal presented to them. The disc holding the cutters is driven usually by electric motor at a speed of about 2,500 revolutions a minute. The plate to be bevelled is clamped to the table in such a way that the cutters meet it at the proper place to make the bevel; the disc is then set revolving, and the table slid along until the plate passes underneath the cutters, the travel usually being actuated by a screw turned by a hand wheel. The lining is done by fixing a cutting tool at the edge of the table so that it meets the plate when the table is driven underneath it. Various tools are used to give different effects of lining.

(*c*) Trimming is usually done on what is called a "bowler" machine; that is a large revolving disc which carries a knife in its radius. A table abuts on to the disc, and the block is placed on this, and pushed up with the hand, so that the edge gets shaved by the knife at every revolution of the disc. Other trimming machines have also been introduced, which have a smaller disc and different cutters, but they are operated in a similar manner, and their effect is the same.

(*d*) The machine that is used for surfacing wood mounts consists of a table, on which the wood to be surfaced is clamped; this can be fed forward in the same way as the bevelling table described above. The table passes underneath a horizontal disc provided with suitable cutters. This disc revolves rapidly, and thus shaves off the surface of the wood as it is passed along under it. Means are provided so that exact adjustments may be made, in order that the wood may be surfaced to just the desired height. Other wood-surfacing machines have a revolving cylinder which is provided with knives, and the planks are fed under this by means of moving rollers.

16. You are given a drawing in monochrome which consists of a portrait in wash, surrounded by a pure line ornamental border. This is to be reproduced by the collotype process, and it is particularly required that the ground of the border be free from tint, whilst the gradations of the portrait are to be retained. State how you would produce a negative suitable for the platemaker's purpose. (35.)

If the drawing was thoroughly satisfactory, one might hope to make an exposure on a plate capable of giving an extended scale of gradation that would by itself satisfy the requirements of the collotype plate maker. If, however, this proves impossible, two negatives should be made, one giving the effect required in the portrait, and the other made especially for the line border. These negatives can then be stripped and mounted together to form one negative correct in both portions. If there is not very much detail in the line border, it is usual to make a negative that is suitable for the portrait, and then paint in the ground of the border design on the negative with opaque water colour, so as to ensure that it is quite white on the print.

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# THE EFFECT OF THE ALKALI IN PHOTOGRAPHIC DEVELOPMENT.

[The following is a translation made with some abridgment of a thesis describing an investigation carried out by M. Louis Bourgeois for the doctorate of science of the Lausanne University. The full text of the paper forms a volume of 116 pages, published by E. Lavanchy, Morges, Switzerland.—Eds. "B.J."]

## II.

THE exact conditions under which we have worked are as follows :—An exactly 10 per cent. solution of silver nitrate is prepared and a 25 per cent. solution of caustic soda. Eleven ccs. of this latter solution would contain a slight excess of caustic soda when all the silver has been precipitated from 10 ccs. of its solution according to the equation

$$2\underset{340}{AgNO_3} + 2\underset{80}{NaHO} = Ag_2O + 2\,NaNO_3 + H_2O$$

For 340 gms $AgNO_3$, we require 80·1 gms NaHO
Therefore 1 „ „ „ $\frac{80\cdot1}{340} = \cdot235$

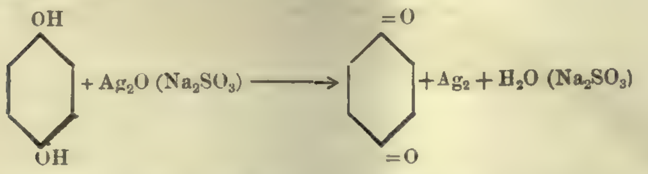
.235 gm. of caustic soda is thus necessary to precipitate exactly 1 gm. silver nitrate. Eleven ccs. of a 25 per cent. solution thus give the excess of alkali necessary for 10 ccs. of silver nitrate solution.

The precipitate of silver oxide is afterwards washed in several operations with a solution of boric acid, the precipitate dissolved with addition of soda sulphite solution. We have observed that small as is the quantity of acetic acid, it leads to loss of silver, it being easy to detect the dissolved silver in the wash water. This does not take place if boric acid be used.

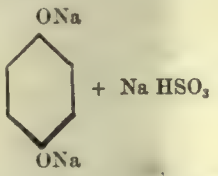
Reeb in his paper does not say anything as to the temperature at which the hydroquinone should be added. Numerous experiments made at the ordinary temperature did not give concordant results. By bringing the solution of the silver oxide to the boil the action was quite different. After each addition of hydroquinone the liquid was rapidly passed through a filter paper by aid of the filter pump, and again brought to the boil. Then, and not till then, was a fresh quantity of the developer solution added.

In our first work we used 25 ccs. of 20 per cent. solution anhydrous sodium sulphite, but the silver oxide dissolves far from readily, and there is a risk of silver being deposited on the inside of the beaker as a mirror. We therefore added the soda sulphite in the solid state, and, taking care to stir constantly while heating, the results were much more satisfactory.

We have assumed that the reaction was produced according to the equation



that is to say, that a molecule of quinone should be produced. In point of fact, no trace of quinone could be detected, and the brownish-yellow products which remained had not at all the colour of quinone. Also, quinone melts at 116 deg. C., hydroquinone at 169 deg. C., whilst the body obtained did not melt when heated up to 220 deg. C. Possibly it is the sodium salt



Heated to a still higher temperature it gave rise to tarry products. It would seem, then, from the above reaction, that silver oxide acts as a powerful base towards hydroquinone and destroys the benzine nucleus.

The following results were obtained with hydroquinone, using a supply from Bender and Hobein, of Zurich.

First Series.—The solution of hydroquinone was of E/200. It remained perfectly colourless for the first few days after making up, and then became gradually reddish-brown.

1. Took 10 ccs. silver nitrate solution (=1 gm.) precipitated with 11 ccs. 25 per cent. solution caustic soda, washed the precipitate by decantation with warm solution of boric acid, dissolved the precipitate with 5 gms. soda sulphite anhydrous, heating carefully, and then added 10 ccs. hydroquinone. Brownish-grey precipitate produced. This was filtered, leaving a grey residue on the filter, and passing a clear, yellow liquid, to which was added 2 ccs. hydroquinone. Less abundant precipitate produced, which was filtered, and 2 ccs. hydroquinone added to the filtrate. A scarcely perceptible precipitate produced, a mere turbidity. A further 1 cc. hydroquinone added, producing a faint turbidity, but still distinct. Further addition of hydroquinone gave rise to no further action.

Second Series.—Under the same conditions as above, 15 ccs. of hydroquinone solution were added in one lot, and produced an abundant precipitate. This was filtered off, giving a yellow liquid clearer and of less colour than in series 1. On adding to this liquid 1 cc. of hydroquinone there was a slight turbidity. Further addition of hydroquinone produced no result.

Third Series.—Added 16 ccs. hydroquinone in one lot, filtered, and with the liquid at the boil, added a further 1 to 2 ccs. No turbidity produced.

The conclusion from these results is that, at any rate at the dilution employed above, the reducing power of hydroquinone is represented by 16 ccs. of E/200 solution, or, as each cc. contains .005 of hydroquinone, the reducing power of this latter is 16 × .005 = .08 gm.

Studying now the effect of diluting the hydroquinone solution, we prepared solutions 1/50th, 1/100th, 1/300th, 1/400th, 1/500th, and 1/1,000th, that is, taking the E/200 solution as normal. These dilutions are in the following ratio (milligrammes contained in 1 cc. of solution):—

20 10 5 3.3 2.5 2 1

1/50 solution. This solution is evidently too strong for practical use: it becomes coloured a few hours after making. 1 cc. contains .02 gm. hydroquinone.

1. Added 3 ccs. of solution, filtered off the precipitate and added 2 ccs., again filtering off the precipitate and adding a few more drops of the solution, when no further turbidity was produced. The reducing power is thus between 3 and 5 ccs. of the E/50 solution; that is, between .06 and .10.

2. Added 3.5 ccs. hydroquinone, filtered off the precipitate, added 1 cc. hydroquinone to the clear liquid, a turbidity being produced. Filtering this off and adding a few further drops, there was no effect, and the reducing power is thus between .07 and .09.

3. Added 3.8 ccs. hydroquinone, filtered the precipitate as before, and added .1 cc., which produced a very slight turbidity. Filtered and added successively, .1, .2, and .5 ccs. No turbidity. The reducing power for the E/50 solution is thus 3.9 ccs. or .078 gm. The three observations have thus led to the three following results:—

1.—.079.
2.—.078.
3.—.078.

From these results it is seen that the strength of the solution has the effect of increasing to a small degree the reducing power.

1/100 solution (1 cc. = .01 gm. hydroquinone). The following figures were obtained:—

1.—7.8 ccs. = .078.
2.—8.0 ,, = .080.
3.—7.9 ,, = .079.
4.—7.9 ,, = .079.

The reducing power thus diminished slightly, and approximated to that of the normal solution.

1/300 solution. This keeps for a much longer time. At the end of a week there was no appreciable colour.

1 cc. = .0033 gm.
1.—24.2 ccs. = .08 gm.
2.—23.8 ,, = .079 ,,
3.—24.2 ,, = .08 ,,

1/400 solution. The average, calculated from four observations, gave the following results:—

31.8 ccs. = .0795
32.1 ,, = .0802
32.0 ,, = .080
32.0 ,, = .080

1/500 solution. The mean of the results varies from 39.5 to 40.2; that is, from .079 to .0804.

1/1000 solution. Several experiments were made with this solution, which requires ample time for its action: it is not of service for rapid measurements, and on that account the E/200 solution is preferable, but as a control of the results tests are usefully made with it. The following figures were obtained:—

1. Added 79 ccs. of solution, filtered off the precipitate as before, and added 2 ccs. to the clear liquid—a very slight precipitate. The reducing power is thus between .079 and .081.

2. Added 79.5 ccs., filtered off the precipitate and added 1 cc. to the liquid. This gave a scarcely perceptible turbidity, and means a reducing power between .0795 and .0805.

3. Added 79.7 ccs., filtered the precipitate, added a few drops 1 to 2, and then 5 ccs. of the hydroquinone solution. No precipitate, even after prolonged boiling. The reducing power would thus be equivalent to 79.7 ccs. = .0797 gm.

The results are much less certain with this process in the case of a largely diluted solution. Even with the E/200 solution, the reaction is not perfectly definite within .2 to .3 ccs., and to a greater extent is this the case with the E/1000 solution.

The five measurements made according to this method have thus given the following results:—

1.—79.5 ccs. = .0795
2.—79.8 ,, = .0798
3.—79.7 ,, = .0797
4.—79.7 ,, = .0797
5.—79.6 ,, = .0796

Conclusions. The above figures thus confirm those obtained by MM. Lumière and Reeb, namely, .07 and .08. The particular sample of hydroquinone (B H) has thus a reducing power represented by .0797, or practically .08. In the case of two other brands of hydroquinone, the Agfa and that of Siegfried of Zofingue, identical results were obtained.

(*To be continued.*)

◆

Messrs. Harringtons, Ltd., who have long been established in each State in the Commonwealth, have now extended their field of operations to New Zealand. The business hitherto known as the New Zealand Photo. Goods Co., Ltd., situated in the most central spot in Queen Street, Auckland, has been acquired (with bulk stores and wholesale department near at hand), and will be known as Harringtons, New Zealand, Ltd.

## THE NEW PREMISES OF MESSRS. F. E. JONES AND CO.

Messrs. F. E. Jones and Co., who for the past six years have been established as suppliers of professional requisites, have recently moved from their first quarters at 22, Gray's Inn Road, to No. 26 in the same thoroughfare, where they have acquired the larger accommodation necessitated by the growth of their business. Messrs. Jones, as large numbers of our professional readers must be aware, have taken a special line in their business, namely, the supply of studio and reception-room outfits, including particularly backgrounds and the full interior decoration of photographers' premises. This, in addition to the supply of materials in the way of plates, papers, and mounts. Their new showrooms, three photographs of which we reproduce in accompaniment of these notes, represent fairly well the opportunity which Messrs. Jones afford to the professional worker who is desirous of making his surroundings in the best possible taste. Mr. F. E. Jones, the head of the firm, is probably as well acquainted as anyone in the trade with the styles in backgrounds, furniture, and decoration which have the approbation of leading studios, and his wide acquaintance with professional establishments of all kinds places him in a peculiarly favourable position to advise those who are undertaking refurnishing of, or additions to, their establishments. His firm supplies not only choice models of old types of furniture, but has also some excellent examples of the genuine antique, whilst special attention may be directed to the styles of wall decoration, including oak panelling, or the cheaper style of wall built of oak battens, including panels of art arras cloth. The new showrooms comprise a stock of over seventy backgrounds, the whole number of which can be inspected in a minute or two. In regard to backgrounds, reference should also be made to the extremely convenient "Freckleton" background cabinet, seen to the left in the second illustration, which provides the most convenient means of storing a dozen grounds, any one of which can be brought into use in a few seconds, the cabinet, at the same time, making an admirable junction of the background and floor covering. Many tasteful designs in mounts are likewise a feature of the new showrooms, which, from their central position a few yards from the Holborn end of Gray's Inn Road, and within a stone's throw of the Chancery Lane tube station of the Central London Railway, is a most convenient place of call for professional photographers arriving in London by either a northern or southern line. Messrs. Jones' full catalogue is a publication of the firm which well represents their ability to supply all professional requisites, but a visit to 26, Gray's Inn Road is recommended to the prospective purchaser as a means of obtaining much useful advice on questions of furnishing and decoration which are vital to him in his business.

Specimens of wall decoration at the new premises of Messrs. F. E. Jones & Co.

On the right is a display of some sixty backgrounds.

Some old furniture at Messrs. Jones's.

# Photo-Mechanical Notes.

### The Mertens Process in Wallpaper and Fabric Printing.

The Intaglio rotary process of Dr. Mertens is the subject of the following article in a recent issue of the "Times" Engineering Supplement :—

A new process, now being perfected, for the printing of wall papers and textile fabrics will mark a distinct advance in this branch of industrial work. The demand for textile fabrics in Europe dates back to the twelfth century, and the early methods of decorating them were necessarily confined to the weaving. The printing of fabrics has at the present time a most extensive application, which has been very materially assisted by the great advances of late years in the manufacture of aniline colours, but until now little work has been done in the production of really pictorial effects by printing. Chaste and æsthetic designs, many of them complicated in character and colouring, are produced, but the new method of printing in intaglio will at once change the aspect of the matter completely, and will admit of better defined and more elaborate work being done.

The intaglio process, as applied to the printing of textiles, consists in pressing the fabric with considerable force against the copper roller of a rotary press, the pattern being engraved in a particular manner on the roller. The number of rollers used for the printing of a fabric depends on the number of colours required by the design, but some admirable work has been done by the three-colour process, so that in three consecutive printings every colour in a design is faithfully reproduced. This alone opens up a new field for the work.

A photographic celluloid transparency of the design is made with the use of the special intaglio photo-mechanical screen, and this is wrapped round the copper cylinder, the surface of which has been previously coated with fish glue and bichromate of potash. The roller is exposed under the photographic film to light, and developed with a solution of ferric chloride in the way familiar to photo-engravers, and the roller thus etched is ready for the machine. The roller, while rotating, dips in a solution of printing ink, and the engraved design takes up the ink; a steel scraper removes the excess of ink from the smooth unengraved surface of the copper, so that when the fabric is brought into contact with it, the material takes up the engraved design. A heavy steel cylinder presses a rubber roller against the copper roller, and the fabric passes between the rubber and the copper surfaces. After impression, the fabric is led away over steam pipes, and the printed design dries within a few seconds, when the textile is rolled up.

The very high pressure against the engraved roller and the fine character of the intaglio screen render the results remarkably clear and sharp, and enable the printer to obtain a great amount of detail. Dr. Mertens, who has practically brought this new system to perfection, has succeeded in producing some excellent photographs on fabrics. The grain of the screen is so fine that the results look much like ordinary photographic prints; and this work will probably create a popular new departure in textile printing. Landscapes and portraits can be printed on silks or rough fabrics at will, in any colour.

An important feature of the intaglio process is the rapidity with which the printing can be carried out. With wall papers, something like ten thousand yards an hour can be printed, and it seems quite possible that fabrics may be manipulated with the same speed and facility. The machines for this work are being constructed in Switzerland, and some of them are already in use for the printing of illustrations on very cheap classes of paper.

## Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between August 14 and 19:—

Colour Cinematography.—No. 18,352. Method and apparatus for recording, projecting, and viewing cinematograph pictures in natural colours. William Bradford Featherstone.

Cinematograph Lens.—No. 18,643. Combined cinematographic and other photographic lens. Campbell Thickins Mackay and George Charles Thomas.

Cinematography.—No. 18,668.—Cinematograph apparatus. Eldred John Walter Budd and Ernest Albert Harding.

## New Trade Names.

Popogen.—No. 334,335. Photographic developers. William Hay Caldwell, Morar Lodge, Mallaig, Scotland. June 13, 1911.

Acorn Brand (design).—No. 334,957. Silicate of soda for use in manufactures, photography, and philosophical research. William Gossage and Sons, Ltd., Widnes, Lancs, soap manufacturers. July 12, 1911.

Duraline.—No. 333,341. Glass measures (graduated). John J. Griffin and Sons, Ltd., Kemble Street, Kingsway, London, scientific instrument makers. May 5, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### How to Tell when Prints are Washed.

One of our local amateurs (writes Dr. d'Arcy Power in "Camera-craft" for August, 1911, page 387) has a good scheme for determining just when his prints are thoroughly washed. It is not original, as he claims he read it in one of the foreign magazines at the club, but he is the only one we have ever found using it. It consists of adding one-fiftieth of 1 per cent. of eosine to the fixing-bath employed. The fixing-bath then gives the prints a slight red colour, and when this has been entirely washed out the prints are safely clear of any remaining fixing-bath ingredients. He finds it quite surprising how often a patch of the red colour will be found remaining on some portion of the print, indicating quite clearly that such print has been allowed to remain in contact with another to an extent that prevented the complete washing out of the fixing solution, even when it was thought that the prints had been kept well separated.

### The Acid Bichromate Bleaching Bath for Sulphide Toning.

The advantages of the bichromate bleacher (writes L. P. T. in "Photography and Focus" for August 29) are that it is very cheap, easily made up, easily used, and gives a very fine deep colour, as far as bromide prints and enlargements are concerned. It is best kept as a ten per cent. solution of potassium bichromate, which, at ordinary temperatures, is a saturated solution. If the bottle is shaken up from time to time, and there are always some undissolved crystals at the bottom, it may be assumed that it contains a ten per cent. solution.

To make up the bleaching bath I take as many drams of this ten per cent. solution as I want ounces of bath, and dilute with water to make the required quantity. For every ounce of this dilute solution ten minims of hydrochloric acid are added, and the bath is ready for use. Whatever bleacher may be used there is no doubt that it is very important to get rid of the last traces of hypo from the print before it is applied, as, if this is not done, the print will be reduced. In my own case, I always place the print, or rather the enlargement, for it is only enlargements that I tone, in a dish of water which has been given a decidedly pink colour by the addition of a few drops of a solution of potassium permanganate, and leave it lying there for a few minutes. If, at the end of that time, the solution still has its pink colour, there is no fear of any hypo being present; if the pink colour has been discharged, the hypo was not removed, and the print should be washed and tested again.

The action of the bichromate bleacher is a fairly rapid one, but it should be allowed to continue for two or three times as long as it takes to bleach the print visibly. The bichromate stain must then be washed out, which will require some half-dozen changes of water, spread over half an hour or so. I give several rapid changes, and then leave the enlargement to soak for a little time, repeating the soaking if there is any yellowness left. Nothing then remains to be done but to darken the print with the usual sodium sulphide solution or with ammonium sulphide. Thirty minims of this to half a pint of water makes a solution which acts rapidly and effectively, giving a fine rich brown-black colour. The print is then washed in half a dozen changes of water.

## Meetings of Societies.

### MEETINGS OF SOCIETIES FOR NEXT WEEK.

Saturday, September 2.

Halifax Camera Club. Ramble to Hurst Woods, Saltaire.
Chelsea and District Photographic Society. Outing to Oxshott.
Manchester Amateur Photographic Society. Ramble to Arley Mill and Pool.
South Suburban Photographic Society. Excursion to Oxted and Limpsfield.
Worthing Camera Club. Excursion to Amberley and the Arun.
Southampton Camera Club. Visit to Red Lodge Nursery.

Sunday, September 3.

Borough Polytechnic Photographic Society. Outing to Amberley (Week-end).

Monday, September 4.

Bradford Photographic Society. "Cloud and Sunset Exposures."

Tuesday, September 5.

Hackney Photographic Society. "A Loon in London." W. L. F. Wastell.

Wednesday, September 6.

North Middlesex Photographic Society. Lantern Slide and Print Competitions.
South Suburban Photographic Society. "A Plea for Technique." P. R. Salmon.
West Surrey Photographic Society. "Passe-partout Framing." Mr. Butterworth.

## Commercial & Legal Intelligence.

Legal Notices.—At an extraordinary general meeting of the members of the Vickers Minim Photo. Printer, Ltd., held at the registered office of the company, 3, London Wall Buildings, E.C., a resolution was passed to the effect that the company be wound up voluntarily. Mr. W. H. Hargreaves was appointed liquidator.

A Receiving Order has been made in the case of Rudolph Leonhardt (trading as R. L. Hart), manufacturers of photographic materials, 7, Horsefair Street, Leicester.

* * *

Change of Address.—J. Rudochoff, enlarger, from Swinderby Road, to 45, Regent Square, London, W.C.

Ensign Film Competition.—Mrs. J. Tolhurst, Asheybrook, Polegate, Sussex, is the winner of the "Ensign" Roll Film Competition for August. Houghtons, Ltd., offer a three-guinea camera every month for the best negative on "Ensign" film. The entries close on the third of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

# News and Notes.

Countess Cameras.—Offices and showrooms for the sale of the "Countess" cameras, of the Contessa Camera-Werke, Stuttgart, have been opened at Hampden House, Kingsway, under the direction of Mr. C. W. Caswell.

Labelling Calcium Carbide. — An order in Council, dated August 8, gazetted on August 15, prescribes that the label on a vessel containing calcium carbide shall bear in conspicuous characters the words "Carbide of calcium." "Dangerous if not kept dry," and the following caution: "The contents of this package are liable if brought into contact with moisture to give off a highly inflammable gas," with the addition of the name and address (a) of the consignee or owner in the case of a vessel kept, (b) of the sender in the case of a vessel sent or conveyed, (c) of the vendor in the case of a vessel sold or exposed for sale. The conditions in regard to storage of quantities of 5 lb. and 28 lb. of calcium carbide are unchanged.

The sensation produced on the retina by a source of light of short duration (writes "Nature") has for the last three-quarters of a century been taken as proportional to the product of the intensity of the source into its duration. The early experiments of Talbot and of Swan, and the later ones of Bloch and of Charpentier, provided ample justification for the law so far as it related to sources of considerable intensity. In the "Journal de Physique" for July, MM. A. Blondel and J. Rey point out that for weak sources the intensities of which are not much greater than the lowest perceptible the statement cannot be true, or there would be no lower limit to perception. On this ground they argue that the sensation should be proportional to the product of the excess of the intensity of the source over the minimum just perceptible into the duration of the source, and this conclusion they have verified by means of the measurements made by seventeen observers by two independent methods of observation.

# Correspondence.

## CEMENTING PRINTS TO CELLULOID, SHARPENING WHEEL TRIMMERS, MARKINGS ON CELLULOID FILMS, AVOIDING HALATION IN WINDOW EXPOSURES, STRIPPING GLAZED PRINTS, REMOVING HYPO, AND OTHER MATTERS.

To the Editors.

Gentlemen,—On numerous occasions have I read, in your valuable journal, of which I am a constant reader, questions as to uniting celluloid to prints, sharpening wheel trimmers, etc. I take the liberty of informing your enquirers of my former difficulties and remedies. Doing a pretty large business in the photo-button line, in conjunction with the usual photographic work, I was always troubled with the uniting of celluloid and print, as I found it a rather expensive item to be continually heating a large uniting roller weighing 25 lb. and heated by coal gas with bunsen burner; another expensive item, also, being alcohol, in which prints have to be steeped prior to uniting with celluloid. I do not bother with either of these now, but simply cut the print and celluloid circular with a cutter of the size required, both print and celluloid being separate. I insert the button parts in their respective places in the dies, and place the print on the tin part in the die on the right-hand side of the button-making machine, and place the circular piece of celluloid over the print. I press both down with a blunt penknife, and revolve the die containing the print, etc., under the top die of the machine. I press down the handle of the machine until the top die meets the penknife, which latter I gently withdraw, and then press down the handle of the machine with a jerk as far as it will go. On completing the button, it will be difficult (in fact, impossible) to detect whether print is united to celluloid in the usual way. By adopting this method, intending purchasers of photo-button apparatus would save £2 5s. cost of roller and plate, save the cost of alcohol, and last, but not least, save valuable time and cost of gas.

It may interest your readers to know that on my advice the Vanguard Company, of Maidenhead, are preparing a cement which does not require the use of a hot roller, and which will permanently unite celluloid and print with the least possible delay, requiring only to be rolled with a roller squeegee.

As regards wheel trimmers and sharpening of the same, the latter I found was not needed, and if a drop of oil is applied to the wheel it will be found to run smooth and cut as well as when first purchased. I used myself to purchase a wheel trimmer every fortnight or so, thinking the wheels were blunt, until I had accumulated about a dozen or more supposed blunt trimmers. One day I found a bicycle oilcan handy, and on applying a drop of oil to each, I was greatly astonished to find the trimmers, one and all, to behave splendidly, and have never purchased another trimmer since (two years ago).

There are sometimes strange markings on celluloid side of films which have puzzled a few photographers, for not long ago a gentleman brought me a dozen cut films with these mysterious streaks, which were plainly visible on all the prints. He asked me the cause and cure. On looking at the films, I was also puzzled for an answer as to cause, and on laying a film down on blotting-paper I rubbed celluloid side with a bit of cotton wool charged with methylated spirit, which soon removed these strange markings. I attributed them to the preparation which makers put on the spool which is wound round film. This adheres to latter before being thoroughly dry. The gentleman in question informed me that he took these films to several photographers, who failed to remedy the defects, or give satisfactory explanation as to the cause.

There were a few articles published recently in the "Journal" regarding the development of plates taken with strong light showing through windows, etc. I myself never bother, when photographing interiors, about the right exposure but always aim at over-exposure. I time with the exposure-meter first, and if I find that correct exposure is, say, three minutes, I give nine or ten minutes, not being particular; but prior to development I place exposed plates in a 10 per cent. solution of potassium bromide for two or three minutes, rocking the dish, then rinse plate, and develop in pyro-soda developer made weak with nearly double the quantity of water. If parts of plate come out quicker than expected I keep a bit of cotton wool charged with 10 per cent. solution of potassium bromide and apply to the parts requiring same, and have never failed in obtaining really good, crisp negatives. Plates used, of course, should be of the colour-sensitive variety (ortho- or panchromatic, backed).

A good many readers of the "Journal," no doubt, are troubled with stripping prints squeegeed to glass. To avoid trouble in the future, if they place the prints, after washing well, in a 10 per cent. solution of formalin for five or ten minutes, keeping prints on the move, and then straightway place prints on clean glass or old negatives with glass side cleaned, they will never experience further trouble.

The following method I have adopted this six years of ridding negatives from hypo in about ten minutes, when scarcity of water was experienced. I fill three steel enamel dishes (12 x 10) half full of clean water, place side by side, and in one of the outer dishes I place three half-plate negatives. Taking up one negative in each and, tilting same slightly, I submerge negative again into water, raise and tilt same. This I do three or four times, and place the negatives in dish No. 2, repeating practice the same as in dish No. 1, till negatives are placed in No. 3 dish. I empty Nos. 1 and 2 dishes, rinse, and again half fill with water, and carry on the same practice, till I have given all dishes three complete changes of water. I then empty out and rinse two of the dishes (negatives being in the third); I half-fill both dishes again with cold water, into one of which I pour boiling water till I think water sufficiently warm, which I ascertain by touch of fingers, and which is much warmer than blood heat. I take out negatives as before, plunge them rapidly into the warm water about twice or three times, according to warmth of water, and place in dish containing cold water quickly. Emptying and rinsing third dish, I fill again with cold water, and repeat practice. For the second round, I empty and rinse dish containing the warm water, and again partly fill and pour in hot water, making as warm as before, doing this with other dishes, but with cold water, and precisely as in round No. 1. In round No. 3 I empty and rinse the cold-water dishes only, and not the hot-water dish, which has now become much cooler. I plunge negatives in third round in hot-water dish five or six times, quickly, and place in cold-water dish as before in rounds Nos. 1 and 2. Taking a piece of cotton wool, which I have soaked in cold water, I squeeze it out flat and long; I then take out negatives singly from the cold-water dish and apply cotton wool gently downwards to whole of film side of negative, and then glass side roughly, place negatives on rack or shelf covered with paper, till I have given all negatives the same application, and if it is summer, I leave negatives to dry where they are, and in winter I put them through a bath of methylated spirit.

With some makes of plates I have found that with above method of washing negatives take a very long time to dry, so have used with success a formalin bath (same strength as used for glazing P.O.P. prints), in which I have immersed negatives, prior to being placed on shelf, for five or ten minutes (doing something else in the meantime), and then the usual methylated spirit bath. I always use an acid fixing bath for plates, which greatly prevents frilling of negatives by above method of washing, which does not take as long as it has taken me to explain in writing. One will soon hit on the right temperature of the water by feel of the fingers, after spoiling a few negatives that are of no earthly use. Furthermore, I develop my plates every night, and in summer use less hot water, and if weather is very hot I use "Hypono" instead, but this is very seldom, as nights are cool even in summer, and I perform this operation near a window or door. I have negatives in my possession washed by above method several years ago, that up to the present day show not the slightest trace of hypo.

The following few hints, if observed, will be found very useful. Always use a roll of crinkled red paper to cover your dark-room lamp when developing plates; it gives a brighter red light, and keeps stray white light (if any) off your plates. An umbrella held over your lens in sunlight is better than none. Always aim for a little over-exposure, and use your developer dilute and warm in winter. If your negatives are stained and streaky after washing and drying, rub "Globe" polish, with a little cotton wool which has been slightly moistened with sweet, olive, or even paraffin oil, all over the negative, then wipe with an old handkerchief; repeat "Globe" polish treatment if required. You can also reduce (partly or all over) negatives by this treatment. Should you find negatives not thoroughly dry by morning, and if wanted in a hurry, do not put right away in methylated spirit, but soak them in water first, or you will find a veil over previous non-dry spot on negative. After retouching negative, rub the touched part with cotton wool gently; it softens it. When printing bromide paper, it is better to hold printing-frame further away than too near light. When you purchase printing-frames, drive sprigs to four small corner pieces, so that if frames get wet in dark-room these pieces will not take a notion to fall off. Old negatives come in handy for trimming prints on, glazing glasses for P.O.P., and have before now been used for hot-houses, with film side up. I herewith enclose film negative which was partly cleaned with methylated spirit, also print from same before it was cleaned, which clearly shows the streaks in question. Herewith also enclosed a photo-button in contact with celluloid without the aid of hot roller or cement; also a print in contact with celluloid, using cement recently manufactured by the Vanguard Co., of Maidenhead, on my advice, which did not need the application of a domestic hot iron or roller, simply their cement.—Ever faithfully yours,

FRANK O'CONNOR.

American Portrait Co.,
King Street, Kilkenny, Ireland.
August 19, 1911.

## THE PROPOSED PHOTOGRAPHIC ASSISTANTS' UNION.

To the Editors.

Gentlemen,—I wish to thank all those assistants who have answered my appeal, and offered me their support. It is pleasant to find that the photographic ranks still contain men whose ideas are progressive. It is also very gratifying to find that there are a number of masters who still retain the spirit of the assistant. Those to whom I have sent answer by post, and asked to undertake certain works for me, I trust will perform the duties in a whole-hearted manner. To those assistants who are interested, but are hanging fire to see which way things go, I would say that the matter *must* go forward. If you are to have a Union, it is now or never, therefore give me your support. I intend to agitate until it becomes an accomplished fact. May I ask what is the matter with Scotland? Has that country grown so poor that there are no assistants employed in it? Keep your eyes open for subsequent events.

6, Salisbury Road, Watford. PHIL JARRETT.

To the Editors.

Gentlemen,—Strikes are in the air, and it is not surprising that the idea of a Union as the first step towards collective action on the part of photographers' assistants should be revived at the present juncture. Many attempts have been made to start such a combination, but there has never been any vitality in them, nor do I think there is any prospect of success unless it could be started among the process section of the trade. Your correspondent of last week doubtless means well, but is too verbose and apt to give advice to the profession in general instead of indicating the lines upon which he thinks a successful Union could be formed. It will certainly not be done by trying to teach the masters their business. It seems to me that the only basis on which a successful Union can be formed is that to which Mr. Jarrett so strongly objects, viz., "What am I going to get out of it?" You may persuade well-fed, comfortably-placed men to work for an idea or a principle, but you will never get the 25s. a week man to do it. We want to have a definite programme on the lines of the Chartists, and to try to attain our objects point by point. —Yours truly,

P. B. A.

To the Editors.

Gentlemen,—The appeal to fellow assistants deserves ready and material support to your able correspondent. A united representative body of assistants *plus* the P.P.A., working for the mutual good, would comprise by combined voice and action a power capable of combating evils menacing present conditions. They would command respect for official limit to minimum salary, decrease working hours, and limit the days of opening studios. They could also put a stop to the issue of coupons, which, unlike clubs, draws its custom from those people who could and would pay the gratifications in vogue for their favours.

But I cannot follow Mr. Phil Garrett when he embarks upon partiality against those employers and employees who are forced by circumstances to avail themselves of a "dormant trade," which by reason of cheapness and convenience is converted into a profitable account. I can very well sympathise with those denouncing the opening of studios on Sundays, viewing the question from a religious point. But those entangling it with economical currents and cross currents, arguing that such repressive measures will improve the position, I say this—that their vision is illusory. I would only refer them to an article by Mr. Hood in "Penrose's Annual." Therein they will see that our sister profession, the process trade, is equally bemoaning chaos. Sabbath does not relieve their situation. Why, I ask, does not the P.P.A. endeavour to substitute another day for Sunday and dispense justice to all?

I think that many an assistant could help fellow workers by diminishing that "article de commerce" which your correspondent proudly terms "brains," from the preponderance of supply against demand of labour. Let those start on their own, with camera, enlargement, miniature, frame, and picture postcard, legitimate side-lines of the profession. That would enhance the independence of fellow men, and augment the prosperity of greater photography, embracing the cause of the dealer, camera and lens makers, and allied trades, and make an assistants' union most likely of success. —Yours most respectfully,

A COHEN.

9, Mary Street, Dublin.

## FOCUSSING HELPS.

To the Editors.

Gentlemen,—With reference to Mr. Berlin's article last week, I should like to point out that focussing eye-pieces with a swivelled base so that they can be inclined to any angle upon the ground glass, have been on the market for many years, and can be had from any good dealer. I can speak from experience as to their utility.—Yours faithfully, E. Clifton.

# Answers to Correspondents.

**Photograph Registered:**

R. J. Salter, The Portrait Studio, Station Road, Letchworth, Herts. *Photograph of John Bruce Wallace, M.A.*

**Cushion Rubber Stamps.**—Can you give me in your next issue the maker's name and address of "cushion rubber stamps" (that is, I think, what they are called). It is a rubber stamp that makes a very clean print.—Rubber Stamp.

M. Lindner, Fleet House, Farringdon Avenue, E.C.

**J. C.**—The retouching is quite up to the average, but is overdone on the large head, all the original texture having been worked out. The stipple is rather too coarse on the small heads. The modern practice is to retain the original texture of the negative as far as possible, working very finely only where work is actually needed.

**W. M. J.**—The easiest way to renovate the balustrade is to give it a coat of hot glue, and before this has time to set to cover with coarse sawdust. Do only a small surface at the time or the glue will set. When dry, give a coat of good size, and finish with one of distemper or matt oil paint. You will get a very good stone effect by this method.

**Print-Meter.**—Can you advise me of one or more really good and efficient print-meter for the printing of platinotypes to ensure all prints being alike, of same order? Result, saving of time and cost.—Print-Meter.

Any so-called "Actinometer," as used for carbon printing, may be used. An excellent one is supplied by the Infallible Exposure Meter Co., Wrexham. Messrs. Illingworth and Co. and the Autotype Co. also supply convenient patterns.

**Studio Gas Lamp.**—Would you oblige by stating whether you have had any experience of Adamson's pressed incandescent gas lights for portraiture in studios, or any other similar make of apparatus? We have no electric supply here, and, provided the above could be relied on for dull days and evening work, I should much prefer it to flash powder.—Night Light.

So far as we know, the lamp is not now on the market. Studio gas installations, either of which you will be safe in choosing, are supplied by Kodak, Ltd., and by Howellite Burners, Ltd., Farringdon Avenue, E.C.

**Prices for Shop-Window Photographs.**—Our leading local chemist called me in the other day to photograph a window display for a prize competition. At the time he asked me my charge, and I replied, "I can scarcely tell. I cannot charge you much." I photographed it the following morning, 6 o'clock, and the enclosed is the result. I supplied three copies, and charged him 5s., whole-plate negative and prints mounted. He is of opinion the charge is exorbitant; that 3s. was quite enough. I want your candid opinion on the matter, both as to the work done and the charge made.—T. E. M. E.

For such an excellent result we consider the price most moderate. A common and fair price for taking a half-plate negative (retained by the photographer) and supplying the mounted print is 5s.

**Regimental Designs.**—Can you inform me who will supply me with the following:—A half-plate negative with masks and discs, or black and white drawing of the colours, honours, etc., of any regiment, to be used as a border negative to take cabinet photograph in centre; also mounts with the colours, honours, etc., of any regiment printed in colours, the mounts to take whole-plate pictures.—L. A. F.

You could get a drawing such as you require from any draughtsman if you supplied him with the necessary details, and a rough sketch of what you require. We would recommend you to apply to Messrs. Hood and Co., 18, Wilson Street, Middlesbrough, who would probably supply the mounts, with coloured design as well. You might also enquire of Messrs. Gale and Polden, 2, Amen Corner, London, E.C., and Mr. J. Fallowfield, 146, Charing Cross Road, London, W.C.

**Photographs in the Sea.**—Being a professional photographer, but doing a little ferrotype work in summer months, shall be glad of your advice in your next issue (if possible) on the following:—Have the authorities any claim if I, or anyone, take photographs (ferrotypes), finished while they wait, in the water, about 12 feet? I am there, camera also, take people paddling at their request, and finish it in about sixty seconds. I understand they cannot if below high water mark, or is it low water mark? It is a novelty for the people, and they like it. The authorities charge 10s. per week to work on the sands.—Ferro.

All we can say is you must comply with the local by-laws for the regulation of photography on the beach. You should be able to see these at the offices of your Urban Council. Probably they forbid photography on the beach above *low-water* mark, except on payment of the licence fee, but we cannot say if they can prevent you actually working in the sea.

**Toning with Schlippe's Salt.**—I enclose a bromide print (Wellington "Chamois") toned by means of bleaching in potass ferricyanide and potass bromide, and re-developed in solution of Schlippe's salt. Print took twenty-four hours in the last-named bath before red tone was reached. I shall be obliged if you will kindly inform me in your "Answers to Correspondents" column of any means to hasten the toning action. Also can you suggest any better method of toning bromide prints red?—R. E. D.

We can only suggest that the Schlippe's salt solution is decomposed—it does not keep well—or requires the addition of a little alkali. A suitable formula for the Schlippe's salt solution is:—

| | |
|---|---|
| Schlippe's salt | 25 grs. |
| Soda carbonate cryst. | 15 grs. |
| Water | 1 oz. |

We think you would find the copper toner (Ferguson's formula, as given in the "Almanac," p. 770) the best for red chalk prints.

**Enlarger.**—Referring to the information you kindly gave me (June 30) as to fitting up daylight enlarger with half-plate Kodak camera, and suggesting artificial light as preferable, can I use the same camera without the expense of buying lantern and condenser in a dark-room of considerable dimensions, and with as many incandescent gas burners as might be necessary?—Enthu.

You can, but it is not the most satisfactory method, as it is not easy to be certain of even illumination of the negative. You can work on one or other of two systems:—1. Place a white screen (blotting paper) about 9 or 10 inches behind the negative and illuminate it by a pair of incandescent burners, the negative being thus illuminated by the reflected light. 2. Place a ground glass about 2 inches behind the negative, and behind this again, about 4 inches further back, as many incandescent burners as you can arrange. If you consult your comfort and convenience in working, the best plan is to use an enlarging lantern, a number of patterns of which are now sold at very moderate prices.

**Notice, Plates, and Prints.**—1. On Tuesday I asked my employer if he could allow me to terminate my services by the following Friday evening, as I had an offer elsewhere. He there and then said I must go at once. Can I sue him for two weeks' salary? I was paid weekly. 2. In my spare time I had experimented in operating on my own plates, having photographed the receptionist. My employer offers to pay my salary up to Tuesday night (the day I left) on receipt of all negatives taken as above in his time. I now wish to know if he can claim them. 3. He also retained two dozen prints of my own from above negatives. Has he the right to do so?—Plates.

1. Presuming, though you do not say so, that you were dismissed on the Tuesday, and that you left, you can sue for a week's salary. 2. Certainly he can. He has a right to negatives made during the hours when you were paid to work for him. 3. Inferring from the fact that prints were at the studio, that they were made there in your employer's time, and with his apparatus, we should say he is within his rights in retaining them.

**Prices for Commercial Photographs.**—We are enclosing specimen print of class of work we do for engineering firm in our district. We take the negative and supply three prints, unmounted, from each negative; also hand over the negative with the prints. What do you consider a fair price per negative for this work?

The photographs have to be taken under difficult conditions, amongst running machinery, and bad light. My services are required, say, about once per month, to take from two to six negatives at a time. I should like to give a fair price, as in a country district up to the present it has been a great help to us.—MACHINERY.

A fair price for taking the photograph and supplying one print is 5s. for one job at a time, say, 4s. for a series done at one visit. You should retain the negative or make a further charge for it, say, 1s. to 2s. Your work would be improved if you were to black out or subdue the background of the shop. Erect a portable screen if this is possible, or if not, get a labourer to keep any sort of a screen, even a large newspaper, to and fro behind the machine during the exposure. This will cause the walls, benches, etc., behind the subject proper to show only faintly in the photograph—a great improvement, and done at no expense or trouble.

UNSHARP ENLARGEMENTS WITH ARC LAMP.—Enlarging with an 8-inch condenser and an Aldis lens, No. 7, focus 7.5 inches, lantern fitted with a "Westminster" enclosed arc (specially made for lantern work), lens stopped down to *f*/16, enlarging from half-plate to 9 by 5, all my prints are unsharp. Focussing on another card half an inch in advance (i.e., half an inch nearer lens than easel is) gives an unsharp image on easel, but a sharp print when developed. Why is this? Is it a fault of the lens, or is it due to the intensely blue light given by this type of lamp, and lens not sufficiently corrected for colour? Is there any remedy? Would reversal of the lens alter matters? An answer through your columns would be appreciated.—GEO. SMITH.

Your difficulty is not uncommon in enlarging with the enclosed arc, and is due, we believe, to the excess of ultra-violet rays in the light. We have known it occur with the best lenses. The remedy is to focus sharply on the easel and then shift this latter forward for the distance found necessary by trial. For such a moderate degree of enlargement we wonder why you should choose so powerful a light. You would secure equally good results with an incandescent mantle, working the lens at *f*/6 or *f*/8, at which latter aperture you will obtain better illumination and still satisfactory definition.

PYRO-SODA DEVELOPER.—In your next issue would you kindly advise me as to the following :—I want to use your "B.J." pyro-soda developer in Kodak tank for Kodak roll-films, 3½-inch: 1. What should be the proportion of dilution, i.e., what quantity of developer to water? 2. What temperature and time should be allowed to complete development? I use the developer ordinarily as follows :—

| | |
|---|---|
| A.—Soda sulphite | 2 ozs. |
| Potass metabisulphite | ½ oz. |
| Pyro | 160 grs. |
| Water to | 20 ozs. |
| B.—Soda carbonate | 4 ozs. |
| Water to | 20 ozs. |

BEGAN.

The "B.J." pyro-soda developer is rather a slow-working formula, and is therefore not so well suited for tank development as others, as it requires to be used stronger. We have not used it ourselves for tank work, but would suggest mixing the solution prepared with A 1 part, B 1 part, water 2 parts, with 4 to 5 times its bulk of water, that is, 18 to 22 parts of water in all, for each part of A or B solution. Try this on a film or two in a dish and see how it works out for time. The developer should be between 60 and 65 deg. F. in temperature.

EURYSCOPE LENS.—I am using for studio work a Euryscope lens (Optimus) 9 in. × 7 in., *f*/8. It works very well under good conditions. I can get single figures or a group of two without using a stop, but when I get a group of five or six or more figures I have to stop down to *f*/11 or *f*/16 to get the outside figures sharp. This is not a serious matter when there is a good light and when the persons are adults, but when the light is bad and there are young children, it means under-exposed negatives if I stop down, or edges out of focus if I use a larger stop. Could I use either of the lenses named (Ross No. 3 Portrait, or Dallmeyer 3B Portrait) at full aperture, *f*/3, and get a group of seven or eight persons all sharp, and get depth of focus for two, or even three rows? I am asking this because they are so expensive, even secondhand, and also because I have had one of the modern anastigmat lenses for trial, and found what I gained in sharp definition to the edges of the plate I lost in depth of focus, which compelled me to stop down as much for depth of focus as I have to for sharpness with an ordinary lens. Are there any of either of these lenses named to be had without the diffusing arrangement?—CYMRU.

Most Euryscope lenses have rather a round field, and you will get the best results at large apertures by arranging your group so that the outside figures are nearer to the camera than the central ones. You would get better results with an anastigmat, as you could arrange your figures in straight lines, then, after focussing the central row, you could bring the front and back into focus by means of the swing back. When working in this way the camera should be kept high and the lens tilted downwards, to avoid convergence of any straight lines in the background. The portrait lenses you mention are not well adapted for groups, as they will require more stopping down than the Euryscope. The Ross Portrait lenses are not provided with the "diffusion" adjustment, which is also absent in the Dallmeyer "Ordinary" Portrait lenses.

DEVELOPMENT WITH EIKONOGEN.—Would be much obliged if you can assist me in my difficulty by answering my letter through your inquiry column. I have restarted photography, and purchased the recent issue of the Concise Library to refresh my memory. The following formula is given, which I made up :—A sol. : Sodium sulphite, 2oz. ; eikonogen, 180grs. ; hydroquinone, 120grs. ; water, 20oz. B sol. : Potassium carbonate, 1oz. ; water, 20oz. One part of A to 2 parts of B are mixed. My first plate with the fresh developer showed a fairly good negative of Glasgow Botanic Gardens. My other plates have all blackened in a short time, showing a whitish-grey through the back, which would not remove, although left in the developer for some time. I used—plates, but have been unfortunate with them. Every plate I have put into a rack-tank have washed completely away in a minute or two. Can you inform me if above solution has any keeping qualities, or must I make it fresh every time I am about to use it? I must not blame the make of plate, seeing they are made commercially, as it would sooner or later affect the firm's business; but am afraid I will require to try some other brand in my next efforts.—D. R.

We should say that both the fogging and the softening of the films are due to too large a proportion of potass. carbonate in the developer, aggravated probably by the recent hot weather, during which, we take it, the exposures were made. A formula for eikonogen-hydroquinone developer which we have long used with great satisfaction for negatives, bromide papers, and lantern-plates, is as follows :—

| | | |
|---|---|---|
| A.—Hydroquinone | 40 grs. | 4.5 gms. |
| Eikonogen | 120 grs. | 14 gms. |
| Sodium sulphite | 480 grs. | 55 gms. |
| Citric acid | 20 grs. | 2.3 gms. |
| Water to | 20 ozs. | 1,000 ccs. |
| B.—Potass. bromide | 5 grs. | 0.5 gms. |
| Sodium carbonate | 60 grs. | 7 gms. |
| Caustic potash | 30 grs. | 3.5 gms. |
| Water to | 20 ozs. | 1,000 ccs. |

For use, mix in equal parts.

Either stock solution will keep for a month or two.

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The British Journal of Photography.

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TERMS OF SUBSCRIPTION, Post Free

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THE BRITISH

JOURNAL OF PHOTOGRAPHY.

No. 2679. Vol. LVIII. FRIDAY, SEPTEMBER 8, 1911. Price Twopence.

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## SUMMARY.

We describe the remarkable results of experiments made with the new Hydrazine plates, which are to be issued shortly by the Paget Prize Plate Company. Certain fallacies, or misconceptions, which appear already to be entertained in regard to the Hydrazine plates are likewise the subject of our editorial comment. (P. 678.)

Mr. G. Watmough Webster, in a contributed article, deals with the practice of recovering gold, silver, and platinum from photographic residues. He deals more particularly with suitable receptacles for waste solutions, the recovery of silver from fixing baths, and with the collection of the precipitate ready for the refiner. The method adopted in the case of platinum residues is that in which powdered zinc is used to precipitate the metal. (P. 680.)

In an article on page 678 we deal further with experiments on the change which soda sulphite undergoes in solution.

A good deal of correspondence in reference to the proposed Photographic Assistants' Union will be found in our columns this week. The letters include the views both of assistants and master photographers, but in the absence of any definite declaration of the policy of a proposed Union from those engaged in its promotion, it is difficult for any of the correspondents to deal pertinently with the question. (P. 693.)

In the continuation of the article by Mr. H. D. Curtis on methods of silvering mirrors, practical and scientific details connected with polishing the silver deposit are given. (P. 681.)

A correspondent from Canada refers to the effective use made by him of stereoscopic photographs of machinery, jewellery, etc., employed for use by travellers. (P. 695.)

Some practical points in the working of the Ozobrome process and in artistic mounting are the subject of paragraphs under "Analecta." (P. 691.)

Under "Patents of the Week" are described details of a circular pocket camera and of an exposure indicator for dark slides. (P. 689.)

## EX CATHEDRA.

**Sunburnt Sitters.** Holiday makers are now returning in force, and in our city streets almost every other face seems to show evidence of a sojourn at the seaside or on the breezy downs. Unfortunately, this healthy tint does not conduce to pleasing portraiture, the skin appearing dirty, in spite of prolonged exposure, and necessitating an amount of retouching which is almost certain to interfere with the likeness. Those who do not already habitually use them should try rapid isochromatic plates for this class of subject, giving full exposures with fairly open lighting. A light-filter will not be of much advantage unless the sitter has blue eyes. Panchromatic plates give even better results, but many photographers probably still hesitate to develop their portrait negatives by time only, and even the dimmest red light will cause fog.

* * *

**Wanted, A Style.** The excellent idea of having a standard sized mount and portfolio or album for moderate sized portraits, which was discussed at the last P.P.A. Congress, does not seem to have caught on with the public generally, possibly because comparatively few photographers adopted it. Nothing would be more welcome to photographers in general than the introduction of a new style, which, like the carte de visite, would be in universal demand. The old family album has gone, and is not likely to be revived in any form. There has long been a tendency to increase the size of mounts, making the photographs costly to give away and troublesome to store or display, and it might be worth while to try the effect of small highly finished work, say, enamel surface carbons, not larger than C.D.V., mounted in the *passe-partout* style ready for hanging or for framing if desired. Possibly some of our readers may have other ideas for a style which might become generally fashionable, and in that case we shall be pleased to print their suggestions.

* * *

**Exit Over-Exposure.** Since writing in our issue of August 18 on the new Hydrazine plates, to be issued in due course by the Paget Prize Plate Company, we have had an opportunity of seeing for ourselves the extraordinary powers of the new plate in the way of immunity to over-exposure. Selecting a somewhat flat subject, and therefore one particularly liable to suffer by over-exposure, we exposed nine plates out of a dozen supplied to us by the Paget Company, giving them times of exposure which ranged from 4 to 100 times that which we ascertained to be correct for a fully exposed negative. In other words, the correct exposure for a plate of the rapidity of the "Hydrazine" being one second at *f*/32, we gave times from 4 seconds to 1 minute 40 seconds on the series of nine plates. We also exposed a further two plates for 250 and 500 seconds, respectively. The first batch of nine plates were all developed by the Paget Company in the same solution, a specially prepared tank developer which will be shortly placed upon the market. The only difference accorded to the different plates was in the time of development, which ranged from 45 minutes to 1 hour 35 minutes. Each of the nine negatives thus obtained is thin, bright, and a thoroughly good printer in P.O.P. The series, in fact, if it were shown to a photographer ignorant of the method of production, would be judged to be a set made by timing a series of exposures as exactly equal to each other as possible. The limits of exposure in this series naturally are greater than those which could readily be made by mistake in practical photography, yet such differences may readily arise in photographing difficult subjects, such as landscapes seen through an open door, market-places photographed through an archway, and many similar scenes where intensely dark objects, as well as those of light tone brilliantly illuminated, occur in the same subject. The ability of the new plates to deal with such problems as this without any elaborate juggling with solutions is simply the corollary to the properties of the Hydrazine emulsion. In the case of the two plates which received 250 and 500 times the correct exposure, a modified developer was used, the negatives in these two cases being almost indistinguishable from the others of the series.

* * *

**Halation and Non-Reversal.** It should, of course, be mentioned in reference to these remarkable plates that they will necessarily be issued with an anti-halation backing. We may fittingly emphasise the fact since, in a contemporary, Mr. Frederick H. Evans, with characteristically genial enthusiasm, assumes that the non-reversing properties of the plate necessarily dispense with any need of backing. We fear that Mr. Evans must for an instant, when penning his breathless paragraph, have fallen under a misapprehension of the cause of halation. Obviously, the non-reversing properties of an emulsion are powerless against the effect of light reflected from the back of the plate or scattered by the grains of the emulsion, so that it falls in the wrong place. As a matter of fact, the great exposures to which the Hydrazine plate is likely to be subjected tend to provoke the production of halation, but fortunately in the recently introduced invisible backing of the Paget Company we have a remarkably perfect preventive of the defect. In not a single instance of the negatives to which we have referred above was there a sign of halation, though the subject, one of buildings against the sky, would have readily shown it. The properties of the Hydrazine plates are sufficiently distinctive to support the belief of their extreme usefulness in practical photography, and it would, therefore, be a pity at the outset to allow to pass unchallenged claims for them which a moment's consideration will show to be untenable.

* * *

**The New London.** The London of Thackeray and Dickens has practically disappeared, only a few landmarks, mostly public property, being preserved to us. The Strand, as middle-aged men once knew it, is no more, and even the classic district of Fleet Street is undergoing a silent yet speedy reconstruction. Dr. Johnson's house remains in Gough Square, but the old buildings on either side have in the last few years made way for tall warehouses and workshops. Almost without Londoners knowing it, a city of palaces is being erected above their heads, could they but spare a moment from dodging the traffic to see it, and the wonder is that no photographer has yet turned his attention to the street architecture of the metropolis in a systematic manner. It seems to us that a well selected series of the more distinctive buildings in London, regarded from an architectural point alone, would find many purchasers, either for single prints, for groups of certain styles, or for a complete record of the state of domestic architecture of the present date. Naturally, the pictures should be of an important size, certainly not less than twelve inches by ten, and should be printed in a permanent medium, preferably collotype, so that the price should not be prohibitive if a number were required. We are confident that a thoroughly up-to-date photographer with an eye for the picturesque would find his reward both in kudos and cash by appointing himself as "architectural photographer to London."

## EXPERIMENTS ON THE DECOMPOSITION AND PRESERVATION OF SODA SULPHITE SOLUTIONS.

## II.

In 1907 we pointed out in the "B.J." for April 26 that exhausted solutions of sodium sulphite sometimes contained bicarbonate and sometimes hydrate of soda, the former being the case when the sample originally contained a small quantity of carbonate and the latter when the initial proportion of carbonate was large. These results were fully confirmed in the recent experiments recorded in our issue of August 18, but these latter experiments also showed exceptions.

Considering first the solutions that contained no extra excess of carbonate at the start, while half of the final solutions in which the sulphite was exhausted were neutral to phenolphthalein and alkaline to methyl orange, the rest were still feebly alkaline to the former indicator. Tests showed that these latter contained no hydrate. A fresh solution of the sulphite is invariably alkaline to phenolphthalein, which fact indicates the presence of an alkaline substance which is not sulphite, for this salt is neutral to that indicator though alkaline to methyl orange. No hydrate can, in our experience, ever be detected in a fresh sulphite solution, whereas carbonate is always present; so the inference is that this alkalinity is due to carbonate alone, the presence of which salt is almost inevitable, considering that the usual method of manufacture involves its use. When an exhausted solution is alkaline to methyl orange alone it is fairly evident that this alkalinity must be due to bicarbonate, which may be formed either by the access of carbon dioxide to the solution or by the action of an acid liberated as the result of the decomposition of the sulphite. The evidence points to the latter being the true explanation, because careful titration shows, as a rule, a slight diminution in the amount of carbon dioxide present, while a solution that when fresh is made exactly neutral to methyl orange is strongly acid to the same indicator when exhausted. We have no evidence as to the nature of the acid, and owing to the minute quantities involved it is not easy to settle the point.

The amount of carbonate found in fresh solutions varies, and may in good quality samples be anything up to about 5 per cent. It is easily comprehensible that if, say, 5 per cent. exists, or if less acid than usual is liberated, the solution when exhausted of its sulphite may still contain a slight residue of carbonate and so be feebly alkaline to phenolphthalein. On the other hand, if the initial amount of carbonate is small, or if the acid set free is large in quantity, the whole of the carbonate may be converted to bicarbonate, and some of the latter may be also neutralised. These assumptions fully account for the phenomena we have observed, as they explain why the final solution is sometimes alkaline to phenolphthalein and sometimes only to methyl orange, and also why there is often an apparent loss of carbon dioxide.

We may add that we cannot trace any of these effects as peculiar to any particular sample. Each sample seems capable of yielding any one of the results mentioned, and so it is reasonable to assume that the determining cause is the amount of acid formed, which may vary with the rate and manner of decomposition of the sulphite. It is very noticeable that no solution becomes neutral to phenolphthalein so long as any sulphite exists, while all dilute solutions, that naturally deteriorate rapidly, eventually do become neutral to that indicator. With strong solutions the results cannot be foreseen, and the chances in favour of the final solution being alkaline to either phenolphthalein or to methyl orange alone seem about equal.

The effects produced when an excess of carbonate is added to the sulphite are not, so far as we can see, capable of any simple explanation. The final exhausted solution is of course always alkaline to phenolphthalein, but if the exhaustion is recent, or if it is not complete, part of this alkalinity is due to a hydrate. This we also found to be the case in 1907 (see "B.J.," April 26, 1907). In fact, it appears that the hydrate is formed or set free at a very early stage in the life of the solution. The largest amount we have found in a solution which originally contained equal quantities of carbonate and sulphite was about 3 per cent. of the weight of either one of these salts. The only suggestion we can offer in explanation of the phenomena is that in the presence of a large excess of alkali the decomposition of the sulphite follows a different course, no acid being liberated, and alkali being formed instead. In this case possibly the other decomposition products also differ, which is not an improbable assumption, in view of the admitted fact that they do vary considerably with different modes and rates of oxidation.

The question of the contents of exhausted sulphite solutions is a most interesting one, and worth further research. So far as the alkaline contents are concerned, our recent work fully confirms the results obtained in 1907, but we have not attempted the far more difficult task of determining the other contents which result from the decomposition of the sulphite. Popularly, of course, it is always considered that sulphite oxidises to sulphate, but this idea is only very partially correct. Sulphate may, perhaps, be the final result, but dithionate is most certainly formed in intermediate stages. Even the contents of a freshly made sulphite solution are not known with any certainty. Taking sample B as a specimen, this when fresh contained 86 per cent. of sulphite with about 5 per cent. of carbonate, and it is unsafe to assume that the remaining 9 per cent. was either all sulphate or all dithionate. Sample D contained 91 per cent. sulphite and about 4.5 per cent. carbonate, leaving 4½ per cent. of unknown material. Here possibly we may have the secret of the good keeping quality of the B sample as compared with D, for the 9 per cent. of unknown compounds may have included something in the nature of a preservative. The fact that the two samples containing the smaller proportions of sulphite kept the best is a somewhat important one to remember, for then efficiency may have depended on the presence of some beneficial impurity that was absent in the other samples. In the next article the method of analysis adopted will be more fully described, and some special phenomena noted will also be considered.

# HOW I TREAT RESIDUES.

The article by "Marchons" which appeared in the last "Colonial" Number is so very practical that it might be thought sufficient for all purposes; but, though my own methods run on parallel lines, there is sufficient variation in them to render it worth while just now to carry out my promise of last year when writing on this subject with accurate quantitative data that I would describe my own methods of treatment. The conditions under which residues become available have greatly changed since my first article on the topic in these pages—about forty years ago! Then, albuminised paper held the vogue; it was sensitised every day, and the amount of surface nitrate of silver was so considerable that there were few photographers who did not save at least the first and second print washings before toning. Even then there was also the used "hypo fixing solution," rich in auriferous silver; yet very little of it was collected throughout the country, though from that day to this I have never ceased, in season and out of season, preaching the gospel of hypo residues. To my certain knowledge, one of the largest portrait publishing firms in the country some time ago threw all their discarded hypo solution down the sink, at a loss to themselves that might be counted by hundreds of pounds sterling in a year.

### Receptacles for Waste Solutions.

At the present time the P.O.P., which has almost entirely supplanted albuminised paper, has so much smaller a content of silver, either on the surface or within the film, that many think it useless to save any waste from it; yet it is, as I showed by actual exact weighings of results, well worth while to collect both print washings and used hypo solutions. But, except in establishments on a manufacturing scale, it is not worth while to have separate receptacles for each, and in my studios it has not been done for years. All waste solutions containing silver go into one jar. When I first started residue collecting I used the jars described by "Marchons," or, rather, a form known in Lancashire as a "pan-mug," and used for milk: bread jars often have an awkward rim for holding a lid. After a while I discarded them for wooden vessels, made for me by a cooper, and somewhat like a barrel with oaken staves, but shaped like a laboratory precipitating jar—wider at bottom than top, so as to reduce the tendency of the precipitate to lodge on the sides. They had each two handles screwed on near the top, and were provided with wooden spigots for drawing off the spent liquor. Coated with black varnish periodically, and kept in the open air, they yet were good at the end of twenty years. I then designed a jar of Doulton ware, similar in shape, registered the pattern, and left the sale in the hands of Houghtons. It had a spigot hole about four inches from the saucer-shaped, almost flat, bottom, and below it, level with the bottom, another of wider aperture, and screw stopper, for easy withdrawal of the precipitate.

At one of my studios the only receptacles have been the three-gallon stoneware jugs made by Doultons, a pair of them used alternately being capable of dealing with a fair amount of silver liquids. The ordinary brown earthenware jugs, even if obtainable of so large a size, are useless: hypo seems to act on the glaze, and in a very short time will eat its way through to the outside, as also I found to happen with the vessels "Marchons" describes. These Doulton ware jars and jugs remain intact after twenty and ten years' use respectively. The jugs have large, strong handles, and render it easy to pour off all the supernatant fluid after a few days' rest.

### Gold-Sulphocyanide Baths.

The above writer refers to his slight use of gold toning baths; but, as in most photographic establishments gold toning still occupies an important position, this article would be incomplete without a reference to recoverable gold.

Firstly, for the average photographer, it is no use preserving old sulphocyanide toning solutions in order to precipitate the gold from them; such precipitation is beyond the power of the amateur chemist, simple enough though it is with the old alkaline gold toning solutions, which were precipitated with ease by the simple addition of sulphate of iron solution. All such used-up baths should be poured into the universal receptacle; the gold is then thrown down along with the silver, and the enhanced value of the precipitate is considerable. I have seen the allowance reach as high as thirty per cent. upon the market price of the silver at the time.

My experience with waste silver-containing paper differs from "Marchons'" since the disuse of albuminised paper, with its accompaniment, old silver bath filter papers, wiped-up splashes, etc. Then, the result was valuable; but the last experiment I made was with clippings and old P.O.P., some very little bromide paper, and no fixed prints at all. When burnt, the result was a goodly heap of ashes; but when they were sent to the refiner with instructions to reduce them apart from the other residues, the charge for reduction exceeded the value of the metal obtained. Probably there was less bromide paper in this instance, and so a smaller proportion of silver. The refiner charges a certain sum for each pound weight of stuff delivered to him for reduction.

### Avoid Too Much Sulphide.

It is probably the case that the main obstacle to the universal saving of hypo wastes is the dread of complicated work (salt for paper washings is so simple), and also of the fumes in close apartments. It is, of course, better to conduct the operations in the open air; but where that is not possible, there will be little smell if care be taken not to add too much of the sulphide of potassium solution. Whenever a scum forms on the surface of the jar it may be safely assumed that there is an excess of sulphide present—objectionable, first, because of the stronger offensive fumes given off, and, next, for the reason that a strong solution of sulphide of potassium may re-dissolve the precipitated gold, just as excess of salt will take up a certain amount of chloride of silver when treating print washings. *En parenthèse,* I may here make a note of a recent experience showing in how many ways saving may be effected. A quart jar in which for a space of twelve months there had always been a frequently changed store of *used* sulphocyanide gold toning baths was being discarded, when, as it was being cleaned before putting away, I noticed there was quite a dark colour inside, due to the deposition of gold. As a matter of curiosity, I dealt with it. The jar was well rinsed out, and then there was poured into it a small quantity of freshly mixed aqua regia, a cover put over the mouth of the jar, and all left to stand overnight. Next morning all the brown deposit had disappeared, it having been dissolved by the acid. The liquid was poured into a precipitating jar, and sulphate of iron was added. A precipitate was quickly formed and had settled in an hour or two; it was washed several times to free it from acid, thrown on to a small filter paper, re-washed there, and finally dried and burnt out of any current of air. The result, which was mainly pure gold, was 11½ grains. Dissolving this in a small quantity of aqua regia, transferring to a small porcelain evaporating dish, and placing it (where the draught was carried into a chimney) on a hot stove, with little more trouble than it takes to describe it, there were produced about 22 grains of chloride of gold recovered from the inside of an old jar. I only mention this actual experience to show possibilities. I do not suggest wasting time for the sake of two or three shillingsworth of chloride of gold.

### Acid Fixing Baths.

Before leaving the question of waste hypo solutions, it is highly desirable to utter an especial warning. The use of acid fixing baths, both for plates and bromide papers, is now so general that it may be assumed that all collected hypo residues will have an acid reaction, and in that case they must be neutralised or rendered alkaline before adding the sulphide, for if this be not done the only precipitate will be a valueless one of sulphur, through the decomposition of the sulphide by the acid, resulting either in loss of silver or great waste of sulphide. The simplest way of combating this possibility is, when first beginning the filling of the jar, to throw in a handful of washing soda, which will generally be in excess when the jar is filled up. In any case, the production of a pale-coloured precipitate would be a sign that more soda was wanted.

### Collecting the Precipitate.

The storage and use of the sulphide is well described by Marchons, so need not be further referred to; but the collecting of the precipitate is another matter. I have two large Doultonware funnels (glass would answer equally well, but is so easily broken). These I line in the usual way with filter paper, and turn the "mud" into them; when well drained a compact magnum of silver sulphide remains. This is emptied out on to a double sheet of filter paper, and dried, either in the sun, or by placing on the top of a stove, with a good draught to take off the fumes, as the mass of sulphide generally gives off penetrating sulphurous acid vapour.

### Platinum Residues.

I will conclude these notes by a reference to platinum. Those using platinotype paper may be sure that, especially with the enormous price the metal has attained to of late, attention will be well rewarded in case of waste prints (undeveloped) and waste developing solutions. I am experimenting on a larger scale on a method that may be carried out by inexperienced hands. At the outset I worked with small quantities on a laboratory experimental scale only. The result was 7s. 6d., nothing of itself, but sufficient to show promise in the future. If my further treatment succeeds, I shall be pleased to publish the details in these pages.

Since the above account of my practice was written I have become able to give the few necessary details about platinotype residues. What I have to say does not in the main differ from the particulars given by Messrs. H. P. Robinson and Son in these pages on June 9. I collect all the used-up developing solutions in two jars, and thus give the first-filled one time to deposit the metal, while the solution is accumulating in the second, vigorously stirring from day to day, the chief difference in our practice being that while they use granulated zinc, I have preferred powdered zinc, which can be readily bought for a shilling a pound at most. Further, I add to the accumulating solution a small quantity of crude carbolic acid, as I find a fungoid growth takes place if this addition be not made, the result being to add to the bulk of the residue, and render its collection less easy. I also added a little sulphuric acid to the mass, so as to dissolve away the unused zinc, and afterwards washed it with several changes of water. It is advisable to keep to their lowest weight all residues that are to be sent to the refiner, as he usually bases his charges on the gross weight received. I think my average is a little higher than Messrs. Robinson's, viz., 12 per cent., as against their 10; but, unfortunately, I cannot speak decisively, as an accident occurred to one batch, and I could only estimate its contents.

I may say that I have tried many methods of heating platinum wastes before arriving at this simple plan, the precipitation with strong solution of ferrous sulphate usually recommended not being practically successful with me. In conclusion, I may say that Messrs. Robinson and Son's experience and my own incontrovertibly prove the great desirability of saving and treating all waste platinum solutions.

G. Watmough Webster, F.C.S.

# METHODS OF SILVERING MIRRORS.

[A paper in the "Publications of the Astronomical Society of the Pacific," Vol. xxiii., February, 1911.]

## III.

### Burnishing.

MAKE two rubbers of best chamois skin, stretched over balls of absorbent cotton. Go over the entire surface in circular strokes, first with a plain rubber to harden the film. Then grind a little best optical rouge into the chamois of the other rubber and repeat. Dust mirror frequently during polishing, and occasionally run the edge of a knife over the pads to "scruff" them up; then dust the pads with a camel's hair brush to prevent the solid particles of rouge from making scratches. With a perfectly deposited coat only a few touches with the rouged pad will be necessary.

Of the methods given above, Brashear's is probably the most used. The writer has always used this method in silvering the mirrors of the Mills reflector at Santiago and the Crossley reflector. Properly applied, it gives a very thick, bright, and tough film, which will stand many burnishings. Dr. Ritchey, of Mount Wilson Solar Observatory, prefers it also to any of the other processes which he has tried, and states that films deposited by this method on the small mirrors of the 60-inch reflector have remained in perfect condition as long as eighteen months with occasional reburnishing. A good coat at Mount Hamilton should last at least nine months.

Dr. Schlesinger uses Brashear's process at Alleghany essentially as given above. The mirror is not removed from the telescope, and the solution is kept in motion by moving the telescope back and forth in right ascension. He finds it essential to dry the mirror quickly after the silver has been deposited; for this purpose he employs an electric fan, and does not attempt to silver unless the atmosphere is tolerably dry. He writes:—

"For burnishing we use chamois and rouge or a good grade of absorbent cotton and rouge. Occasionally we have secured coats that are beautifully bright without burnishing, but even in these cases we have found it desirable to burnish at once, as the life of the coat is thus prolonged.

"In our situation we silver the 30-inch mirror once a month and the secondary (hyperboloidal) mirror every two weeks. In the violet and ultra-violet portions of the spectrum the mirrors decrease considerably in effectiveness only a few days after they have been renewed.

"When the mirrors are not in use they are protected by metal covers lined with absorbent cotton. The latter is pressed into contact with the silvered surfaces, and effectually prevents the oxidation that would otherwise rapidly spoil the silver.

"Although the tube of the telescope is entirely open and the mirrors are thus directly exposed to the heavy dew that we occasionally have here, we have never noticed the least deposit of moisture on the mirror. Care must be taken, however, not to expose the mirrors when they are colder than the air, as in that case the moisture immediately condenses on the silver, and seems to get between it and the glass."

The air at Mount Hamilton is, of course, almost absolutely free from deleterious vapours which would injure the film, so such frequent silverings have not been found necessary. The flap which covers the mirror of the Crossley is about three feet above the mirror, but is never closed in the summer time; the mirror is occasionally dusted with a very soft, fine feather duster to clean off the light dust which gradually collects on the surface.

In some localities the deterioration of the silver coat is so rapid that considerable thought has to be given to methods for protecting the film. A method due to M. Izarn[1] consisted in coating the mirror with a thin film of bichromatised gelatine, and was tried with some success at the observatory of Toulouse. Perot[2] describes the method of forming a very thin film of celluloid over the silver film:—

"After having thoroughly washed, dried, and polished the mirror, and having very carefully removed all dust, a dilute solution of celluloid in amyl acetate is poured over the surface. The operation can be performed at ordinary temperatures, and the commercial solution, known as Japon varnish, diluted with about its volume of amyl acetate, serves very well. The mirror is tilted so as to let the excess drain off, and is dry in half an hour. Broad, strongly coloured interference bands (colours of the third order) should then be seen on the surface, showing that the uniform thickness of the celluloid is about 0.5μ. Under these conditions the images are bright, sharp, and show no diffusion if the film of celluloid is thin. The results obtained at the observatory of Meudon from the use of this varnish are very favourable. Among others, a plane mirror 60cm. in diameter, which formerly had to be silvered every month in the year, lasted nearly six months, and without doubt could have been used longer if the washing after silvering had been made with greater care. The protecting coat is rather soft, and care should be taken to avoid scratches. The dust which gradually collects on the surface should be removed by a very gentle dusting."

All silvering processes appear to be very wasteful. Dr. Common removed a fine coat from his five-foot mirror after a year's use. On weighing, the thickness of the silver film was found to be 1/280,000 of an inch =907 tenth-metres. Of the 400 grams of nitrate of silver used in depositing the film on 1.7 grams was laid down as silver.

Chloride of silver can be deposited from the spent solutions by the addition of common salt, and the silver thus ultimately recovered.

A thick film will have a much longer life than a very thin one. Quincke states that he silvered a small mirror with a very thick coat (Petitjean's process, employing tartaric acid as reducer) which stood one hundred and fifty reburnishings.

A convenient way of determining the thickness of a silver film is due to Fizeau.[3] "To determine the thickness of the deposit of silver a bit of iodine was placed on its surface, and allowed to develop about it, under the influence of its emanation, coloured rings of silver iodide till the spot occupied by the iodine became entirely transparent, the silver coat at that point being transformed into yellow iodide through its entire thickness.[4] From the point where the vapours of iodine had not touched the silver up to that where the metal was entirely transformed into iodide, there was a series of coloured rings beginning with white, and which, counted with a red glass, were found to number nine. The series ceased about the middle of the ninth bright ring. The index of refraction of silver iodide being 2.246 . . . , the ninth bright ring gave for the thickness of the silver iodide 0.00193 mm. Thence was derived 0.000294 mm. for the thickness of the silver coat."

Fizeau describes this film as "very thin, but nevertheless of perfect opacity." It was certainly a very thick film, and more "massive" than is ordinarily secured. Another film, which he describes as opaque to light of moderate intensity only (silver foil) gave Nobili's rings to the fourth bright ring, corresponding to a silver thickness of 1,102 tenth-metres; the sun could be seen through this film, coloured a very rich blue. A still thinner film of a greater degree of transparence showed the iodide rings to the second bright ring, corresponding to a thickness for the silver film of 367 tenth-metres.

For the use of this method, the following table will suffice:—

Thickness of the original silver film as determined from Nobili's rings in silver iodide.

| | | | |
|---|---|---|---|
| To first dark ring | 180 | tenth-metres. | |
| To second bright ring | 370 | ,, | ,, |
| To third bright ring | 740 | ,, | ,, |
| To fourth bright ring | 1,100 | ,, | ,, |
| To fifth bright ring | 1,470 | ,, | ,, |
| To sixth bright ring | 1,840 | ,, | ,, |
| To seventh bright ring | 2,200 | ,, | ,, |
| To eighth bright ring | 2,570 | ,, | ,, |
| To ninth bright ring | 2,940 | ,, | ,, |
| To tenth bright ring | 3,300 | ,, | ,, |

The colour of the silver transformed to silver iodide may instead be determined by reflected light. If $e$ is the thickness of the air film which would show the same Newtonian colour as that given by the silver iodide film, then from

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[1] "Comptes Rendus," 118, 1314, 1898.

[2] "Comptes Rendus," November 2, 1909.

[3] "Comptes Rendus," 52, 274, 1861.

[4] For the symmetrical production of these rings (known as Nobili's rings) it is well to avoid the effect of air draughts by placing a funnel or beaker, which should not fit too closely to the surface, over the crystal of iodine.

The atomic weight of silver $= 107.9 = Ag$
The atomic weight of silver iodide $= 234.9 = IAg$
The specific gravity of silver $= 10.55 = d$
The specific gravity of silver iodide $= 5.6 = d'$
The refractive index of silver iodide $= 2.15 = n$

the thickness of the silver film from which the silver iodide was formed is :—

$$= \frac{Ag}{IAg} - \frac{d'}{d} - \frac{e}{n} = 0{\cdot}114e$$

Thence we have the following table, adapted from Drude's table in "Wied. Ann.," 50, 607, 1893; the colours are Quincke's :—

TABLE FOR DETERMINING THICKNESS OF SILVER FILMS.

| Thickness of original silver film in tenth-metres. | Colours of silver iodide film in perpendicularly reflected white light. | |
|---|---|---|
| 0 | Black | First Order |
| 38 | Iron grey | |
| 56 | Lavender grey | |
| 94 | Bluish grey | |
| 112 | Clear grey | |
| 146 | Greenish white | |
| 167 | Straw Colour | |
| 186 | Bright yellow | |
| 223 | Sorrel | |
| 261 | Reddish orange | |
| 279 | Warm red | |
| 298 | Deeper red | |
| 317 | Purple | Second Order |
| 336 | Indigo | |
| 373 | Sky blue | |
| 410 | Greenish blue | |
| 429 | Green | |
| 467 | Clearer green | |
| 484 | Yellowish green | |
| 503 | Greenish yellow | |
| 521 | Pure yellow | |
| 540 | Orange | |
| 577 | Reddish orange | |
| 615 | Dark violet red | |
| 652 | Clear bluish violet | Third Order |
| 671 | Indigo | |
| 708 | Blue (greenish) | |
| 746 | Sea green | |
| 783 | Brilliant green | |
| 821 | Greenish yellow | |
| 840 | Flesh colour | |
| 877 | Carmine red | |
| 914 | Dull purple | |
| 933 | Violet grey | |
| 952 | Greyish blue | Fourth Order |
| 971 | Dull sea-green | |
| 989 | Bluish green | |
| 1026 | Fine pure green | |
| 1101 | Clear grey-green | |
| 1139 | Grey, almost white | |
| 1157 | Flesh red | |

A still more accurate method of determining the thickness of the silver film was employed by Drude in the paper quoted, but requires some subsidiary apparatus, and would be very difficult of application to a surface not plane. The film is transformed into iodide by Fizeau's method, and a narrow strip of the iodide is then scratched off. A plane glass plate is then placed over the film so as to make a very thin prism of air, whose refracting edge is perpendicular to the direction of the strip. The interference fringes thus produced by homogeneous light show a shift where they pass over the strip freed from iodide, and from the magnitude of this shift the thickness of the original silver film can be very accurately determined.

Conroy, with a film 845 tenth-metres thick, states :—"The film appeared opaque by ordinary daylight, but when examined with sunlight was seen to be slightly transparent, and of a deep blue colour." Double silvering gave a film 1737 tenth-metres thick. "This film was not absolutely opaque, as the disc of the sun on a clear day could be just seen through it, but it transmitted much less light than the film previously used."

The amount of light reflected from silver films has been determined by a number of investigators, though there is some difference in the results secured. As is well known, silver is more or less transparent to the ultra-violet rays, as may be illustrated by the following data as to the percentage of light reflected at perpendicular incidence, taken from Landolt und Börnstein's Physikalisch-Chemische Tabellen :—

| Wave lengths. | Per cent. reflected. |
|---|---|
| λ3050 | 9.1 |
| 3160 | 4.2 |
| 3260 | 14.6 |
| 3380 | 55.5 |
| 3570 | 74.5 |
| 3850 | 81.4 |
| 4200 | 86.6 |
| 4500 | 90.5 |
| 5000 | 91.3 |
| 6000 | 92.6 |
| 7000 | 94.6 |
| 8000 | 96.3 |

Langley found the following values :—

| Wave lengths. | Per cent. reflected. |
|---|---|
| 3500 | 61 |
| 3800 | 73 |
| 4000 | 79 |
| 4500 | 85 |
| 5000 | 89 |
| 5500 | 91 |
| 6000 | 93 |

Much naturally depends upon the freshness and condition of the film. Schlesinger states that a good coat will reflect about 85 per cent. of the incident light at λ 4860, and about 70 per cent. at λ 3934.

The amount of reflectivity as depending upon the thickness of the film has never been adequately investigated, though much work has been done on the other optical constants of silver films of different thickness.

Sir J. Conroy has made some related investigations on this point.[5] He used Martin's process for depositing the films. "The room in which the silvering was carried on being very cold the action was slow, and till at least five minutes had elapsed there was hardly any deposit; the slips were removed successively after 8, 11, 14, and 18 minutes, well washed with water, and placed on edge to dry." By weighing the glasses with and without the films, the thicknesses were calculated as follows :—

Film I., removed after 8 minutes, thickness 404 tenth-metres
" II., " " 11 " " 685 " "
" III., " " 14 " " 772 " "
" IV., " " 18 " " 900 " "

His results indicated that the optical constants of a polished silver plate depended to a certain extent upon the substance with which it had been polished, and that this surface condition was a fairly permanent one, not being destroyed by contact with liquids or by a considerable amount of rubbing with a clean chamois leather. He found in particular that a film polished with rouge had a slightly reddish tinge; using putty powder instead, the principal azimuths of the reflected rays were considerably higher and differed but little for red, yellow, and blue light, whereas when polished with rouge, these increased with the refrangibility of light. He found also that the principal incidence and principal azimuth both increase with the thickness of the film, and that therefore it seemed that more than one layer of molecules was concerned in the act of reflection. This would indicate that light polarised perpendicularly to the plane of incidence penetrates to a greater depth in the film than that polarised in the plane of incidence.

The observations of Wiener and Drude show also that for thin films the optical constants are very different from those of "massive" silver, for the refractive index of silver in very thin films (0.02λ =120 tenth-metres) is greater than unity, while it is less than unity for "massive" films, i.e., those nearly or entirely opaque (0.1 λ = 600 tenth-metres).

As is well known, silver appears under a number of allotropic forms, three of which have long been recognised—namely, crystalline silver (tree-formed crystals), "mirror" silver, and granular or powdered silver. In addition to this there are a number of other interesting allotropic modifications produced by special methods—

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[5] "Proceedings" Royal Society, 31, 486, 1881.

silver possessing the yellow colour and lustre of gold, another like copper, and others brown and green. These allotropic modifications possess the curious property that the powdered moist mass may be spread upon a surface with a brush, and when dry, they possess the characteristic metallic reflecting power, and are apparently as coherent and unbroken as a film deposited in the ordinary way. All these forms are somewhat unstable, and the gold-coloured silver and the copper-coloured variety soon change into ordinary mirror silver under the action of light or of a moderate degree of heat. I have had test films on beakers which were so golden in appearance that it seems certain that a portion of the coat at least was the gold-coloured allotropic variety. Considerable work has been done on these allotropic forms.[6]

Oberbeck found that the electrical resistance of chemically deposited silver films decreased greatly with time. This change was quite rapid for the first few days, becoming slower later, and was still decreasing slowly after 641 days, when the electrical resistance averaged only about 15 per cent. of that of freshly deposited film. He used Böttger's method, and it was his opinion that a considerable portion of the freshly deposited film was an allotropic modification of ordinary "mirror" silver. Lüdtke corroborated these results for mirrors silvered by the same process, and also for mirrors silvered by Drayton's and Petitjean's methods. Mirrors silvered by Liebig's and Martin's processes, however, showed no such decrease in resistance with the time. All these investigators state that the outward appearance of the mirrors remained the same, but it is unfortunate that none of them appear to have carried on tests of reflectivity at the same time with the electrical tests. The decrease was quickened by the direct action of sunlight just as in the experiments made with allotropic forms the change to ordinary mirror silver was similarly hastened. The suggestion has been made that the bleach seen on a mirror left too long in the silvering solution is the granular powdered form of silver.

HEBER D. CURTIS.

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[6] Vogel, "Pogg Ann.," 117, 316, 1862; Oberbeck, "Wied. Ann.," 46, 265; 47, 353' 1892; Lüdtke, Ueber die Eigenschaften verschiedener Siebermodificationen, Inauguraldissertation, Greifswald, 1893, and "Wied. Ann.," 50, 678, 1893; Carey Lea, "Amer. Jour. of Science,' 37, 476; 38, 47, 237, 1889, "Phil. Mag.," 31, 238, 321, 497; 32, 337, 1891.

# THE EFFECT OF THE ALKALI IN PHOTOGRAPHIC DEVELOPMENT.

[The following is a translation made with some abridgment of a thesis describing an investigation carried out by M. Louis Bourgeois for the doctorate of science of the Lausanne University. The full text of the paper forms a volume of 116 pages, published by E. Lavanchy, Morges, Switzerland.—EDS. "B.J."]

## III

### The Effect of the Proportion of Soda Sulphite.

SODA sulphite in the developing solution plays the part of a preservative, retarding the oxidation of the developer proper by the oxygen of the air. It is, therefore, well to see if the sulphite does not give rise to precipitation of metallic silver, and, in the case when the precipitation has been complete, if the reaction is thereby reduced in rapidity. M. Reeb[12] has already answered the first question in the negative. The test was made as follows:—1 gm. of silver nitrate was precipitated with caustic soda, the precipitate washed by decantation and suspended in distilled water. 14 to 15 ccs. (=.07 to .075) hydroquinone were then added, the mixture kept well stirred while heating it in order to produce complete action of the hydroquinone. The precipitate was collected on a filter, washed with water, and then with diluted (10 per cent.) acetic acid, which dissolved the silver oxide but leaves the reduced metallic silver unaffected. The filtered solution gave a marked turbidity on addition of hydrochloric acid, showing the presence of silver oxide unreduced by the hydroquinone.

By taking 16 ccs., equivalent to .08 gm. of hydroquinone, no turbidity was produced, that is to say, this quantity suffices to reduce completely 1 gm. silver nitrate. The figures obtained by this method, and by that in which the silver oxide is dissolved in soda sulphite, are absolutely identical, and it is therefore clear that the soda sulphite itself does not affect the quantity of silver reduced.

It was further desirable from the photographic standpoint to study the action of a greater or less proportion of soda sulphite on the colour and grain of the precipitated silver. A series of solutions of anhydrous sulphite were prepared of increasing strength, and the original experiments repeated with these different concentrations. As a normal quantity for the solution of the silver oxide formed from 1 gm. of silver nitrate, 5 gms. of soda sulphite was taken. The series of solutions was as follows:—

1.— 5 gms. $Na_2SO_3$
2.— 8 ,, ,,
3.—10 ,, ,,
4.—15 ,, ,,
5.—20 ,, ,,
6.—30 ,, ,,

In proportion to the increase in the quantity of sulphite, the precipitation of the silver, although complete in all cases, falls off in rapidity. The grain of the reduced silver is finer, but its colour passes from a brownish-black to greyish-black, and then to a still lighter grey.

It then remains to determine the normal quantity of sulphite requiring to be added to developer in order to assure good keeping properties. These figures have been given by M. Reeb, but as the quantity of sulphite depends not only on the quantity of developer, but also on the proportion between developer and alkali, complete experiments would have led us too far from our immediate purpose, and we therefore take the figures hitherto accepted and forming the basis of the majority of formulæ.

The quantity of alkali, caustic or alkaline carbonate, which is theoretically necessary in development, is readily determined. The method employed in practice is based on the reactions:—

$$2\,Ag\,NO_3 + 2M^1OH = M^1NO_3 + Ag_2O + H_2O$$
$$2\,Ag\,NO_3 + M_2CO_3 = (Ag_2O + CO_2) + 2\,M^1NO_3$$

1 gm. silver nitrate would thus require $\frac{KOH}{AgNO_3} = .329$, or of

| | |
|---|---|
| Caustic potash | .3294 gm. |
| ,, soda | .2353 ,, |
| ,, lithia | .1452 ,, |
| Potass carbonate | .4057 ,, |
| Soda carbonate anhydrous | .3117 ,, |
| Soda carbonate cryst. | .8411 ,, |

.08 gm. of hydroquinone corresponding with 1 gm. of silver nitrate, the figures given above will be modified as follows in order to give the quantity of alkali to be used with 1 gm. of hydroquinone.

| | |
|---|---|
| KOH | 8·2350 |
| NaOH | 5·8825 |
| LiOH | 3·6300 |
| $K_2CO_3$ | 10·1450 |
| $Na_2CO_3$ | 7·7925 |
| $Na_2CO_3.10H_2O$ | 21·0275 |

We thus arrive at the last section of these determinations on the reducing power of hydroquinone, namely, the confirmation of the figures obtained. This is based on the following facts:—Metallic silver and likewise reduced silver are insoluble in even strong acetic acid. Oxide of silver dissolves completely, even a very weak acid being able to dissolve appreciable quantities. A note has already been made of the fact that a wash-water, in volume about 100 to 150 ccs., and containing 30 drops of acetic acid (99 per cent.) per litre, had dissolved a quantity of silver oxide, estimated at between 1 and 5 per cent. of the total used in experiment.

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[12] "L'hydroquinone," Gauthier Villars, p. 7.

In confirming or otherwise the figures given above, silver oxide was dissolved in sodium sulphite and a quantity of E/200 hydroquinone solution added in quantity sufficient for complete reduction, say, 14 ccs.; the precipitate was filtered off, carefully washed, first with water, and then with dilute acetic acid, 100 ccs. of 99 per cent. acetic acid in a litre of water. A few drops of sodium chloride solution were added to the washing water, and a faint turbidity showed the presence of a small quantity of silver acetate in solution, and therefore the fact of silver oxide unreduced by the hydroquinone.

The experiments were made with the two solutions of hydroquinone, the E/200 and E/1000.

E/200 solution.—1. 15 ccs. of hydroquinone were added to the solution of silver oxide in sodium sulphite, the precipitate washed with 10 per cent. acetic acid, and sodium chloride solution used to test the washing water. An immediate precipitate.

II. Added 15.5 ccs. of hydroquinone and treated as before. A fainter precipitate.

III. Added 16 ccs. hydroquinone. No turbidity.

The figures thus obtained correspond with those resulting from the direct method.

We have made experiments by titrating the dissolved silver, which, had they been successful, would have provided a very exact indirect method. But the results obtained were not sufficiently accurate: the Volhardt and chromate methods of titrating silver are evidently interfered with by the substances produced by the oxidation of hydroquinone.

E/1000 solution.—I. Added 78 ccs. hydroquinone solution, and then treated exactly as for the E/200. On addition of a few drops of hydrochloric acid to the wash-water, a turbidity was produced.

II. Added 79 ccs. and proceeded as in I. A slight turbidity.

III. Added 79.2 ccs. and filtered. A scarcely perceptible turbidity.

It was not possible to detect traces of silver dissolved beyond this point, say, 79.2 to 79.7, the average obtained by the direct method.

Gravimetric Method.—We were thus forced to seek for an exact method of determining the reducing power of the developer. The simplest appeared to be to weigh the silver reduced by a known weight of developer, operating as follows:—15 ccs. of a 10 per cent. solution of silver nitrate were precipitated by 20 ccs. of E/200 hydroquinone solution, equivalent to .1 gm. According to the figures previously given, there should be an excess of silver. The solution was filtered, the precipitate well washed and ignited, the reduced silver undergoing no oxidation in the air. As a control, the silver remaining in the filtrate was precipitated with sodium chloride, after having acidified with nitric acid and removed the excess by evaporation.

In a first experiment an excess certain of silver solution was taken, precipitated by a known quantity of reducer, the reduced silver weighed, and from this information obtained as to the exact quantity of silver which it is necessary to take, in the case of a given developer, in order to have a slight excess of silver in the filtrate after the reaction. This excess of silver can be controlled qualitatively by sodium chloride. In cases where this method can be conveniently applied, it is possible to see whether there is any variation caused by the presence of a greater or less excess of silver.

The following points were examined:—

1. Concordance of the results for a given quantity of silver in the presence of excess of hydroquinone. For this a given quantity of silver nitrate was precipitated with an excess of hydroquinone or other reducer, the excess of hydroquinone in the filtrate collected, and caused to act on a further quantity of silver, this time in excess. From the figures previously obtained, one will know the quantity of hydroquinone passing into the filtrate. This, from the weight of reduced silver obtained, and thus, by difference, the quantity of hydroquinone which has reacted on the known weight of silver in the first part of the experiment.

2. The effect of dilution with water of the silver and hydroquinone solutions upon the figures obtained. From this it will be seen if the reduction proceeds in accordance with the reaction which can be expressed as a simple equation between the reducer and the silver salt, or if the phenomenon is modified by hydrolysis.

3. The effect of temperature on the progress of the reaction.

In the first experiments made, 50 ccs. of an E/30 solution of silver nitrate was used = 1.6667 silver nitrate, equivalent to 1.0588 metallic silver. The following results were obtained:—

I. Silver nitrate = 1 6667 reduced Ag calculated as $AgNO_3$ = ·3072
Hydroquinone = ·1000 Ag (AgCl) „ „ = 1·3285
1·6357

II. Silver nitrate = 1·6667 reduced Ag calculated as $AgNO_3$ = ·2936
Hydroquinone = ·1000 Ag (AgCl) „ „ = 1.3406
1·6342

III. Silver nitrate = 1·6667 reduced Ag calculated as $AgNO_3$ = ·2883
Hydroquinone = ·.000 Ag (AgCl) „ „ = 1·3223
1·6106

These figures do not correspond absolutely to those obtained by the method above described. The precipitate of silver is not regular, either in appearance or quantity. It is, moreover, very difficult to collect it, as it forms a metallic mirror on the containing vessel in consequence of the slowness of reduction.

According to the first method, where the reduction was carried out on the mixture of silver oxide and hydroxide, .08 gm. hydroquinone served to reduce 1 gm. silver nitrate to the metallic state. With the latter method, .1 gm. hydroquinone gave .28 to .30 gm. silver calculated as silver nitrate, whereas one should have obtained 1.25 gm. silver nitrate. A further series of tests gave the following results:—

| | I. | II. | III. | IV. | V. |
|---|---|---|---|---|---|
| Silver reduced ... | ·1952 | ·1909 | ·1882 | ·1930 | ·1893 |
| Silver chloride ... | 1·1326 | 1·1209 | 1·1252 | 1·1365 | 1·1295 |
| =Silver ... ... | ·8527 | ·8436 | ·8467 | ·8550 | ·8496 |

Say, as a mean—

Silver reduced ... ... ... ... ·191
Silver ... ... ... ... ... ·849
or, Total ... ... ... ... 1·040

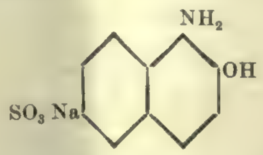
We had weighed out in the above experiment 2.5 gms. silver nitrate, equivalent to 1.5882 gm. metallic silver, dissolved this in a little water, reduced it with .1 gm. hydroquinone, that is to say, with a quantity somewhat less than that necessary for the reduction of 2.5 gm. silver nitrate. The unreduced silver was determined by means of a 10 per cent. solution of potass chloride.

As regards the discrepancy between these results—which cannot arise from experimental error, since practically identical results have been obtained by a colleague—we have not further examined the action of excess of hydroquinone on a known quantity of silver, and we have not made further experiments on the effect of dilution, since the result obtained with hydroquinone solution of E/50 and E/1000 respectively are in agreement.

On the other hand, it has not been possible to prove that the reduction follows a simple reaction, since the tests for quinone have given negative results. We hope to study more completely this reaction by physico-chemical methods or by the method already given, employed under conditions identical with those prevailing in the volumetric method. We shall study, at the same time, the effect of temperature in the direct reaction of hydroquinone on silver nitrate.

### Eikonogen.

This substance, discovered in 1888 by Dr. Andressen, is the sodium salt of amido (1), naphthol (2), sulphonic acid (6), corresponding with the formula:



The sample which we used was that of Siegfried, of Zofingue. The sample had the following properties:—

| | |
|---|---|
| Melting point ............................ | Decomposes before melting. |
| Solubility in water at 15 C. ........... | 2 parts per 100. |
| Solubility in boiling water ........... | 13 to 14 parts per 100. |

As in the experiments with hydroquinone, we prepared solutions E 50, E/100, E/200, E 400, and E/1000.

E/50 Solution.—This being practically a saturated solution of eikonogen, a slight change in temperature caused it to deposit a substance, and therefore we rejected it for any measurements.

E 100 Solution.—I. 10 ccs. of eikonogen solution were added to 10 ccs. of nitrate. The precipitate is much finer than that produced by hydroquinone, and is first grey, then yellowish. The liquid, after filtering, is yellow, a bichromate colour. On bringing the filtered solution to the boil and adding a further 10 ccs. of eikonogen, a precipitate more yellowish than the first was produced. Again filtered, and added 5 ccs. more. A less dense precipitate, the colour of the filtered liquid being from orange-red to greenish-yellow, and the liquid itself opalescent. A further 5 ccs. produced distinct turbidity, and a still further addition of the same quantity, turbidity at the end of a few moments. Further addition of reducer produced no effect, even on prolonged boiling. The reducing power is thus measured by a quantity falling between 30 and 35 ccs.

II.—Added 30ccs., filtered, brought the filtered liquid to the boil, and added 2ccs. more. Almost immediate precipitate. On again filtering and adding further 2ccs., a precipitate at the end of a few moments. Further additions of 1, 2, and 5ccs. gave no further turbidity, even on boiling some time.

III.—Added 34ccs., filtered and added a drop or two of the eikonogen solution and then 1 and 2ccs. No further turbidity.

The reducing power is thus measured by the 34ccs. = .34 gm. eikonogen.

E/200 solution. I. 60ccs. of solution were added, and the precipitate—still finer than that produced by the E/100—filtered, giving an orange-red solution. A further 2ccs. gave an immediate precipitate, the next 2ccs. a very fine turbidity, which required two filterings to produce a clear liquid. A further 2ccs. gave a turbidity at the end of a short time. Added 1cc., a faint turbidity after five minutes, and no further effect on adding 1, 2, 3, and 5ccs. This represents a figure of 67ccs., equivalent to .335 eikonogen, the two other tests giving .34 and .335, in each case with the E/200 solution.

E/400 solution. The results are practically the same, namely, as follows:—

I. 136ccs. = .340gm.
II. 137ccs. = .3425gm.
III. 136ccs. = .340gm.
IV. 137.5ccs. = .3439gm.

It would thus seem that in the case of eikonogen, as in that of hydroquinone, there is a slight increase in the reducing power with the concentration of the reducing solution.

E/1000 solution. The note made in reference to hydroquinone on the uncertainty of the results with the dilute solution apply also here, even in the case of the E/200. We have therefore made a series of solutions of silver oxide in sulphite to which have been added increasing quantities of reducer.

I. Added 330ccs., filtered and added 5ccs. Turbidity in the course of a few minutes on boiling.

II. Added 335ccs., filtered and added 3ccs. No result. Added 2ccs., slight turbidity on boiling.

III. Added 340ccs., filtered, added 5ccs., 1cc. at a time. Scarcely perceptible turbidity on boiling for six or seven minutes. The results are less certainly obtained with this E/1000 solution than with hydroquinone. This is probably due to the fact that its energy is four times that of hydroquinone.

Reducing power of eikonogen E/1000 is thus 345ccs. = .345gm.

In verifying these figures we used the indirect method in the case of the E/200 and E/1000 solutions.

E/200. I. Added 30ccs. to the solution of silver oxide, filtered, washed with 10 per cent. acetic acid, and added a few drops potass. chloride solution to the filtered liquid. Distinct turbidity.

II. Added 32ccs. eikonogen, filtered, washed, etc., as before. Turbidity.

III. Added 33ccs., etc. Turbidity on addition of potass. chloride.

IV. Added 34ccs., etc. Scarcely perceptible turbidity on addition of potass. chloride.

V. On adding 35ccs., no turbidity was produced with potass. chloride.

E/1000 Solution.

I. Added 35ccs., filtered, added potass. chloride, turbidity.

II. Added 337ccs., filtered, added potass. chloride, turbidity.

III. Added 340ccs., filtered, added potass. chloride, slight turbidity.

IV. Added 343ccs., filtered, added potass. chloride, no turbidity.

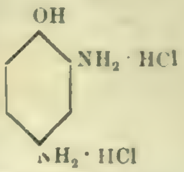
The figures obtained are in fair agreement with those of M. Reeb (.33), but give a lower reducing value than that found by Lumière (.30).

A further commercial sample has given somewhat weaker reducing power, a figure of .36.

The influence of soda sulphite is noteworthy. The silver deposit is rendered whiter, and its grain finer, by increasing the sulphite. As regards the quantity of silver reduced in presence of increasing quantities of soda sulphite, it does not vary.

## Amidol.

This hydrochloride of diamidophenol, corresponding with the formula—

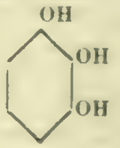


resembles eikonogen in that it decomposes before melting. The solubility in cold water is fairly great, the plain solution rapidly becoming coloured in the air. At the end of about fifteen hours we found that a bottle of E/200 solution became a deep red-wine colour. The amidol used was that of Hauff, the solutions examined being of strength E/20, E/50, E/100, E/200, E/500, E/1000. Adopting the method already given for hydroquinone, we found that the reducing power of the solution E/20 is 3ccs., namely, .150. In the case of the E/50 solution these figures are 7.6ccs., or .152. For E/100 solution, the figures are 15.5ccs., or .155; for E/200, 79ccs., or .158; whilst for the E/1000 solution the reducing power was found to be .162.

As a result of the experiments, it may be said that the reducing power of amidol ranges from .150 for E/20 solution to .162 for E/1000. As in the case of preceding reducers, the strength of the solution thus exerts a certain influence. Soda sulphite has an effect similar to that observed in other cases, namely, reduction of the size of the silver grain and lighter-coloured deposit of silver as the sulphite is increased. Also, dilution of the solutions has the result of reducing the grain.

## Pyrogallic Acid.

Pyro, corresponding with the formula—



was used from a supply obtained from the firm of Bender and Hobein, having a melting point of 130 deg. C., and a solubility of 38 per cent. The sample dissolved in water and in alcohol without leaving any residue, so that it was evidently free from gallic acid and sugar, the substances most commonly employed in its adulteration. The strengths of solutions tested for reducing power were E/10, E/50, E/200, and E/1000. In the case of the E/10, the reducing power was found to be approximately .097; for E/50, .098 to .1; E/200 solution, .1; E/1000, .100.

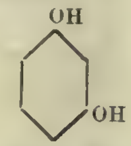
The reduction of grain and lighter colour of deposit are likewise obtained by increasing sulphite. The reaction with pyro is much sharper than in the case of other reducers, especially at the strengths from E/10 to E/200. It will be seen that increase of strength slightly increases the reducing power.

### Piral Hauff.

In the case of this variety of pyrogallic acid, which differs from the previous sublimed pyro only in its crystalline form, we made a series of tests with an E/200 solution, the results being .1090, .1100, .1095, and .1100.

### Pyrocatechin.

This developer is a diphenol isomeric with hydroquinone and corresponding with the formula—

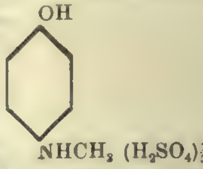


The supply obtained from Bender and Hobein had a melting point of 100 deg. C., and boiling point 240 deg. C. The solutions tested were the strengths E/50, E/200, and E/1000. The figures obtained for the reducing power were: E/50, .072; E/200, .0740 to .0755; E/1000, .0745 as the mean of five measurements.

The measurements with pyrocatechin were not easy to make with exactness, but the average value may be taken as .075. There is no special note to be made on the developer, except as regards the remarkable fineness of grain of the reduced silver. Also, pyrocatechin does not seem to follow the rule of giving increased reducing power on increasing the strength of the solution.

### Metol.

This developer, the sulphate of methyl-para-amidophenol,



$$NHCH_2\ (H_2SO_4)_{\frac{1}{2}}$$

was used only in the two strengths E/200 and E/1000. In the case of the E/200 the reducing power was found to vary from .1175 to .1225. The figure obtained for the E/1000 was .120, which figure may be taken as a fair average for this developer.

*(To be continued.)*

# DEPTH OF FOCUS IN RELATION TO THE LENS AND THE PLATE.

(A translation of a paper by M. Raoul Ellie, in the "Photo-Midi," in which the author deals very fully, and by aid of illustrative numerical examples, with the principles of depth of focus calculation).

In dealing with problems of depth of focus, most authorities admit a constant diameter of the circles of confusion, a course which is reasonable as regards sharpness in its presumption that prints are invariably viewed at the minimum distance of normal clear vision, say, about 30 cm. But in order to obtain the effect of correct perspective, a photographic print should be placed at a distance from the eye equal to the focal length of the lens with which the negative was taken, that is to say, if this print was made by contact from the negative. In this case, as has been noted by several writers on the subject, notably Dr. von Rohr and M. Thovert, it is best to take the diameter, $e$, of the circle of confusion, as varying in proportion to this focal distance, $f^1$, which comes to the same thing as taking the ratio $e/f^1$, which we will call $\epsilon$, as constant. This ratio, $\epsilon$, we will express in the form of a fraction, in which the numerator is 1, calling this the co-efficient of angular definition.

Assuming that the print can give the same effect of sharpness as that of the objects themselves, the co-efficient, $\epsilon$, should correspond to one minute in circular measurement, that is to say, to very nearly 1/3,500, the value given by ophthalmologists to the definition of sight of normal vision. Certain writers, nevertheless, hold that a co-efficient of 1/1,000 is sufficient in many cases, but in regard to this, as has been stated by Dr. von Rohr,[1] "it is obviously unnecessary to fix the angular standard of distinctness at one degree; every multiple will do as well if, for scientific or artistic purposes, a higher or lower standard seems desirable. . . . But whatever standard we may use, it seems advisable to employ the angular and not the linear measure."

### Focus Formulæ.

When a group of objects, fairly close to the camera, but occupying a certain depth of field between two planes at distances D (the smaller), and $D_1$ (the larger), have to be photographed, the first thing which requires to be done is to choose the focussed plane conjugate to the plane image. Admitting that the diffusion images of points in the two extreme limiting distances are circles of which the diameters, $e$, are equal, it may be shown that the distance $D^1$ of focussed plane, corresponding to a maximum working diameter of the diaphragm, is given by the formula:—

$$(1)\quad D^1 = \frac{2D_1D}{D_1+D}$$

If the diaphragm is open to its largest aperture, and if an object is present at this distance, exact focussing may be done on the ground glass in a given light, or, if the apparatus (accurately made) is provided with a focussing scale, carefully graduated, the position of the plane image may be obtained by setting the index opposite the division $D^1$ of the scale. This method of procedure is the only one possible when working under conditions of extremely weak lighting.

In order to adjust the diameter of the diaphragm, it is necessary greatly to reduce it when near objects are separated by a considerable depth of field. The brightness of the image on the ground glass may then be so reduced that it is impossible to form an idea of its sharpness in the case of objects in the extreme distances, even if these are strongly lighted. It is preferable then to calculate this diameter from formulæ, choosing a suitable coefficient $\epsilon$.

Calling the working diameter O, focal length F (for infinity), the denominator of the relative diameter $n$, and the ratio of O to $\epsilon$, H (that is to say, the "distance of opening")[2], it may be shown that these quantities may be related among themselves, and to $D_1$, and D by the equations:—

$$(2)\quad H = \frac{2D_1D}{D_1-D} \qquad (3)\quad O = \epsilon H \qquad (4)\quad n = \frac{F}{O}$$

Taking $D_1 = \infty$, $H = 2D$. According to (1), we have $D^1 = 2D$, to which latter the name hyperfocal distance is given. The distance of opening and the hyperfocal distance are distinct dimensions, but having the same numerical value, as is noted by Welborne Piper in "A First Book of the Lens." This writer gives to H the name of "depth constant," that is, on the hypothesis that $e$ is constant. As a general rule, H is spoken of as hyperfocal for finite values of $D_1$, although strictly this term should apply only to cases where $D_1$ equals infinity, or is very great. Having determined H by formula (2), O is obtained by multiplying this distance by $\epsilon$, that is to say, by dividing it by the denominator of this co-efficient. The focal length F not occurring in (2), it is seen that the working diameter calculated for given values of $D_1$ and D applies to all lenses of a given value of $\epsilon$. It thus appears rational, from the point of view of depth of focus, to graduate diaphragms in millimetres of their working diameter, and we shall see later that, in order to make allowance for the effects of diffraction the diameter O should not be less than 2.5 mm. But, as a general rule, diaphragm markings take the form of ratios or fractions of these diameters for the easier computation of times of exposure. In this case it is necessary to know the focal length F in order to calculate $n$ by dividing F by O, and afterwards determining the number of the graduation corresponding to $n$ by aid of a table of comparative values of lens-diaphragms systems.

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[1] "B. J.," July 19, 1901.

[2] It may be noted that H is the distance at which the diameter O is seen over an angle corresponding with $\epsilon$. For the minimum value of $\epsilon$, this is the distance beyond which one can no longer distinguish between the disc of confusion and a point.

The problem of focus above referred to is obviously involved in all those cases where a number of objects are photographed, and the distances, D and $D_1$ known, and was involved in the conditions under which I formerly devised combined stereoscopic prints.[3] Here it was impossible to obtain the maximum sharpness of focus, since there was no principal object, the two groups of objects (the images of which were to be seen in the stereoscope in direct relation) having each only a few decimeters of depth, and being separated by a distance of several metres. I adopted the hypothesis of a constant $e$, which gave me a more complicated diaphragm formula than that corresponding with a constant $\epsilon$. The working diameter thus calculated depends on the focal length F of the lens used, whilst that which is based on the theory of a constant $\epsilon$ is independent of F, and thus applies to all lenses.

Most of the authors who have treated the problem of focus have assumed that $D^1$, $n$ (or the corresponding value of O) are given, and deduce the distances D and $D^1$, or the near depths $D^1 - D$ and far depth $D^1 - D^1$, corresponding to a given value of $e$. But, for the reason indicated at the commencement of this article, it appears preferable to take the hypothesis of $e/f^1 = \epsilon$ constant.

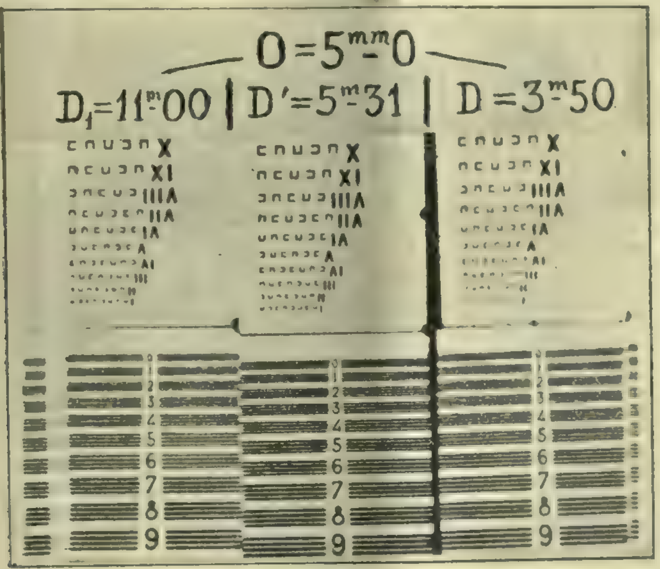

Fig. A.

Knowing F, $n$, or O, we have:

$$\text{(5 and 5A)} \quad H = O/\epsilon \text{ or } H = F/n\epsilon$$

$D^1$ and H being known, it is sufficient, in order to determine D and $D_1$, to solve the equations (1) and (2) for these distances. We thus have:

$$\text{(6)} \quad D = \frac{HD^1}{H+D^1} \qquad \text{(7)} \quad D_1 = \frac{HD^1}{H-D^1}$$

### Direct Calculation of Minimum $\epsilon$.

It appeared of interest to me to verify, by observations made at the distance of correct perspective on the photograph of the test charts, consisting of groups of four parallel lines and of square shape hooks (which I have designed for this purpose), whether the minimum value of $\epsilon$ corresponds practically with one minute of arc. I will here indicate very briefly the principle of the method employed. I drew the three pairs of charts on scales proportionate to the extreme distances $D_1$ = 11 metres, D = 3.5 metres, and to that of sharp focus $D^1$ = 5.31 metres. I then photographed these at these distances, after having adjusted the extension of the camera, so that the image of $D^1$ (5.31 metres) was always the sharpest, whilst the two others had the same degree of confusion. I used the series of effective apertures 6, 5.5, 5, 4.5, 4, 3.5, 3, 2.5 millimetres. The eight triple prints thus produced are identical in appearance, but differ in sharpness, according to the values of O for the images of the extreme distances. The lens used was a Zeiss anastigmat, of 12.4 cm. focal length, but the focal distance for 5.31 metres was 12.7 cm. The negatives were enlarged on the scale of 6.95, and the correct perspective distance being then 6.95 x 12.7 cm., or 88 cm., it was not necessary to use a converging lens for purposes of accommodation of the eye. An observer with sharp vision has judged that there is practically the same impression of sharpness for the three images of the trio-print made at the aperture of 3 mm.

Formula 2 gives H = 10.27 metres, whence, by formula 3, we obtain $\epsilon$ = O/H. As O = .003, O/H = 1/3422, which corresponds almost exactly with one minute of arc. As the minimum value of O appears to be a little less than 3 mm. we can take 1/3500 as the minimum value of $\epsilon$ for a lens having F = at least to 12.4 cm.

In a previous article on the depth of focus in "La Photographie des Couleurs" (April and May, 1908), I named 1/2500 as the limit of $\epsilon$ from observations on transparencies obtained by contact, and placed at about 12.7 cm. from the eye, but with interposition of a converging lens. This coefficient may be adopted when extreme sharpness is not required.

The enlargement of the triple print representing O = 5 mm. is here reproduced same size (Fig. A), though with diminished sharpness, in consequence of the half-tone structure. The value of $\epsilon$ here is about 1/2000, namely that adopted by Dr. Luther ("B.J.," January 14, 1910). The confusion of the images at 11 and 3.5 metres are somewhat marked, even at 88 cm. from the eye. This co-efficient can be adopted in all cases where extreme sharpness is not necessary, or where an after-process of reproduction reduces the fine rendering of detail.

### Effects of the Grain of the Plate and of Diffraction.

In working out formulæ of depth of focus, it is assumed that the aberrations of the lens, the grain of the plate, irradiation in parts of the image showing great contrast, as well as the effects of diffraction with small apertures of the diaphragm may all be neglected. The influence of the grain of the plate is appreciable, particularly in the case of lenses of short focus. In a note before the French Academy of Sciences, on September 19, 1904, M. Thovert, taking $\epsilon$ = 1/3000, stated that "the examination of the images obtained on gelatino-bromide plates showed that it was difficult to produce linear images, the width of which was less than 1/40th of a millimetre. From this limit, which is set simply by the manner in which the light acts upon the sensitive film, it follows that the angular definition of the minute of arc can be effectively rendered only by lenses, the focal length of which is at least 3,000 ÷ 40 = 75 mm. Lenses of very short focal length cannot reproduce all that is visible." This remark of M. Thovert's corresponds with the case where the image of distant objects is exactly in focus. But if the whole of the object is near, and occupies a certain depth of field, the image is apparently formed of circles of confusion, which are enlarged by the grain, and it cannot then be admitted that a lens of 75 mm. focal length gives an image which throughout possesses sharpness of definition corresponding with $\epsilon$ = 1/3000.

It should be noted that, for the focal distance F = 127 mm., which was that which I used in confirming the correctness of the co-efficient $\epsilon$ = 1/3500, using Lumière non-halation plates, the effect of the grain is negligible. I under-developed my tiny negatives so as to avoid too great contrasts, but other negatives, developed to the full, show that the finest details are not easily recognised, owing to irradiation. This effect would be less marked with a lens of greater focus, since the image would then be larger.

In his note M. Thovert also says that "the phenomena of diffraction do not allow of obtaining optical definition equal to one minute of arc if the aperture of the lens is less than 2 mm. in diameter." In my paper in "La Photographie des Couleurs," I named this value as the lower limit of the diaphragm aperture. We can take it in the case of images in exact focus, but the reduction of the diaphragm in the case of a good lens should be considered as a last resource, in the case only where the objects are distributed over a certain depth of field in order to give the best possible definition to images which are not exactly in focus. The confusion due to diffraction is then added to that due to the properties of the lens, but increases as the diameter of the diaphragm is reduced. I made experiments with test charts designed for this purpose, which I placed at distances $D_1$ = 11 metres, D = 2.08 metres, and $D^1$ = 3.5 metres, corresponding to exact focus. For the distances $D_1$ and $D^1$ I used two pairs of charts, which I had already designed, for measuring the limit of $\epsilon$, and I only designed specially for these experiments the pair of charts containing both lines and square hooks for the position D. I took a series of negatives in sets of three of these charts, using working diameters 3, 2.75, 2.5, 2.25, and 2 mm. By examining the images in the microscope at an enlargement of 40, it was found that the sharpness of the images in exact focus decrease regularly from 3 to 2 mm., but that in the case of those images where there was a certain amount of confusion at the start, the sharpness increases for the successive diameters of the diaphragm 3, 2.75, and 2.5 mm., whilst it decreased, or appeared to be stationary, for the diameters 2.25 and 2.0 mm. The most favourable result thus appeared to be that with a diaphragm of 2.5 mm. working diameter.

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[3] "Photo Midi," February and April, 1902. "Photo-Revue," June 1 and August 10, 1902.

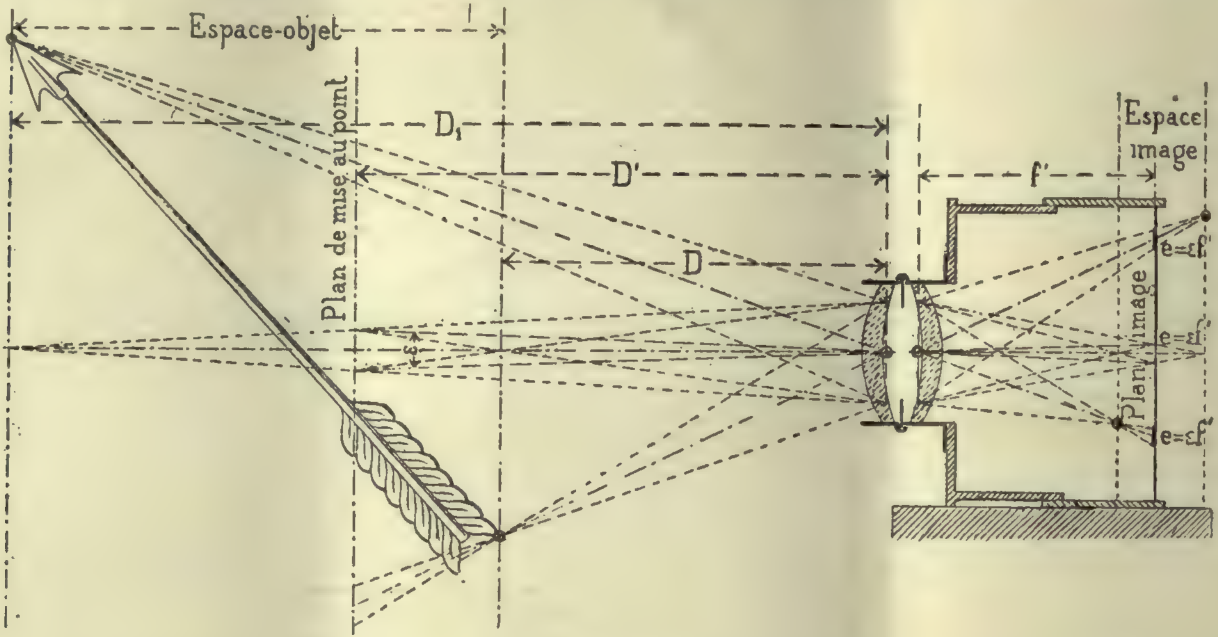

Fig. 1.

Thus, if for a pair of extreme distances, we find a lower limit of 2.5 mm. for the working diameter of the diaphragm, it is best to bring it to this limit. For $D_1$ = 11 metres, and D = 2.08 metres, H is found to be 5.13 metres; we can take the co-efficient $\epsilon$ = 1/1,000, since, with this as a basis, we obtain a value of diaphragm diameter = 5.13 mm. But the definition of one minute of arc cannot be obtained, since for this it would be necessary to take a diaphragm diameter of 5.13 ÷ 3,500 = 1.4 m.m., whilst the maximum sharpness compatible with diffraction phenomena corresponds, as we have seen, with a diameter of 2.5 mm.

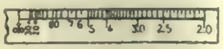

Fig. 2.

Focussing Scale for F=21 cm.

## The Theory of Magnifiers.

Exact focus of a flat object can be obtained only with a certain minimum distance, T, corresponding to the maximum extension of the camera, but if we place in front of the lens a converging lens—a so-called magnifier—the effect of this lens is to produce a conjugate image which can be considered, in reference to the lens, as a virtual object at a much greater distance than the actual object.

Assuming that the separation between the anterior nodes of the lens and of the magnifier is small in comparison of the distances (of the object), in order to include this separation in calculation of these distances, we will call the focal length of the magnifier $F^1$, the distance of the front surface of the object placed before the camera D, which will be less than T. According to lens formulæ, the distance $D_2$ of the virtual conjugate of the plane is—

$$(7) \quad D_2=\frac{F^1D}{F^1-D}$$

As $D_2$ is positive, $F^1$ cannot be less than D. On the other side, the minimum value of $D_2$ not being less than T, we can calculate from it the maximum value of $F_1{}^1$ according to the calculation—

$$T=\frac{F_1{}^1D}{F_1{}^1-D}$$

whence

$$F_1{}^1=\frac{TD}{T-D}$$

Among the magnifiers at our disposal we will select one the focal length of which (between D and $F_1{}^1$) is nearer to $F_1{}^1$, since the interposition of a lens of great focal distance affects the quality of the objective less than a more strongly converging lens. Substituting its value in (7) we obtain $D_2$. The index of the apparatus is placed opposite the division $D_2$ of the scale in order to focus on the object at distance D.

Example.—Let T = 2.0 metres; D = 1.45 metres. We shall have—

$$F_1{}^1=\frac{2\times 1.45}{2-1.45}=5.27 \text{ metres.}$$

Let $F^1$ = 3.0 metres, i.e., between 1.45 and 5.27 metres. We shall then focus on the distance—

$$D_2=\frac{3.0\times 1.45}{3.0-1.45}=2.8 \text{ metres.}$$

If the apparatus is set at fixed focus on infinity, exact focus is obtainable only with a magnifier the focal length $F^1$ of which is exactly equal to D, or differs very slightly from it, the virtual conjugate object then being at infinity. Focussing can be exactly obtained only if D is equal to the focal length $F_1$ of one of the magnifiers in use.

If the object occupies a certain depth of field between the planes at distances D and $D_1$, assuming always that the separation of the anterior nodes is neglected in calculating this distance, it is shown that the distance of opening H is the same with or without the magnifier, and that the focussing distance $D_2^1$ of the virtual object, when using the magnifier, is conjugate with the focal distance $D^1$, which can be calculated from (1). The use of a magnifier is necessary if $D^1$ is less than the minimum distance T, that correspond to the maximum extension of the camera.

H, O, and $n$ may then be calculated from formulæ (2), (3), and (4), the distance $D_2^1$ of focus when using the magnifier is then calculated from—

$$(8) \quad D_2^1=\frac{F^1D^1}{F^1-D^1}$$

The minimum value of $F^1$ is $D_1$, for then the conjugate distance of $D_1$ is infinity, and the focussing distance is the hyperfocal distance the numerical value of which is exactly equal to H already calculated. The maximum value $F_1^1$ is obtained from—

$$T=\frac{F_1^1D^1}{F_1^1-D^1}$$

whence

$$F_1^1=\frac{TD^1}{T-D^1}$$

For the reason already given choice is made of a magnifier of greater focal distance between limits $D_1$ and $F_1^1$.

Example.—Let T = 2 metres, and let the object be placed between the distances D = 1.15 metres and $D_1$ = 1.5 metres. From formula (2) H = 9.86 metres. Taking $\epsilon$ = 1/2,500, and if the lens has a focal length of 12.4 cm., it is found from (3) that O = 9.86/2,500 = 3.9mm., and from (4) that $n$ = 124/3.9 = 32. These values are the same when using a magnifier.

From formula (1) $D^1$ is found = 1.31 metre. The minimum value of $F^1$ of the magnifier is $D_1$ = 1.5 metres, and with this we should obtain the focussing on the hyperfocal distance at the distance H = 9.86 metres. The maximum value of $F^1$ is—

$$F_1^1=\frac{2.0\times 1.31}{2.0-1.31}=3.8 \text{ metres.}$$

If we employ several magnifiers of foci between 1.50 and 3.80 metres we shall choose the least convergent, that is, the one having the greatest value of $F^1$. Assume $F^1$ = 3.0 metres. After affixing the magnifier we adjust the extension by placing the index opposite the division of the scale which we have calculated from formula (8), say—

$$D_1^1=\frac{2.0\times 1.31}{3.0-1.31}=2.32 \text{ metres.}$$

If we know only the distance $D^1$ of the focussing plane, and the working diameter O, or, which comes to the same thing, the denominator $n$ of the diameter relative to the focal length F of the lens, we can determine the extreme distance D and $D_1$ of the field corresponding to a given value of the co-efficient of angular definition $\epsilon$[4]. Also the distance of exact focussing when using the magnifier. We shall ascertain this distance $D_2^1$ from formula (8). The value of H remaining the same, when the magnifier is used we obtain H from formula (5) or (5a). Formulæ (6) and (7) will give the limits of the sharply defined field of the real object: the same formulæ in which one has replaced $D_2^1$ by $D^1$ would indicate the limits of the sharp field for the virtual object, but a knowledge of these limits is not necessary. We shall, moreover, find that $F^1$ of the magnifier comes between $D^1$ and the value calculated from formula (9).

R. Ellie.

(*To be continued.*)

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**Deutsche Photographen-Verein.**—The annual conference of professional photographers, organised by our contemporary, the "Deutsche Photographen-Zeitung," of Weimar, was held this year at Dessau from August 21 to 24. The catalogue of the exhibition of photography, held in conjunction with the conference, is a most interesting souvenir of the meetings, and is, moreover, technically of great interest, since the examples are produced by a variety of photographic and photo-mechanical processes.

## FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.

September 28 to 30.—Wallasey Amateur Photographic Society. Entries close September 16. Sec., W. Hayes, 110, Brighton Street, Seacombe, Cheshire.

October 11 to 20.—Bournemouth and District Camera Club. Entries close October 2. Sec., Miss Penrice, 41, Wellington Road, Bournemouth.

October 18 to 21.—Rotherham Photographic Society. Entries close October 9. Sec., H. C. Hemmingway, Tooker Road, Rotherham.

November 6 to 11.—Southampton Camera Club. Sec., C. M. Cooper, 203, Shirley Road, Southampton.

November 7 to 11.—Norwich Photographic Society. Sec., J. T. Tanner, The Lodge, Bowthorpe Road, Norwich.

November 15 to 18.—Cambridge and District Photographic Club, Sec., T. J. Sowdon, Sunny Side, Guest Road, Cambridge.

November 27 to 30.—City of London and Cripplegate Photographic Society. Sec., F. W. Gardner, 135, Vaughan Road, Harrow.

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# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between August 21 and 26:—

Colour Photography.—No. 18,783. Three-colour photographic processes. William Arthur Shaw.

Colour Process.—No. 18,965. Processes for obtaining impressions in ink or colour from photographic films. Edward George Handel-Lucas.

Drying Prints.—No. 19,075. Tables for laying-out and drying prints and the like. Carl Mayer and Franz Trautmann.

Printing Machine.—No. 18,867. Automatic photographic printing machine. Oliver Imray, for G. M. Dye Printing Machine Co., United States.

Cinematographs.—No. 18,889. Cinematographs. William Thomas Coulson.

Cinematographs.—No. 19,078. Automatic control and safety device for moving-picture machine. John McFeely.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Circular Pocket Camera.—No. 18,466, 1910 (August 3, 1910).—This invention relates to improvements in cameras of the type in which one half of the camera containing the lens, revolves on the lower half containing the plate or film, as in Specifications Nos. 11,365, 1886, and 9,655, 1886.

The improvement consists in arranging the parts of cameras of this type, in such a manner so as to be all held together in their respective positions by one central bolt and bush. Moreover, each separate part while in this position to be able to perform its own function when revolving the parts round the central bolt.

Figs. 1 and 2 show the general arrangement of the camera.

$a$ is the bottom of a circular box, preferably of metal, in which is placed a flat circular sensitive film, $a_1$. This is held in position by a disc of wood or other substance, $c$, this disc containing holes, $c_1$, according to the number, shape, and size of the photographs desired. This disc is prevented from turning round in the box by the indentation $f_1$.

The disc $c$ is loose, and can be removed from the box $a$ owing to a groove, $f_2$.

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[4] In the "Photo-Revue," August 4, 1907, M. Quintana has given formulæ corresponding with this case, but on the hypothesis of a constant value of $\epsilon$, also the formula for focusing on a plane surface at a distance D.

In the lid *b* of the box is fixed the lens, *h*, the lid being made to revolve easily on the lower part of the box *a*.

*d* and *e* is the bolt which holds all the parts together.

The separate photographs are enabled to be changed by slackening the nut *e* and revolving the lid and bringing the indentation or mark *g* in the lid, above the other indentations or marks *f* on the box.

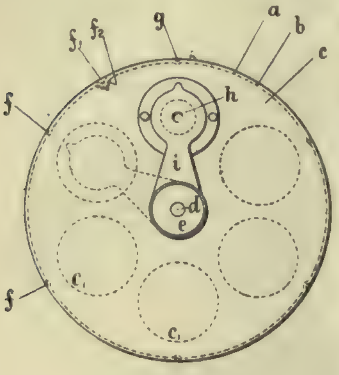


Fig. 1.

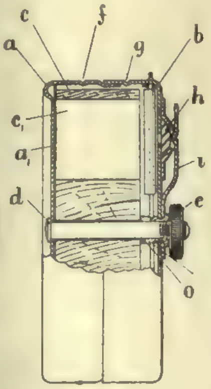


Fig. 2.

In the centre of the lid is fastened a bush, *o*, which retains the working parts of the shutter in position by means of the groove $o_1$, in the bush.

Fig. 3 is the shutter for the camera, and consists of a wire, $k_1$, sprung into the groove $o_1$ in the bush *o*. $l_1$ is the shutter which slides between the wire $k_1$ and the lid of the box, and can be opened only after pulling out $k_1$ and catching the shutter by the catch, $m_1$. On depressing, the shutter is then opened and released again by the shutter striking the centre bush *o*, and thus releasing it from the catch $m_1$. $n_1$ is the shutter spring.

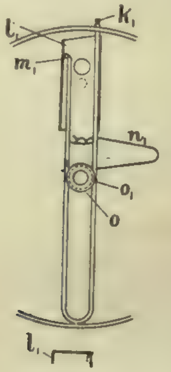


Fig. 3.

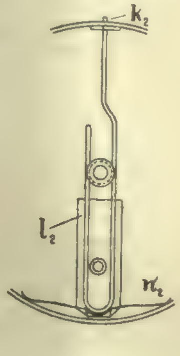


Fig. 4.

Fig. 4 is an arrangement suitable for small cameras. On depressing $k_2$ it directly opens the shutter, and is closed by the spring $n_2$. $l_2$ is the shutter, and is fixed to the wire $k_2$.—John Arnold, 6, Brownswood Park, South Hornsey, London, N.

Exposure Indicators for Dark Slides.—No. 1,423, 1911 (February 18, 1910).— The indicator is inserted in a suitable place into the woodwork of the frame *a* of the slide, and consists of a plate, *c*, fixed to the frame by means of screws *b*, and provided with suitable guides for two slides, *d* and *e*, arranged underneath the plate *c*. The outer slide *d* is acted upon by a spring *f*, whilst the inner slide *e* is similarly acted upon by the spring *g*. The springs *g* and *f* tend to pull the slides *d* and *e* against the stop or projection *h* of the plate *c*.

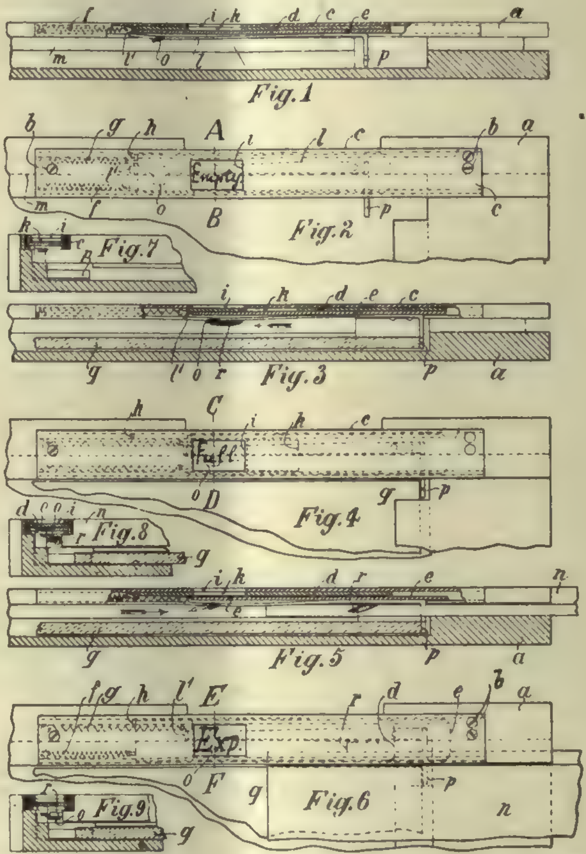
The plate is provided with an opening *i*, and the upper slide *d* also has an opening, *k*. When the slide *d* is in the position shown in figs. 1 and 2, the inner slide *e* is visible through the two openings, *i* and *k*.

In this position the word "empty" on the inner slide *e* appears through the two openings *i* and *k*. Upon the inner side of the slide *e* is fixed a flat spring, *l*, which carries at its free end the hook $l^1$, and is provided at some distance from the end with a projection, *o*, which extends into the groove *m*, by which the shutter *n* of the slide is guided. The slide *e*, moreover, carries a projection, *p*, extending into the interior of the slide.

On inserting a plate, *q*, into the slide, the projection *p* is moved by the plate into the position shown in figs. 3 and 4.

As this projection is rigidly connected to the slide *e*, the slide *e* is shifted, carrying with it the slide *d* by means of the hook $l^1$ of spring *l*.

This causes the opening *k* in the slide *d* to disappear behind the plate *c*, and there appears in the opening *i* of the latter plate the inscription "full," borne by the slide *d*. After the insertion of the plate *q*, the slide is closed by means of the shutter *n*.



The latter carries a projection, *r*, which is constructed so as to pass, during the closing movement of the shutter *n* underneath the tongue *o* of the spring *l*, but to slide over the tongue *o* during the opening movement.

During the latter movement the spring *l* is moved away from the slide *e*, so that the hook $l^1$ releases the slide *d* and allows this slide to be pulled back by its spring *f*. The opening *k* is by this movement brought again under the opening *i* of the plate *c*, and the lower slide *e* becomes again visible. On the back of the slide *e* which is now visible, the inscription "exposed" is arranged.

If after the plate *q* has been exposed, the slide or container is closed by the insertion of the shutter *n*, the two slides *d* and *e* remain in the last position and return to their initial positions (figs. 1 and 2) only when the plate *q* is taken out of the container.

When the plate is removed the slide *e*, bearing the inscriptions "exposed" and "empty" is pulled by the spring *g* against the stop *h*.—Friedrich Kunze, 61, Alter Steinweg, Hamburg, Germany.

* * *

The Festival of Empire Exhibition.—The only prize awarded for photographic preparations was bestowed upon those handy accessories of the dark-room, "Tabloid" photographic chemicals, which were honoured with a gold medal. Messrs. Burroughs Wellcome and Co. also secured two grand prizes for "Tabloid" first-aid equipments and the "Kepler" malt preparations.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

## Some Points in Ozobrome.

I recently had a batch of ozobrome tissue (writes Mr. A. H. Blake in the "Amateur Photographer and Photographic News" for September 4) that had been lying by for more than eighteen months and was quite hard and horny; it was suggested to use it with the addition of boric acid to the working bath, and as a result of this, whereas before there had been considerable difficulty in stripping, after the addition the tissue behaved in a normal way. The amount to be added is 1 or 2 per cent. to the working bath. As this spoils the working bath for normal tissues, it is advisable to keep old tissue until a sufficiency can be used to make it worth while to have the special bath.

The reverse of this is often the case, and in hot weather, or in the case of very new tissue, it is often found that it flows too readily, and it is required, if possible, to raise the melting-point. This can be done by the use of sulphate of magnesia, adding to the working bath in the same proportion as the boric acid.

It will be found a considerable convenience to use the acid bath at half strength; this gives more time for the tissue to remain in it, and there is not that scurry and bustle to get the tissue out to the very fraction of a second, as is the case in the full-strength acid bath. Though the time that the tissue remains in the acid bath has to be accurately determined according to the result desired, it is not necessary to hurry the print in the pigmenting bath, and it can remain there and look after itself while other things are being got ready, provided the time is not excessive and it be turned over and back again from time to time.

## Effective Mounting.

The instructions that are issued with the Gevaert Japan platinum paper (writes Mr. W. Groves, in "Photography and Focus," for September 5) describe how the prints may be made quite smooth and flat. My own method is to place the print, after blotting it surface dry, between a couple of clean pieces of paper, and shut it up between the leaves of a big book for a day or two. If there is any doubt about it being pressed flat, a weight of some kind may be put on the book. There is no need to trim the prints, if the negative was provided with a narrow mask, so that the print has a plain white or cream border. A most effective and extremely easy way of mounting these prints is to run a thin line of gum along the edge, and press it down in position on a piece of mounted Whatman drawing paper three or four times the size of the print, leaving it under pressure for a day or two, if possible, so that it may come out quite flat. The print will lie quite closely on the drawing paper without any further attachment than the strip of gum at the top, which need not be more than a sixteenth of an inch wide. The mounted print has a very tasteful and quiet appearance. The cards, about 13 by 10, cost fourpence each, at Reeves's, the artists' colourmen, which, if a good deal more than some of the more orthodox mounts, is not an extravagant price for a whole-plate platinum print. For smaller prints, each card may be cut in two, or in smaller pieces if necessary.

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Postal Instruction in Printing.—We have been interested in perusing a book of specimens of students' work, which is kindly sent us by the Inland Printer's Technical School, conducted under the International Typographical Union Commission at 632, Sherman Street, Chicago. The course of instruction is divided amongst such branches of the printer's craft as principles of design, study of colour, composition, and display, in addition to other of the technical processes. The book of specimens is particularly interesting, as showing the remarkable improvement in graceful and effective display of matter achieved by printers after a brief course of instruction. Students of the school, situated in all parts of the world, testify to the benefit derived from this instruction, and the specimens of their work before and after taking the course certainly show a remarkable development of the sense of what is effective and tasteful in typographical display.

# New Materials, &c.

A.B.C. Stripping Solution.—We have received from Mr. T. E. H. Bullen, 591, Leigh Road, Westcliff on Sea, a sample of this preparation, supplied by him for glazing gelatine prints and postcards. To those who have occasional trouble in this operation, the directions for using the A.B.C. solution sound almost too simple for belief. The solution is simply to be rubbed lightly over the glass, without polishing, the wetted prints, with plenty of water adhering to them, are laid down and squeegeed. Nothing could be more rapid than this process, and in our trial of it we were able fully to confirm the vendor's description, that, on drying, the prints fall off or can be easily detached. In our experience of the preparation it is a most certain means of ensuring prints leaving the glasses with a high gloss. It is supplied in bottles at 1s., 2s., or 4s., or in gallon jars at prices which may be obtained on application to Mr. Bullen at the address given above.

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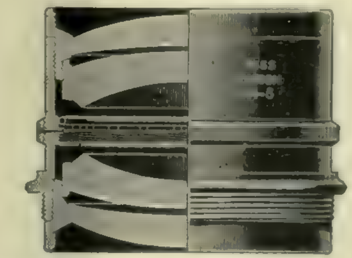
# New Apparatus, &c.

**The Ross f 4·5 "Homocentric" Lens. Made by Ross Ltd., 3, North Side, Clapham Common, London, S.W.**

The series of "Homocentric" anastigmat lenses, manufactured and supplied by the old-established firm of Ross for some years past, has now been supplemented by a new series of the aperture of *f*/4.5. Hitherto the "Homocentric" has been manufactured only of the maximum aperture of *f*/5.6, a rapidity which for a very large proportion of outdoor exposures is amply sufficient. A lens, however, of the aperture of *f*/4.5 has many applications, such as in reflex camera photography, portraiture, and for work with a stand camera where short exposures need to be given in a dull light. Knowing something of the excellent optical qualities of the "Homocentric" lenses as a class, we were interested in making a practical trial of this latest addition to the series. The lens examined was that of 7½ inches equivalent focal length which, at its full aperture of *f*/4.5, we found to cover a half-plate perfectly to the extreme corners, and, even with the camera front raised several inches above the centre of the plate, still to give satisfactory definition to the margins. The crispness and brilliancy of the definition afford ample evidence that in the *f*/4.5 "Homocentric" the high correction of spherical and zonal aberration is maintained.



The lens is of the unsymmetrical type, the front combination having a focal length of double the complete lens, namely, 14½ inches, whilst in the case of the back combination the focal length is one and a half times that of the whole lens, or practically eleven inches. We found the makers' claims as to the satisfactory definition given by these halves of the lens when using the diaphragm (of the complete lens) *f*/11, to be fully borne out in practice. The choice of three focal lengths in the one lens is a facility which many photographers, and particularly those of the amateur class, are likely to appreciate, and all the more so that they obtain the advantage of two long focus lenses without sacrificing high quality of definition and large aperture in the complete lens. The new "Homocentric" is thus a lens of which the makers may be justly proud: photographers, choosing a universal anastigmat objective, can want no better lens.

## CATALOGUES AND TRADE NOTICES.

Stereoscopic Photography.—Messrs. W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London, E.C., have just issued a revised edition of their 48-page booklet on stereoscopic work. It briefly describes the practice of stereoscopic photography, and lists the apparatus, in the way both of hand and stand cameras, supplied by Messrs. Butcher for stereoscopic work, and, in addition, a number of useful accessories which simplify the operations of making stereoscopic prints or transparencies.

Photographic Handbooks.—A catalogue of technical and scientific books is issued by Messrs. W. and G. Foyle, 135, Charing Cross Road, London, W.C., sellers of both new and secondhand books. The catalogue is conveniently classified under the heads of the various sciences and handicrafts, and includes, under "Photography," a considerable number of modern handbooks, most of which, Messrs. Foyle advise us, may be obtained from them secondhand at about half the published price.

Beck Lenses, etc.—Messrs. R. and J. Beck, Ltd., 68, Cornhill, London, E.C., send us the newly issued catalogue of their manufactures in lenses, shutters, cameras, etc. The new list contains full particulars of Messrs. Beck's most recent introductions in the way of lenses, the "Isostigmar" and the "Neostigmar," as well as of the older aplanats and other lenses. The latter portion of the list is devoted to a selection of stand and hand cameras, the latter including the "Frena," "Dai-Cornex," etc. Messrs. Beck make a special feature of taking a photographer's own lens on the purchase of a Beck objective, and particulars of this scheme will be found in the list, which is sent post free on application.

Portraits with Steinheil Lenses.—Messrs. Steinheil, the well-known Munich firm of opticians, send us a handsomely bound volume made up exclusively of handsome half-tone and collotype reproductions of portraits taken with their larger aperture lenses, the "Unofocal" and "Triplar," as well as a few made with the Steinheil "Orthostigmat." The volume is one which will be of interest chiefly to professional photographers, since most of the illustrations are the work of portrait photographers, notably Herr Grainer, of Munich. While we have no intimation of the fact, we assume that the booklet will be sent to any professional photographer making application to Messrs. Steinheil at 7, Theresienhöhe, Munich.

Houghtons' Professional List.—Messrs. Houghtons, Ltd., have just issued from their professional department, 88 and 89, High Holborn, a handsome cloth-bound list of 250 pages, devoted entirely to materials and apparatus for the professional or commercial photographer. The thousand and one accessories dear to the heart of the amateur necessarily render any complete catalogue a bulky volume, but here, in a compact volume, the professional will find a full price-list of such apparatus as cameras, tripods, lenses, shutters, enlargers, artificial-lighting equipment for studio and printing purposes, backgrounds and background stands, studio furniture, mounts and mounting materials, including dry-mounting presses. The whole volume is excellently arranged and illustrated, and every professional photographer desiring to be up-to-date as regards apparatus, etc., cannot afford to refrain from addressing to Messrs. Houghtons the postcard which will bring him a copy of this convenient list.

# Commercial & Legal Intelligence.

Legal Notices.—A receiving order has been made in the case of Elizabeth Baird Hamilton (carrying on business under the style of Allan Hamilton and Sons), artist and photographic enlarger, residing and carrying on business at 7, Paul Street, Kingsdown, Bristol.

Notice of intended dividend is given in the bankrupt estate of Samuel Hodge, photographer, etc., Spohr House, Fore Street, Sidmouth, Devonshire. All proofs must be lodged on or before September 29 with Mr. A. E. Ward, 9, Bedford Circus, Exeter.

A second and final dividend of 1s. 5d. in the £ has been declared in the bankrupt estate of Albert Edward Seaman, photographer, 5, Hady Lane, near Chesterfield, in the parish of Hasland, Derbyshire, and carrying on business at 13, High Street, Chesterfield, and lately residing and carrying on business at 75, King's Road, Brighton.

## NEW COMPANIES REGISTERED.

J. and R. Couper, Ltd.—This private company was registered in Edinburgh with a capital of £2,000 in £1 shares. Objects: To carry on business as commercial and general photographers. Qualification of first directors, 50 shares. Registered office, 108, Hope Street, Glasgow.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Saturday, September 9.

Handsworth Photographic Society. Excursion to Knowle.
Liverpool Amateur Photographic Association. Outing to Mickle Trafford.
United Stereoscopic Society. Outing to Wanstead Park.
Leeds Camera Club. Outing to Roundhay Park.
Bristol Photographic Club. Outing to Berkeley.
Bradford Photographic Society. Outing to Hardcastle Craggs.
Manchester Amateur Photographic Society. Outing to Hoylake.
Hull Photographic Society. Outing to Alexandra and Joint Docks.
Hackney Photographic Society. Outing to St. Paul's Cray.
North Middlesex Photographic Society. Outing to Goff's Oak.
Lincoln Amateur Photographic Society. Outing to Grimsby Docks.

### Monday, September 11.

Southampton Camera Club. Auction of Surplus Apparatus.

### Thursday, September 14.

Handsworth Photographic Society. "The Development of a Negative with Pyro-Soda." J. W. Baker.

# News and Notes.

The Borough Polytechnic Photographic Society are holding an exhibition of members' work in the Cuming Museum at the Central Library, Walworth Road (two minutes' from the Elephant and Castle), for five weeks, from August 31 to October 7. The exhibition was opened by the Mayor of Southwark, and Mr. F. C. Boyes, F.R.P.S., spoke on "Modern Photographic Methods" to a large audience. Admission is free.

Rotherham Photographic Society.—The twenty-second annual exhibition of this society will be held in the Rotherham Drill Hall from October 18 to 21, when the exhibits will be judged by Mr. Godfrey Bingley, of Leeds. There will be six open classes, in addition to the usual members' section. Entries close October 9, and entry forms and further particulars may be obtained on application to Mr. H. C. Hemmingway, Tooker Road, Rotherham.

Autotype Carbon Demonstrations.—The Autotype Company, 74, New Oxford Street, London, W.C., have arranged a scheme by which those societies who desire to include a demonstration of the carbon process in their winter programme may do so with a minimum of trouble to themselves. The Company are prepared to supply a sufficient quantity of exposed carbon tissues and transfer papers, thus leaving only the simple operation of squeegeeing and development to be carried out by the lecturer at the meeting. Secretaries may obtain any further information they require by communicating with the Autotype Company at the above address.

At the Kinemacolor (Scala) Theatre, where crowded houses are still attracted twice daily by the realistic reproductions in animation and the actual tints of nature of the Coronation, the Investiture, and a wide variety of recent events, Mr. Charles Urban has in reserve, for presentation as soon as may be desirable, two new series of quite absorbing interest. The one is a pictorial record of a tour in a special Canadian-Pacific car from Toronto to Montreal, the other is a most artistic film of the modern aspects of the oldest civilisation in the world—Egypt. A noteworthy feature of this series is a life-motion panorama of a trip up the Nile.

An Economic Mistake.—One of the things that I notice in nearly every studio that I visit (writes G. W. Harris in "Photo-Era") is the fact that so many of the proprietors are so busy doing the little things around the place that they have no time to think of the business in the aggregate.

Take the man who owns a studio, who is worth from $25.00 per week up, and we find him putting in time at things that a $5.00 a week girl can and should do, and this is the cause of so many studio-owners finding their business running them and not the business being run by the owners. There is not a business on earth that a man can be successful in if he hires a $100.00 man for a $20.00 job, and why should a photographer do it?

**Rotary Photogravure.**—Messrs. Allen and Co., 107, Clifton Street, Finsbury Square, London, E.C., advise us that they have recently re-incorporated their firm under the title of the Vandyck Printers, Ltd. This forward movement has been taken as the result of the attention which the firm has devoted of late to machine photogravure, which important branch of the process craft they have brought to a high degree of perfection, as shown by a number of exceedingly choice examples which lie before us. Photographers should be among the first to realise that in machine photogravure they have a process which, at a reasonable price, can do really ample justice to the beauty of photographic originals, and for this reason those contemplating the publication of prints in any large number, or the issue of view albums, etc., will be well advised to make inquiries of Messrs. Vandyck Printers, Ltd., from whom they can readily obtain specimens showing the excellence of the work produced.

**Colour-Sensitised Plates for India.**—The "Times of India," in its issue for August 7, reports that some interesting experiments have been carried out in the photo-litho office of the Survey of India by Mr. Taylor, manager of the photographic branch. The rapid deterioration of colour-sensitive plates in the Indian climate makes the process both uncertain and expensive. It has therefore been the object of Mr. Taylor's experiments to produce a bromide of silver emulsion in collodion for coating plates which would render them suitable to take the place of imported dry-plates in this process. In this, according to the last annual report of the Survey of India, his experiments have been attended with a remarkable degree of success, and it is hoped that before long the photo-litho office will be able to take up reproduction in colours as a regular branch of its business. At present this would not be of much use perhaps to the Survey of India itself, but it is hoped that it would be of value to several other departments.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## THE PROPOSED PHOTOGRAPHIC ASSISTANTS' UNION.

To the Editors.

Gentlemen,—I wish to again thank all those assistants who have up to the present given me their support. They are coming along splendidly, but I hope assistants will not stop sending their names. I hope soon to lay before them the policy of the proposed Union.

6, Salisbury Road, Watford. **Phil Jarrett.**

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To the Editors.

Gentlemen,—No doubt there is a good deal to be said both for and against the proposed Photographic Assistants' Union, but I am afraid Mr. Cohen is very much out of it when he suggests "that assistants should reduce the preponderance of supply against demand of labour by starting on their own."

Surely we are experiencing at the present time the folly of so many so-called photographers starting on their own, to the tune of bad work and price-cutting in many cases. Then, again, I ask assistants before giving their support to Mr. Jarrett and his scheme to consider very seriously whether he is the right man to champion their cause. I doubt it. My reason for doing so is that he is not approaching his would-be supporters in a serious light, and what is more serious is that he gives the assistant no credit for being intelligent. At least, that is the conclusion I have arrived at after reading his advertisement in the "B. J." for September 1, p. iv. Such a serious question should not be made ridiculous.

Is it logic in the first place to imagine that an assistant cannot find pen and ink?—he says nothing about notepaper—and, secondly, to suggest that they should write him and he will send them some? He does not say write, but I take it that intelligent people like photographic assistants would sooner write than spend sixpence on a wire, though, seriously speaking, I think after a few minutes' thought on the subject they will come to the conclusion that such a question requires to be worked out by a man of more serious motives. It is not a joke, and I should very much like to see the matter gone seriously into by some influential person, but as at present started, "No; drop it."—Yours truly, **L. R. Goodyer.**

33, High Street, Bognor.

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To the Editors.

Gentlemen,—With reference to the suggested Union for photographic assistants, I should like to wish Mr. Phil Jarrett every success in his endeavour to form a Union, whose object will be to improve the conditions of the assistants.

I should also like to inform "P. B. A." that the process section of the trade has looked after itself and has a strong Union, both financially and numerically. The name of it is the "Amalgamated Society of Lithographic Artists and Process Workers"; general secretary, Mr. R. Barnes, J.P., Phœnix Buildings, 20, Cooper Street, Manchester, who, I have no doubt, would be pleased to give any advice which would help to place on its feet a much needed Union.

Surely from a worker's point of view a Union does not need an apology, and may even be of the greatest help to the masters. In the above Union, and in many others, when a vacancy occurs in a shop the masters apply to the general secretary for a man to fill it, and I believe the men supplied by the Unions are thoroughly reliable and competent. Of course there are exceptions; but properly managed a Union could be of the greatest possible benefit both to the employer and assistant.

It is always admitted that competition has a tendency to force the men to accept lower wages, and from what I know of employers I do not believe it gives them any pleasure to offer a man a wage that is often insufficient to provide the common necessities of life, to say nothing of providing for old age—photographic assistants get old.

When men are well organised the chances are that it is a much more difficult job to lower their wages than when they are not. Disorganised labour is nearly always at the mercy of the unscrupulous employer. The unscrupulous employer is nearly always the man who cuts the prices to such an extent that it is almost impossible for a fair man to make a living and treat his assistants fair.

I take it that one of the objects of the Union would be a minimum wage according to the district, and with a strong and well organised Union this would make it difficult for the unscrupulous employer to take advantage of the unfortunate assistant.

The conditions of the photographic assistant are not to be envied at present, and unless they make an effort to better these conditions they alone will be responsible for the unfortunate predicament in which they find themselves.—Yours faithfully,

**Process Worker.**

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To the Editors.

Gentlemen,—There seems to me no necessity whatever for a photographic assistants' union, which Mr. Phil Jarrett says is so badly needed. My opinion is backed up by the fact that five years ago when a union was suggested, seventy only, out of a few thousands, promised their help. But what is needed is strong individual effort on the part of the assistant to improve his own position in the trade, business, profession, whichever it is. He must be more pushful, energetic, and persevering, and increase his knowledge of photography and art, take pains to improve his work, and then set a value on his abilities. Many assistants look upon their employer as their enemy. They are afraid he is making too much out of their work. This is a bad principle. An assistant should endeavour to do everything as well as possible; this certainly means more business for the employer: at the same time the assistant is reaping the benefit for he is improving his own work and increasing his knowledge, with the result that he is soon able to command higher wages. No reasonable master is going to lose a good assistant for the sake of a few shillings a week. The assistant, however, must first see that he is worth what he is asking.

Many master photographers at the present time are not in a flourishing condition, and if assistants cannot obtain higher wages by individual effort, I fail to see how they can by united effort. You cannot take from a man what he has not got.

There are too many assistants who do not know their business, and some of them never will know it unless they strive for knowledge themselves.

There would not be so many unqualified and underpaid assistants if all apprentices were properly taught. Parents and guardians would do well to take more precautions in apprenticing their boys and girls.

Photographers may be divided into two classes—the class who offer value in quantity, and the class who depend upon the quality of their work to bring business. The "quantity" man, to make his business a success, must necessarily cut the price in every way, everything must be cheap, both in selling and buying, cheap materials, cheap labour, which means employment of young ladies and apprentices. Division of labour is also necessary, which means an apprentice is kept at one branch, and has no opportunity of learning photography in general, with the result that when he is out of his time he knows very little of photography, and has trouble to get a situation.

A young fellow once in the employ of a "quantity" employer will find it difficult to get into the studio of the "quality" photographer, but it can be done. And to do it needs self-help and perseverance.

If parents refused to apprentice their sons to the "quantity" photographer, we should see less young men growing up to swell the army of complaining assistants.

"Quantity" photography calls for business abilities and not necessarily a good knowledge of photography. But "quality" photography, in addition to business abilities, needs a good general knowledge of photography combined with artistic ability.

Now getting back to this idea of a union. Supposing one is formed, and it carried the points hinted at by Mr. Jarrett, viz., higher wages, limitation of employment of female workers, and Sunday closing, what will be the result? Many master photographers will have to shut up, and with each master who closes there will be added several assistants to the unemployed list.

Although some master photographers and assistants would suffer at first, the "quality" photographer would derive the benefit in the end. But I am not in favour of a union; it will not encourage individual effort in the attainment of success in photography. Let the law close shops on Sunday, and let assistants wake up and get out of "that rut" by their own energies and not wait for someone to come and get them out.

If Mr. Jarrett earnestly wishes to help the assistants, I think his time would be better spent in forming a kind of self-help society, whereby photographic assistants interested in the welfare of photography (bearing in mind that many of them hope to be master photographers in the future) can gain knowledge of photography and art, and so raise the standard of photographic work among the assistants, and thus commence to bring about an improvement in the existing bad conditions he speaks of.—Yours faithfully,

September 4, 1911. NON-UNIONIST.

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To the Editors.

Gentlemen,—The opinions contained in Mr. Jarrett's appeal to assistants in the "B.J." for August 25, to my mind, express the feeling of the entire body of photographic assistants. Of course, there are men ensconced in congenial surroundings, and in receipt of a more than adequate return for services rendered as manager, operator, or other position of trust, who will be inclined to scout the idea of an assistants' union, principally, perhaps, because they do not feel the need of it. These men are in the minority, and in no case to be classed among those mentioned in Mr. Jarrett's letter, who are receiving "princely sums" from 25s. weekly downwards. Of course, this minority is composed of clever men, who, as such, have a decided influence on their less fortunate confrères, to the effect that, not needing a union themselves, they are able in many instances to dissuade many embryo efforts to establish such. And having experience of such cases gives some justification to the remark, "What is he going to get out of it?" in the event of any employer or manager taking an active interest to form an assistants' union, because it is a psychological point that only those really in need of any trade union or organisation calculated to better their condition, are able to bring about a state of affairs likely to be to their advantage.

That a betterment is needed there can be no doubt, and it is not restricted to our calling, for without seeking a discussion of economics through the columns of a photographic journal, one cannot overlook the fact of a growing tendency on the part of all operative and other classes to join issue in organisations which may bring about their betterment, and that they may obtain a more adequate return for labour and ability given.

Perhaps the backwardness of photographic workers in this respect may be accounted for by the usually reasonable conditions and hours of labour which have hitherto prevailed, correlative with the pursuit which it has been our endeavour to uphold as a profession.

It is agreed by all that brains and success in our work are inseparable; also that a man of intellect is the man of to-day as opposed to the man of physique in the past, and in this light for an employer of photographic labour to expect talent to develop, and genius or originality to advance on the wage of less than a navvy, is not only going to result in his own lack of progress, but rapidly to depreciate all assumption as to the professionalism of photography as a calling.

The above being an existent state makes it incumbent that we should look for the cause. It is useless to conjecture, and no cure is possible without getting to the root of the matter, always keeping in mind the reason for this correspondence, i.e., the formation of a union for photographic assistants, and their ultimate betterment; not to the exclusion of any well-meant co-operation on the part of employers, but emphatically and implacably against those termed by Mr. Jarrett the "money grubbers," who will not pay reasonable salaries until they must, as well as those in the same wage-saving competition who employ cheap labour, keep studios open after dark, Sundays, Bank Holidays, and advertise for an up-to-date, energetic, conscientious operator, one with determination, etc. They get one suitable, more or less, and, encouraged with specious prospects, he goes on his way, carrying out the advertisement's requirements to the letter. This is not an imaginary case. I have met dozens such, and could get into communication with them right away if needful. But, it may be urged, they know what hours and wage to expect, why do it? and here it is that a powerful factor in the question of cheap labour comes in.

Those who are the cheap labourers may be divided into three classes. I refer to those engaged in middle-class work—the sticky-back men may be left out.

First, there is the man "too old at forty," and it may be a fact that his ideas are too out of date to make for progress, so accordingly he must take what is offered him, more especially because invariably he has a family. This man may understand the business all round, and rely on his knowledge of carbon work, platinum printing, the retouching of a "few" negatives daily, and a hundred and one foibles connected with a good old-fashioned business of the past. But as with him, so it is with numbers more—they have yet to learn that the masses, on whom the majority of photographers rely for custom, will not pay for such processes, when to them there is offered what appears quite as good value in the shape of good prints in bromide, sepia, and B. and W.

Being a creature of habit the poor man adheres to his early training, it being difficult for all men to adapt themselves to circumstances, with the consequence that he is deposed for a "smart, up-to-date, energetic young operator-retoucher," who will put forth every effort to attain to the "splendid prospects," which, like an "ignis fatuus," is kept tantalisingly just beyond acquisition. This young man is the second under this heading of cheap labour, and in many cases has taken to himself a wife, a fact—I say it hesitatingly—which is shamelessly taken advantage of by unscrupulous employers. I know it, and in what manner, although I am not married.

The third is the youth who, on the strength of his ability to do a little straight printing, take an emergency negative and retouch "a little," answers the afore-mentioned alluring advertisement, and if his correspondence is smart is interviewed. It goes without saying that out of innumerable such cases there are many young men of intellect whom a business man can negotiate to his own advantage, the result being that the young man is taken on as assistant operator retoucher, and soon becomes efficient in the class of business which holds sway nowadays, and with which I shall deal directly.

Cheap labour and long hours go hand in hand, because if the before-mentioned men allow themselves to work for a low wage, the employers have no difficulty to keep them as long as necessary to themselves.

Then, again, if artificial lighting had not reached its present state of perfection, excessive hours of labour could not have become so prevalent, and it is a fact that the man who does not install an artificial lighting plant, omits this because his patronage does not appear to warrant it, or perhaps because he cannot afford it.

The men who matter are they who see the advisability of the artificial-light installation, and these are the men who will have to keep their workers longer hours to cope with the increased business.

These are the men who, while the Congress of Continual Controversialists are sitting to discuss what will be the probable effect a ray of light would have, deflected at such and such an angle in direction so and so, on a subject probably not yet obtained—have acquired premises in a busy shopping centre, rigged up a powerful arc lamp well screened, and as the masses are a very mediocre lot, a good full light at what is considered the best angle for an ordinary sitter usually answers surprisingly well.

Little remains now except to let the "masses" see what they may really expect in the way of portraiture, and on opening morning the blinds are drawn aside, displaying just what the public has been waiting for, i.e., photographs plainly priced, at a low rate, cleanly mounted, and, what I suppose we must blame our education for—attractive. And as nowadays people come to busy centres for photographs, much the same as for clothing or provisions, "the speculator with his big windows and cheap labour" must score. Besides, cheapness will always predominate while people require photographs more as a record of the latest fashion in dress than a permanent memento of featural likeness. Ask the ladies! Perhaps this explains the ascendency of bromides over other printing processes. Carbons, etc., are too expensive.

Those who have grasped such facts may not be "photo-artists," but they are "business men." Personally, I heartily sympathise with the "poorer brethren" and others of that ilk who are rapidly being added to the ranks of cheap labour, and apply what they understand as their artistic ability twelve hours daily creating negatives, the prints from which adorn, or are adorned by, the mounting—which is—attractive!

What I have written I am sure will meet with the endorsement of hundreds who have been in one or other stage of cheap labour enumerated above, or who have come in contact with the methods of business here described, and while much of the correspondence on this subject hitherto has savoured strongly of the personal note (and restricted localities, etc.), it has remained for Mr. Jarrett to strike the right note in reverting to the idea of an assistants' union, for until its formation, there will continue the ousting of the man "too old at forty" to make room for the youngster who will undersell him, being unable to discriminate between true advancement and fallacious prospects or specious promises.

Then there is one thing to bear in mind, that long hours and low wages go hand in hand, and both these keep down expenses, and the man who can keep expenses lowest can naturally cut prices lowest. Evil begets evil!

In supporting Mr. Jarrett's ideas I desire to express my admiration to him for his initial appeal to assistants, and trust it is but the commencement of a practical attempt to form this union, having for its objects not only the betterment of assistants, but the sustaining to its true standard as a "profession," our mutual means of livelihood.—Yours faithfully,

VICTOR H. BRYANT.

Camden Town, London, N.W.
August 30, 1911.

### ONE PRINTING PROCESS, BUT WHICH?

To the Editors.

Gentlemen, — Respecting your article in this week's issue of "B.J.P.," page 662, it may interest you to know that I use the carbon process only in my business, with the only exception that sometimes I use another process for "rough proofs," and prints that are required for reproduction in the press.—Yours faithfully,

F. A. SWAINE.

6, Grove Road South, Palmerston Road, Southsea,
September 5, 1911.

### STEREOSCOPIC PRINTS FOR COMMERCIAL USE.

To the Editors.

Gentlemen,—How often have we heard it said: "We can't judge very well from a photograph." The words are very familiar to the commercial photographer! For a long time back I have tried to perfect commercial photographs, and I find the process of photographing the goods stereoscopically to be the best, for clear definition, and specially suitable for machinery and all kinds of jewellery, where fine detail exists. The traveller or salesman can show his wares to perfection. The outfit consists of a folding stereoscope and a case suitably made for carrying the slides, and is more compact than the old-fashioned album, as carried by travellers of today. I am at present experimenting, and find excellent results.

GEORGE CHARLES REIDY.

128, Pembroke Street, Toronto, Canada.
August 28, 1911.

## Answers to Correspondents.

*** *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to Advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**PHOTOGRAPH REGISTERED:**

Chadwick and Co., High Street, Heacham. *Photograph of Ben. Bray, Founder of Empire Boys Association.*

**ENAMELS.**—Seriez-vous assez bon pour me donner dans votre prochain numéro une adresse pour acheter des émaux en blanc? En vous remerciant s'avance.—G. BONNAUD.

If we may take your question to refer to ceramic enamels, we recommend your writing to Mr. J. W. Beaufort, The Studio, Easy Row, Birmingham.

**CEMENTIUM.**—In your issue of June 11, 1909, you describe a repairing apparatus, by name "Cementium." I should be pleased if you will tell me where I can obtain some of this, as I have not been able to get it in Nottingham.—CEMENTIUM.

The material is supplied by Caementium, Ltd., 51, Tanner Street, Bermondsey, London, S.E.

"**LE PHOTOGRAMME.**"—Could you kindly furnish us with the address of the Editor of the French photographic paper entitled "Le Photogramme," and oblige.—GALLEY POT.

The Editor of "Le Photogramme" was M. Klary, 105, Avenue de Villiers, Paris, but so far as we are aware the magazine is no longer published.

**SWELLED GELATINE.**—I saw in the "Journal" a few weeks ago an American gentleman in an address mentioned swelled gelatine;

can you give me any information on this subject? It sounds something like what I want to know.—A. D.

If you mean the swelled gelatine process, as employed in photo-mechanical work, you had better consult any book on "process," e.g., "Photo-Mechanical Processes," by W. T. Wilkinson.

Book on Technical Photography.—I should be much obliged if you could tell me in your next issue what you would consider the best text-book on technical photography (not too advanced). I should be glad to have title, author, and price.—Technique.

We advise you to get No. 110 of the "Photo-Miniature" (G. Routledge and Co., Carter Lane, E.C., or any photographic dealer, price 6d.), and "The Photography of Coloured Objects," by Dr. C. E. K. Mees (Wratten and Wainwright, Croydon, price 1s.).

Field-Camera in Studio.—Will you please inform me: 1. If a half-plate field-camera of the Thornton-Pickard "Imperial" type can be used on a studio stand, and what alterations, if any, are necessary to camera? 2. For midget work, various sizes, which is preferable, an outfit working with cut sizes of plates or one of the "Multisecto" pattern?—Euston.

Certainly, such a camera can be used on a studio stand, needing only a very little adaptation by way of fixing it securely. 2. Far preferable to use an apparatus such as the "Multisecto," which can readily be adapted to take a large variety of sizes.

Photographs in Bas-Relief.—I will be much obliged to you if you will kindly let me know how I am to make photographs in bas-relief, or do there exist any books dealing with this, as I should like to learn this process thoroughly?—Constant Reader of the "B. J. of Photography."

The method of producing relief photographs is in general to produce by hand some sort of die by which the outlines and chief details of a portrait can be embossed by pressure from the back. There is no book on the subject. The only sources of information are scattered articles and patent specifications in the press.

Stained Prints.—I should be pleased if you would inform me what caused the stain on enclosed print. Toned, gold sulphocyanide bath; fixed, hypo 8 ozs., alum (powdered) 1 oz? Can you tell me what is the best thing to do to prevent same?—C. Kelli.

The stain has the appearance of being due to minute traces of hypo coming in contact with the prints when washing after toning and before fixing. Such stains are readily produced in this way. We do not understand your fixing bath. You ought not to use a mixture of hypo and alum for fixing. This itself, improperly used, will cause stains. Fix in hypo, 3 ozs.; water, 20 ozs.

Titles on Postcards.—Where can cut masks be procured, i.e., masks to give a printed inscription in the white margin of a postcard, and what other method is there whereby a neat, block-lettered title can be got, similar to those seen upon local view cards?—P. V.

We know of no masks which will do what you require. The usual method, adopted in photo-postcard works, is to block out the portion of view required (on the postcard) on the negative, and to cut a small clear space in the opaque margin. On to this is laid a strip of gelatine (film) negative, obtained by photographing the title set up in type and stripping from the glass. As a matter of fact, this strip of title negative is applied first before blocking out the view on the negative.

Studio Light.—My place of business being so situated that I can neither have gas nor electric light, can you tell me if there is a light, other than the above-mentioned, suitable for portraiture? It must be equal in power to at least sixteen incandescent gas mantles. There are powerful oil-gas lamps sold by the United Kingdom Lighting Trust, 231, Strand, London, W.C., up to 1,000 candle-power. Would you advise one of these for my purpose, and would it be a suitable colour? I leave myself entirely in your hands.—Henry Curran.

In preference to oil you had far better use acetylene. Send particulars of the dimensions and situation of your studio to Mr. R. J. Moss, 98, Snow Hill, Birmingham, and he will be able to advise you as to cost of a light and generator.

Enlargers in Canada.—Will you kindly inform us how we can obtain information as to trade enlargers in Canada (Montreal, Ottawa, Ontario, Toronto) for general printing and carbons on ivory; also how to obtain their price lists? Also, could you inform us the number of photographers in these towns, and if the standard of work is good?—Y. Z.

You will glean a few names from an American photographic journal, such as "Wilson's Magazine," but if you wish to address enlarging and photographic firms throughout the Dominion, your best course will be to insert a small advertisement in the next "Colonial" issue of the "British Journal," which is sent direct to every firm of standing. It is issued in March next. Much of the work in leading studios in Canada is first-class; photographic portraiture varies there as at home.

Gaslight Sensitiser.—If not troubling you too much, I should be obliged if you could let me know whether you have published in your valuable journal a formula for home sensitising for a gaslight paper. I have looked through the last three issues of the "B.J. Almanac," but there does not appear to be one there.—H. L. A. F.

There is no "sensitising" formula for a gaslight paper such as those on the market. These papers are coated with a special kind of emulsion. The only process which can be said to answer in any way to your requirements is the so-called "Solar" paper, used to some extent for the cheap class of enlargements. A formula for this paper was given in the "Almanac" for 1907, p. 816. If you cannot obtain this issue, you can perhaps procure the "B.J." for January 11, 1907, where a similar formula is given.

Bromide Cards.—1. How to dry quickly quantities of matt bromide cards so that when dry they remain quite flat? 2. How to wash quickly bromide cards, and what apparatus you consider best for the purpose? I have no tap water-supply. 3. What practical book can you recommend dealing with bromide printing and toning, as applied to commercial photography?—Nomen.

1. Place the wet cards face down on thin, fine muslin, strained on a wooden frame, and leave them to dry slowly in a well-aired, but not over-warmed, room. If taken off before they are absolutely bone dry, and put under moderate pressure, they will remain flat. Another method is to place cards between a pair of narrow wooden strips, nailed down at such a distance apart (about 4 inches) that cards are bowed up somewhat. Place cards thus emulsion sides outwards and leave to dry. 2. No more satisfactory method than repeatedly transferring from one dish of clean water to another, say, seven or eight times, giving a five-minutes soak in each lot of water. 3. There is no book which deals with the process purely from the commercial standpoint. For printing and developing, better get the hand-book issued by Messrs. Wellington and Ward; for toning, No. 103 of the "Photo-Miniature" (Routledge, Carter Lane, E.C., 6d.).

⁂ Notice to Advertisers.—*Blocks and copy are received subject to the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.*

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2680. Vol. LVIII. FRIDAY, SEPTEMBER 15, 1911. Price Twopence.

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## SUMMARY.

The exhibition of the London Salon of Photography opened on Thursday last at the galleries of the Royal Water Colour Society, at 5A, Pall Mall East. The exhibition contains a fair number of photographs of outstanding merit, among which are the works of F. Bruguière, F. Boissonnas, H. Erfurt, R. Lincoln Cocks, P. Dubreuil, Guido Rey, C. David Kay, and L. Misonne. (P. 699.)

Under the auspices of the Salon this year a number of evening lectures will be delivered in the Gallery, when opportunities will be afforded for after-discussion. (P. 697.)

The instructive results obtained by Mr. T. Smith, of the National Physical Laboratory, in testing the speed and efficiency of diaphragm and focal-plane shutters, will be found detailed in the full text of the paper on page 701.

Herr W. Zschokke, of the Goerz Optical Works, has recently published descriptive data of the properties of the Goerz "Dagor" anastigmat. (P. 707.)

Several further letters in reference to the proposed Photographic Assistants' Union appear this week. A meeting for the discussion of the project among assistants has been convened for Tuesday next, September 19. (P. 712.)

The rapidity of lenses, ancient and modern methods of mixing and intensifying, the new Hydrazine plates, and a suggested standard size of photographic portrait, likewise figure in our "Correspondence" columns. (P. 711.)

The question of depth of focus dealt with in the translated paper by M. R. Ellie, which is concluded on page 705 of this issue, is the subject of a short article, in which we point out the two views which are commonly taken in regard to depth. It will be seen that there is no fundamental discrepancy between the conflicting views, but that considerable elasticity is necessary in applying the rules of either system in practice. (P. 698.)

Particulars of a number of the classes in photography and process work now commencing their session will be found on pages 709 and 710.

Messrs. Wratten and Wainwright are shortly opening a factory at Buda-Pest. (P. 710.)

## EX CATHEDRA.

**The "British Journal Almanac."** The fifty-first annual issue of the "British Journal Almanac" is already in an advanced state of preparation, and secretaries of photographic societies are in possession of our letter of application asking that particulars shall be sent for insertion in the "Directory" of photographic associations, which is one of the features of the "Almanac." We would take this opportunity of begging secretaries to return the form, containing the information asked for, without needless delay. The work of compiling an accurate directory of societies is, we are sorry to say, greatly increased by the repeated applications which require to be made to many secretaries before a reply is obtained. In some instances, where there has been a change in the secretaryship, and our application is sent to a retired official, the latter apparently neglects to hand on the form to his successor, or to deal with it himself. We are constantly the recipients of reproachful letters from secretaries asking the reason for the omission of particulars of their society—the result simply of neglect on the part of a previous secretary to pass on our application to the proper quarter.

* * *

**Society Programmes.** The end of September marking, in the case of most photographic societies, the opening of the autumn programme of lectures and papers, we beg to remind secretaries that we shall be glad to publish fixtures, week by week, in our pages, if they will kindly send us the syllabus of the society immediately on publication. Similarly, forthcoming exhibitions, in which there are open classes, are announced week by week in the "British Journal," and we should be glad to include those of any such societies who will send us their entry form immediately on publication.

* * *

**Talks on Art at the Salon.** Mr. William Rothenstein, who is to lecture at the London Salon on Tuesday next, the 19th, has strong opinions on the subject of photography, for while admiring it unstintingly for its achievements, he feels that it has but little connection with art as a creative force. He is one of the most successful of our younger portrait-painters, and his work is greatly appreciated by painters, as well as by the critical public, not only in his own country, but also in Paris, where he first exhibited, and in America, where some of his works are already in the Metropolitan Museum of Art, New York. He is to sail for New York in a few days for the opening of an exhibition of his pictures. Mr. Rothenstein's works are on exhibition in the Tate Gallery; the National Gallery, Melbourne; the British Museum; the Dresden, Berlin, and Luxembourg Galleries; the Walker Art Gallery, Liverpool; and other great collections. Though not inclined to rate photography so highly as some enthusiasts would like, Mr. Rothenstein takes great interest in the subject, and shows this in a very practical way in connection with the Bolt Court School of Photo-Engraving, where he is a member of the Advisory Committee.

* * *

**The Jubilee of the Reflex Camera.** We are reminded by our colleagues of "Die Photographische Industrie," a journal with a wide knowledge of the share taken in photographic progress by English workers, that the past month of August included the fiftieth anniversary of the invention of the reflex camera by Thomas Sutton. Sutton's camera, although of a primitive type—the exposures were made by raising and lowering the mirror—was, nevertheless, not an invention on paper, it was actually manufactured and sold, chiefly for taking portraits. It seems particularly fitting that, at the time of the celebration of the jubilee of Sutton's invention, portrait photographers should be turning to the reflex type of camera for producing attractive results in the studio.

* * *

**Aeroplanes and Telephoto Lenses.** About sixty permits for press photography were issued at Windsor Castle on the occasion of the inauguration of the aerial post. Unfortunately, all the holders of these were doomed to disappointment, the aviator landing nearly a mile away, and making his appearance at the appointed spot on foot, accompanied by a bicycle and his mail bag. As it happened, it did not matter what lenses were brought out for use, as there was no chance of using them; but we were struck by the absence of any of the telephoto type. When one considers the choice of really rapid telephoto lenses, such as the Bis-Telar, the new rapid Adons of Dallmeyer, and the Zeiss Rapid Teleobjectives, now at the disposal of photographers, we wonder at their lack of enterprise. Possibly they have remembrances of high magnifications and long exposures, but that must not deter them. The tele-photography of to-day is mostly of the snap-shot variety, and we felt keenly that an opportunity of making an historical picture was lost while Mr. Hamel soared over the Round Tower.

* * *

**The Reproving Camera.** Members of the photographic profession who would have us believe that photography is played out, ought at times to feel encouraged by the readiness with which all classes of persons turn to the camera as a panacea of social ills. Thus Sir William Ramsay, in his presidential address at the British Association on the wastage of our coal supplies, foreshadowed regulations as to the domestic fire, a breach of which in the form of a smoking chimney, should be punishable by fine. And the evidence of this act of wanton waste of a product which is the mainstay of the country is to be an instantaneous photograph of the chimney with its issuing smoke. Still, we must fear that in petty offences of this nature Sir William Ramsay would inflict a fine of only 6d.—the evidence of the police constable must be taken as sufficient. Conditions under which use might be more seriously made of the camera are those of the intimidation and "peaceful picketing" common during the recent railway unrest. The suggestion is made by a correspondent of a Sheffield newspaper that more use might be made of photographs identifying those engaging in such breach of the law, a course which is suggested by the writer on the ground that it would show these unlawful acts to be due chiefly to the hooligan element of the community.

* * *

**Disfiguring the Landscape.** Photographers, of all people, will join with those societies and public bodies which, by any means, have worked towards the prevention of the erection of disfiguring advertisement signs among picturesque scenery. Although an Act of Parliament, the Advertisement Regulations Act of 1907, is in force to restrict such abuse of advertisement, its effect is largely nullified by the conditions under which a local authority has hitherto been able to take steps under it. In a letter to the "Times" of Monday last Mr. Richardson Evans draws attention to the legal steps which the Hampshire County Council is taking with the object of safeguarding the scenery in its district from further disfigurement. Hitherto under the Act it has been necessary for a local authority to specify exactly the places and areas of picturesque character to which the provisions of the Act are to apply, but under a new concession of the Home Office it would appear that the Council can apply the Act in all places where disfigurement is possible, and, should it think it necessary to take action, will only have to prove disfigurement. The greater powers which it may be supposed are thus conferred upon local authorities may, we presume, be employed by local governing bodies elsewhere, and it is to be hoped that lovers of the picturesque will lend their support to any such movement as this towards the retention of the English country-side in its unspoilt beauty.

◆

## A MODERN METHOD OF CALCULATING DEPTH.

The paper by M. R. Ellie, the conclusion of which we print in this issue, deals once more with the matter of depth from the point of view advocated by Mr. Debenham many years ago, and recently supported by many Continental writers. M. Ellie has, however, apparently taken the matter much

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## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

The fifty-first annual issue of The British Journal Photographic Almanac will be published on December 1. This year's Almanac reached a total of over 1,000 pages, and the entire edition of 25,000 copies was sold out immediately. Of no other photographic book ever issued can two such unique facts be recorded. The edition for 1912 will also consist of 25,000 copies.

As in recent issues, the systematic review of the practical work of the year under the title "Epitome of Progress" will be a strong feature of the volume.

In addition to the standard features of the Almanac, the 1912 edition will contain an article by the Editor on "Lantern-slide Making," dealing with the latest methods of this branch of photography; an article by Mr. C. H. Hewitt, F.R.P.S., on "Indoor and Outdoor At-Home Portraiture," illustrated by numerous diagrams and supplemental plates; and a series of twelve illustrated articles (under the title "How to Do It"), which contain an immense number of useful hints and wrinkles.

The Almanac for 1912 will appeal to photographers all the world over as a daily reference guide in practical work.

*** Important Notice.—The attention of advertisers is specially directed to the announcement that the entire edition of the Almanac (25,000 copies) will again be placed in the hands of dealers and the trade on December 1, so as to be well in advance of the Christmas publishing season, and the co-operation of advertisers to that end will be esteemed by the publishers.

farther than the others, and has evolved a completely organised system by which all calculations can be very readily effected on a slide rule of special design.

It will be remembered that Mr. Debenham claimed that depth was independent of focal length, and dependent only on the actual diameter of the aperture, which means that all lenses with an aperture of, say, 1in., will give the same depth, whatever the focal length. An 8in. lens at *f*/8 will therefore give the same depth as a 4in. lens at *f*/4, which conclusion, being utterly at variance with the more commonly accepted ideas, was treated with derision, especially by those who had never studied the matter of depth at all closely. The basis of Mr. Debenham's argument was, however, quite misunderstood. His contention was that the amount of confusion permissible in an image depended on the scale of the image, and that in two different size prints the depth could only be considered to be equal provided that each showed the same amount of confusion when enlarged upon the same scale. His opponents' contention, when boiled down, was to the effect that the depth in two prints of different scales was only equal when the confusion in the corresponding parts was the same; that is to say, that the amount of confusion permissible was the same for any scale. This latter argument, of course, forms the basis of the ordinary depth formulæ and tables given in English text-books, while Mr. Debenham's argument practically forms the basis of the more modern theories, such as those advocated by M. Ellie. We need, however, hardly point out that the crude theories given above are both practically and theoretically unsound. When we go to the trouble and expense of using large plates and long focus lenses we do so nine times out of ten because we want more detail than will be visible in a small print. If we follow Mr. Debenham's rule we shall only get the same amount, for the result will be only equivalent to the small print enlarged, while if we follow the other rule we shall probably get more minute details than we want. Far more elastic rules than these are required in practical work, and so it is now the general rule to adopt different standards of confusion for different size images, with the result that we consider depth from a point of view that is really a compromise between the two systems.

Practically the only difference that now exists between the two methods of studying depth is the manner in which we consider the circle of confusion. In what we may term the English system we take the actual diameter of the circle of confusion; in what we may call the Continental system, though it is English by origin, we consider the angle subtended at the eye by that circle of confusion when the print is viewed at its proper viewing distance. This is the coefficient E used by M. Ellie, and it will be seen that it is allowed to vary in just the same way as the diameter of the circle is allowed to vary in the English system. When this fact is grasped it will be found that there is no real difference between the two systems, excepting in a mathematical sense. The final results are the same, but they are arrived at by different processes.

M. Ellie's system appears to be a very complete one, as his slide-rule seems to be capable of giving all the information that can be wished for. It will be noted that he takes at the start the distances of the nearest and farthest objects that are required to be in focus, the rule then shows the distance on which we should focus sharply and the stop we should use to give the maximum amount of confusion that we deem permissible, or the amount of confusion that we shall get with any other particular stop. The rule also allows for the use of magnifiers. It may be as well to point out that when E is taken as equal to 1-1,000 the result is equivalent to allowing a circle of confusion of 1-100 inch with a lens of 10in. focal length, or a circle of 1-200 inch with a lens of 5in. focal length.

# THE LONDON SALON OF PHOTOGRAPHY.

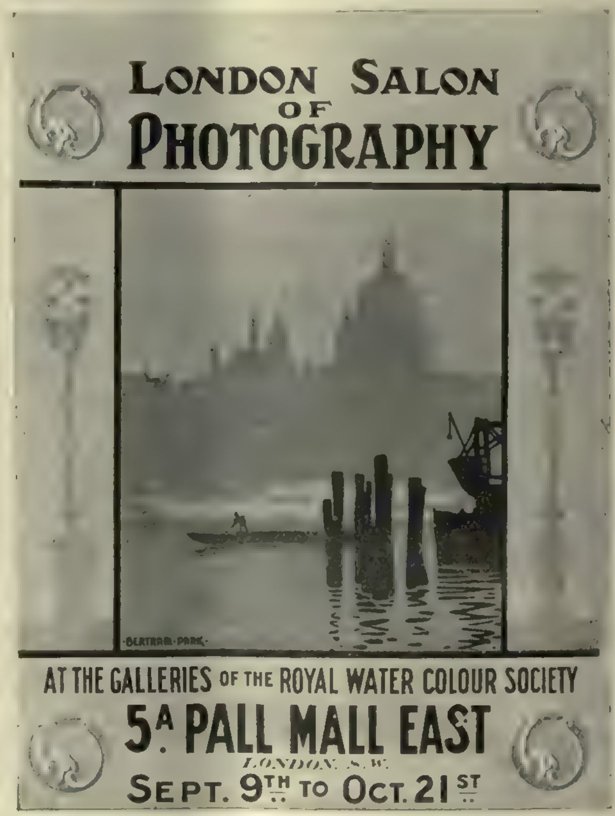
THE exhibition of the society of photographers which calls itself by the French word for room opened on the 9th inst. in the galleries of the Royal Water-colour Society. Although the new organisation is in reality a resuscitation of the Linked Ring, its pictorial tenets are not exactly on all-fours with the old one. In the present show one sees, even more distinctly than in the show last year, that the views of the promoters have grown more liberal; their selection is more catholic and, on the whole, less aggressively "arty" than in the early days. There is nothing peculiarly "salonistic" as the term used to go, and nothing to differentiate from an exhibition by any other photographic body, beyond what lies in the degree of excellence, a distinction open to all.

It may be a sign of the times that a larger proportion than ever of the exhibits are from the hands of foreigners. This may point to the fact that pictorial photography is becoming more popular on the Continent, although, as some say, it has passed its heyday in this country. We are of opinion that much of the attractiveness of this and other similar shows is due to the judicious selection of work submitted by our foreign neighbours. For example, the large multiple-gum prints from Th. and Oscar Hofmeister take a leading place here, and will certainly leave the strongest impression upon the minds of visitors, largely because of the insistence of their size and colour. These German gentlemen have certainly never been beaten in the line of which they were pioneers. The exhibition of their works some years ago in our own offices remains not only unsurpassed, but unimitated. The finest in the present exhibition is without doubt that to which the place of honour has been given. It is called "Aus einer alten Deutschen Kleinstadt" (69), and represents a mediæval street by moonlight, with a ruddy light gleaming in a few windows. There is more truth to natural effect in this than in the other subjects, the quality of colour and balance of tones being remarkably well caught. One little unfortunate detail appears in the aggressive high-light along the back of a white horse in the foreground. The picture would make a fine decorative piece for a large room. "Rothenburg" (51) and "Abendstimmung" (76) are less completely fine, but the latter has good colour. It falls short a little on the side of contrast and strength. Perhaps the next striking thing in the room is the centrepiece of the opposite wall, the imposing stormpiece by F. J. Mortimer entitled "In the Thick of It" (183). This is a large print from a negative taken over the stern rail of a ship that has just ridden over an enormous wave. The sky-line is, of course, hidden by the heaving masses that tower above the ship. The sky is dark with tempest, and the black waves are blotched with foam, whilst sheets of spray fall over the rails. It is long since Mr. Mortimer did anything better than this. Near by it hangs a quiet and peaceful view of the "Mission, Santa Barbara" (187), by Francis Bruguiere, which is also imposing in a different way. The towers of the building are fine pictorial material, enhanced by the proximity of an overshadowing tree, of which proper use has been made. Through the vista a reflected light from the ground creeps into the shadowed walls of the mission. But these facts are but the dry bones of picture-making; the breath that gives them life is the indefinable quality and harmony of tones, that makes something romantic out of what might have been the merest topographical view. Another foreign work of striking characteristics is a group of four girls leaping up in the symmetric disposition of a dance, with their arms aloft. This sculpturesque design is by Fred Boissonnas, who calls it "Vers l'Idéal, jeunes filles dansant" (199). The figures are all off the ground together, and their classic apparel is tossed about by the action. The yellow tint of the picture, it should be explained, is due to a coloured glass that was placed over the print to correct what was thought to be an inharmonious tint inclining to a purple. There are two other dancing subjects which arrest attention. One is "Die Tänzerin" (208), by Hugo Erfurth, and the other by A. Erfurth, called "Girl Dancing" (61). The latter has by far the most action and grace; but the Tänzerin scores on account of the fine mass that it makes, the shape of which is not too adroitly emphasised by the process of clearing away the background from the figure. This process is a dangerous one, resulting almost invariably in unpleasant edges. Some of H. Erfurth's portraits suffer from the same rather catch-penny method of getting force of a specious kind. He is seen to better advantage in the capital oil print, "Portrait" (86).

The size and tonal strength of R. Lincoln Cocks's "La Fontaine des Girondins, Bordeaux" (124) gives this work also an important place in the array of work. It represents a group of sea-horses and their riders, at the foot of the monument part of which is just seen to the left. The selection is a good one, and the vigour of the group, though attributable to the sculptor, nevertheless becomes an attractive feature of Mr. Cocks's design. We rather demur to the brightening of the sky behind the head of the uppermost figure. It involves a mixture of principles. It is perhaps just allowable to arrange a halo in the background of a painted head if material is amenable, but it is over-stepping the mark to introduce a sun for such a purpose in the actual sky behind statuary, when that statuary is very strongly illuminated from another direction. Apart from that little solecism, Mr. Cocks's noble subject deserves high praise. So, indeed, does his other large and effective view of "The Alkaza, Segovia" (85), a stately composition having strong lines and a capital effect in the sky. There may be some who will be struck with Pierre Dubreuil's view of "Notre Dame de Paris" (57), which is three-quarters obscured by life-sized chestnut leaves, black, as seen against the light. The whole picture is possibly ten inches by seven: the chestnut leaf is probably seven inches by seven. Can such an arrangement have any artistic advantages? It is quite in the old spirit of Salon freaks. Of course, the view of the Cathedral may be good or charming; but who can see it or appraise it between and beneath the chinks of these black masses? One simply leaves it with a shrug. Things of this sort are supposed to be a "draw." They may be so, in a limited way, but they do not make for reputation in a society, and therefore their adoption is a short-sighted policy. What a refreshing and inspiring exhibition could be made of things that are striking without causing unpleasant shock! The commonplace and ordinary certainly do pall—in photography—even when they are good; but the remedy for that does not lie in hanging exciting things when they traverse every principle of good art. That is too large a sacrifice to make on the altar of commercialism.

Pierre Dubreuil's "Grand Place" in Brussels (122) is, fortunately, both striking and legitimate in every particular, and therefore a doubly welcome contribution to the show. It is simply a somewhat unconventional bird's-eye view of a market-place, where the white umbrellas of the stalls and the little walking figures stand out strangely but convincingly. Here there is nothing to shock the most fastidious, and yet no one would pass the work by as "the usual thing." The same remarks apply to C. Yarnall Abbott's cleverly treated portrait of Miss Ruth St. Denis, called "The Dance" (121), a charming figure having the angularity of pose and the flatness of tone, tint, and relief associated with Egyptian art. A deal of sentiment and strength characterises "The Pillars of St. Martin's" (171), by A. H. Blake, who has seldom surpassed it. The view is of the portico of the church looking towards St. Martin's Lane by night. The lights of the distant shops are a concentration of effect and a good foil to the sombreness of the pediment, which, it appears, has had to be helped out a little from the enveloping darkness by Mr. Blake's own hand.

The foregoing are the works which will impress the average visitor upon a first tour of the gallery. In a second examination many prints of more reticence, but not of less merit, will be noted. There are the charming interiors and genre subjects of Guido Rey, who now affects a kind of eighteenth century costume in his figures. "Rayon de Soleil" (10) is perhaps the best of them. It represents a lady looking up from a book with a lively expression, in a room prettily arranged. All these prints have a "literary" motive, and, as technical examples, are clean, bright, and sharp, yet withal very pleasing. R. M. Cocks continues to display his forceful Oriental subjects, of which perhaps "Sidi-Okba, A Splash of Sunlight" (18) is the most effective. The deep shadows, the glare of the sun on the ground and on the robes of the figure, may appear to English eyes an over-statement; but they are no doubt perfectly true records of a land where the light is undiffused by vaporous air. "An Arab Café" (21) is a shady interior, where the figures are fine pictorial material. We like also his "Under the Pepper Tree" (195), which, though a little flat, has a good design. C. Wille exhibits several strong portraits, and of them "Miss T." (7) shows his methods at their best. Here the subject is the


LONDON SALON OF PHOTOGRAPHY

AT THE GALLERIES OF THE ROYAL WATER COLOUR SOCIETY

5A PALL MALL EAST

LONDON, S.W.

SEPT. 9TH TO OCT. 21ST

The Salon is advertising its Exhibition by a very attractive and tasteful poster, of which the above is a reproduction.

broadest in treatment. The Misses W. and G. Parrish send from St. Louis some captivating baby portraits. The little fellow "In Hospital" (15) has a lively expression as he looks out at us from his pillows, and "Nestlings" (149) are a pair of twins, presumably, who slumber in their voluminous napery. They will be great favourites of the young lady visitors on the look out for "sweet" and "ducky" things.

"The Dark Stairway" (136), by C. Yarnall Abbott, is another child subject, with the addition of a mother. Here the mysterious shadows of the stairs serve a good pictorial purpose, and give point to the youngster's apprehension. We are glad to see several of the charming landscapes of Leonard Misonne. Few among photographers understand so well as he does what constitutes beauty of effect. "Les Oies" (22) and "La Neige" (196) are both good things; but the crowning effort in pictorialism is the beautifully designed and artistically felt "Aux Champs" (38). If such prints do not sell there is no hope, commercially, for pictorial photography. C. David Kay, who made a reputation a year ago, has done an excellent thing in his sunny and dusty subject of "Repairing Winchester Cathedral" (29). The man wheeling the barrow, the stones, the dry, sunny place where the air is thick with stone-dust, all this is the kind of matter that suits the camera.

A very charming subject of a half-length portrait of a young lady is called "A Sunny Window" (31). It is by Fredk. Hollyer, who has given it a soft melting quality that is suitable and attractive. In "The White Sail" (35) John H. Anderson has sacrificed realism very considerably to pictorial effect. It is not to be denied that his tones are fine in themselves; but we feel them to be too heavy and opaque to properly represent the distance seen beyond the boat. The print looks like a photogravure, over-inked; but it is a strong work nevertheless. There is better quality in the dark tones of John Currie's view of "The Cross, Glasgow Exhibition, 1911" (47). E. T. Holding sends "Evening in the Harbour" (56), presumably of some Dutch town. It would be very good for somebody less clever than Mr. Holding. A simple subject, but an excellent effect, is given in the large stretch of sloping meadow, some trees, and a lively sky, called "Morning" (63), by G. Edwin Keller. From Budapesth come four clever portraits by Joseph Pécsi, one of them a "Portrait of F. Widder" (79), who returns the compliment with a "Portrait of Joseph Pécsi" (65). D'Ora, of Vienna, also shows some extremely strong portraits. All this work should interest professional portraitists here, for it is distinctly out of the common. "Tea in the Open Air" (73) is a sunny and very pretty subject, dexterously handled by C. H. Hewitt, and Mrs. Minna Keene surpasses herself in two charming figure subjects with sunshine through the leaves of trees. One is called "Pomegranates" (93), and the other, and better, "Sunshine and Shadow" (66). R. Dührkoop's works are as fine as ever. One of them is "A. L. Coburn, Esq." (104), who wears neither collar, necktie, nor shirt under his jacket, which fact, we suppose, is the *raison d'être* of the portrait.

"Kingston Mill, Sussex" (102) is a view to which Chas. Job has given what the Germans call *stimmung*. The light over the earth, the trees, and the sky are all full of real feeling, and we should take this to be one of his finest landscapes. James McKissack's "Scarboro'" (131) we saw and admired at Liverpool. Of Alex. Keighley's works, which are not so good here as those he showed last year, "The Shepherd" (172) is, to our minds, the best. Other old friends are J. B. B. Wellington and C. H. L. Emanuel, the former showing an excellent study of a man and woman under an awning, the diffused light making a novel arrangement of lighting. Mr. Emanuel has given up his postcard size this time for a larger-scaled picture of an old street where a grandmotherly old soul stands at a doorway, "Under One Hundred and One" (157), the number of the house seen above her head. Harold Baker has found a fine "Deserted Mill" (162), and Percy G. R. Wright, as in days gone by, comes to the front with a Dutch girl ruminating at a table in a dark room lit by a strong sunbeam. This is called "Pieternella" (163). "Tallages" (166) is another of Harry Wild's mythical castles —great in romantic portent. The "Roses" (177) of Marcus Adams has a very distinguished method, and we ought also to refer to "Paönieu" (80), a still-life group, by O. Ehrhardt, which looks as though it were a slight outline painted upon a warm ground with high lights in flake white. W. H. Porterfield has imbued with a "mood" his "Gorge, Niagara" (200), and Fredk. H. Evans gives us another of his perfect presentations of carvings in the porch of "Chartres Cathedral" (204). We suppose Americans think very highly of Pirie Macdonald's large-scale epidermis charts that gleam with a natural exudation; but we think that people on "this side" would care for less detail on a nose and more on an ear than they would find in "Portrait" (207). "The Victoria Memorial" (209) as seen through trees by A. R. F. Evershed makes a taking subject. As frequently with the otherwise fine works of John M. Whitehead, the sky dominates to the disadvantage of the rest of the subject in the romantic "Stirling Brig" (215). A lady's head by Reginald Craigie is a forcible "Portrait" (219), and the Rembrandtesque attempt of Mrs. Barton in "The Ambassador" (220) is very nearly a great success; but the hand is too fussy in its tones. Bertram Park's work shows great enterprise.

The exhibition will remain open until October 21. Its success will be watched with much interest, since it is a debatable point with many as to whether the public have had enough of exhibitions.

# ON THE RESULTS OF SOME TESTS OF PHOTOGRAPHIC SHUTTERS AT THE NATIONAL PHYSICAL LABORATORY

(A paper read at the meeting of the Optical Society.)

The tests referred to in this paper were taken by the method and with the apparatus fully described in a paper read before the Physical Society.* The time is measured by receiving on a falling photographic plate a focussed beam of light which is made by electrical means to vibrate from side to side in a horizontal plane at a known uniform rate. When the plate is developed the time record appears as a sine curve, in which the interval of time taken by the plate to move through the distance separating two successive vertices of the sine curve is a definite fraction of a second. In the tests to be discussed these intervals of time were 1/25th, 1/50th, 1/300th, 1/1,000th, and 1/2,000th of a second.

The simplest method of testing is to place the shutter in the path of the vibrating beam of light, so that the beam can only reach the plate while the shutter is open. To obtain the duration of the exposure it is then only necessary to count the number of vibrations recorded on the plate. Figure 1 shows an example of a plate in which this method was used. Each complete vibration took 1/300th second. The numbers of vibrations recorded are 18.6, 5.1, 4.5, and 6.1. Hence the durations of exposure in the four cases shown were .062, .017, .015, and .020 of a second respectively.

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* "On a Method of Testing Photographic Shutters." "Proc. Phys. Soc.," Vol. XXII., p. 782. "Phil. Mag.," Nov., 1909. "B.J." Nov. 19, 1909.

By this method we can evidently only obtain the total length of time for which the exposure lasted. For many purposes this is not enough. It is desirable to be able to see what the shutter is doing at every instant of the exposure. A shutter may give exactly the duration of exposure which it is stated to give, and yet be a very unsatisfactory instrument: it may, for instance, not open to its full aperture, or it may take a very considerable proportion of the time of exposure in opening and closing; in either of these cases under-exposure would very likely be the result.

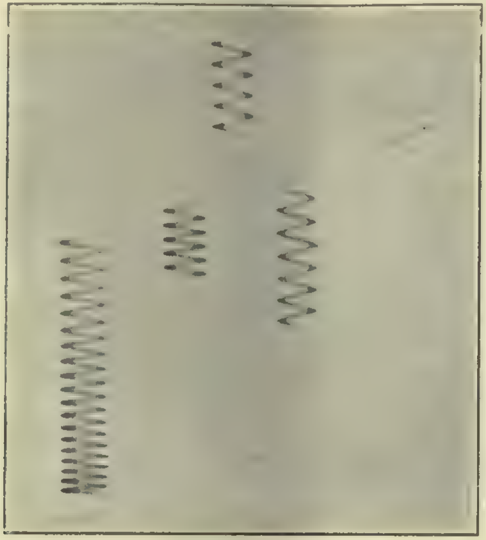

Fig. 1.
In the original print the vibrations appear on a quite clear ground.

To obtain this further information the vibrating beam of light is allowed free access to the photographic plate (i.e., the beam does not pass through the shutter), and a separate record by the side of this time-measuring sine curve shows what the shutter is doing. Figures 2 and 3 (taken from the paper mentioned above) show the method followed. Figure 2 shows a series of stages in the opening of a shutter; to a particular length of the white line (which is really a slit placed close to the shutter leaves), there corresponds a definite area of the shutter opening. Figure 3 shows for every instant of the exposure the length of the white line of Figure 2; the time is measured vertically by the aid of the vibrating light, and the length of the slit is the length of the portion of a horizontal line intercepted by the "shutter diagram." By combining the results derived from measurements of Figures 2 and 3 the area of the shutter opening admitting light to the plate is found for every instant of the exposure.

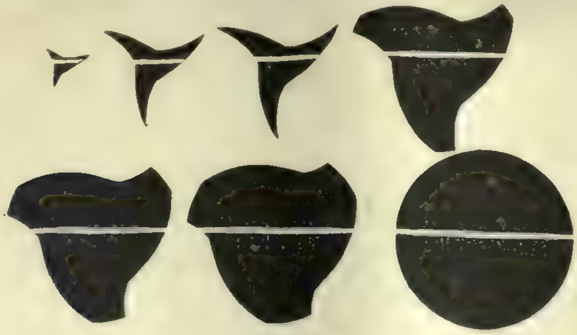

Fig. 2.

In testing focal-plane shutters a similar method is followed. A very narrow illuminated slit is placed almost in contact with the shutter blind. As long as the blind opening is opposite this slit light reaches the photographic plate, forming a rectangular image by the side of the sine curve.

The results to be given refer to focal-plane and to between-lens shutters.

Before considering the results of the tests it is necessary to realise precisely what is meant by the terms "speed" and "efficiency" as applied to these two types of shutters. It is convenient to denote by the "speed" of a particular shutter the length of an exposure defined in such a way as to depend solely upon the shutter; in particular it should be independent of the aperture of the lens used. It may not in all cases be possible to do this, but it is possible in the case of focal-plane shutters and of between-lens shutters which open and close at the centre. It happens, however, that if we adopt definitions of the "speed" which are independent of the aperture, by the speed of a between-lens shutter we mean something very different from what must be understood by the same term when applied to a focal-plane shutter. We define the speed of a between-lens shutter of the type considered to be the interval of time between the instant when light first passes the shutter leaves and the instant when all light is cut off: in other words by speed in this connection we mean the total duration of exposure at the centre of the plate. From a practical point of view speed in this case is an indication of the rate at which an object may be moving without risk of producing an appreciable blurring of its image.

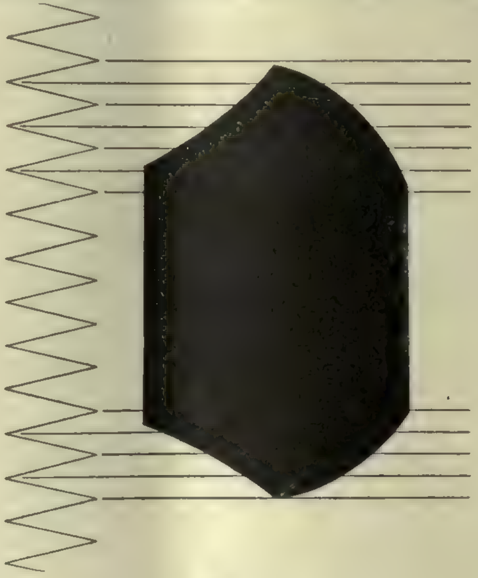

Fig. 3.

In the case of the focal-plane shutter, the speed is defined as the interval of time taken by the opening between the blinds to cross the axis of the lens. This is a measure of the amount of light that will reach the centre of the plate during the exposure, i.e., it indicates whether the plate will or will not be properly exposed: whatever the type of shutter such a measure of exposure is called the "equivalent exposure." We may define this as follows:—

The equivalent exposure is the length of time required to transmit to the plate an amount of light equal to that received during the actual exposure, when throughout this (equivalent) exposure we suppose that every part of the lens is effective which is effective at any instant of the actual exposure.

The exposures in all shutters are connected with the efficiency by the equation—

Equivalent exposure = Total duration of exposure × efficiency.

From this it is evident that the "speeds" of focal-plane and of between-lens shutters are not directly comparable. A case which may easily arise is one in which a focal-plane shutter and a between-lens shutter for a particular lens aperture have an efficiency of .5; the "speed" of the focal-plane shutter may be .001 sec., and of the between-lens shutter may be .002 sec. Under these circumstances the two shutters are equivalent to one another: in each case the length of time during which light reaches the centre of the plate would be .002 sec., and the equivalent exposure would be .001 sec. This distinction must be borne in mind when considering the results of some of the tests.

The particulars which I now propose to give indicate in each type of shutter the highest speeds attained; the range of speeds, the general accuracy of the marked speeds, and the efficiency. This is followed by a short discussion of the factors that affect the efficiency, and some diagrams will be given illustrating a few cases of particular interest.

### Focal-Plane Shutters.

In ten typical shutters, of which only two were made to the same design, of the highest speeds obtained from the individual shutters, the highest was .0005 sec., and the lowest .006; the mean of all the highest speeds was .0025 sec., four of the ten having their highest speeds lower than this. Only two shutters attained as high a speed as .001 sec.

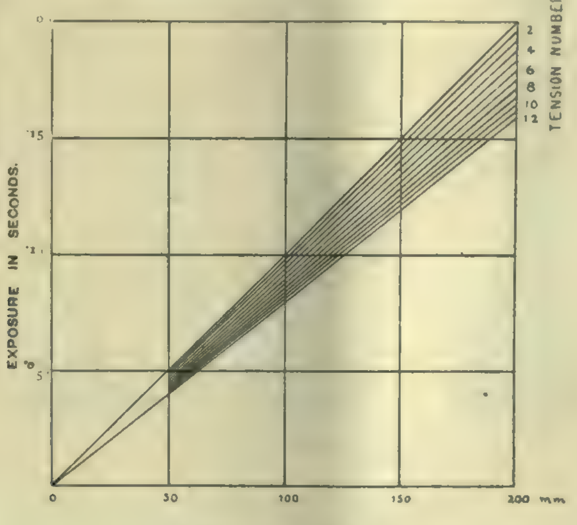

Fig. 4.

In the best case the highest speed was within three per cent. of its nominal value; in the worst case it was three times as long as it should have been—an error of 200 per cent.—taking the marked speed as the basis of measurement.

In some of these shutters the various speeds were denoted by a number, and no indication was given of the speeds they were expected to give. In the best case the mean error of all the marked speeds was fourteen per cent., in the worst case sixty per cent., and the mean error of all marked speeds of all shutters was forty-three per cent.

The longest exposures were between .089 sec. and .030 sec., with a mean value of .056 sec. The ratio of the lowest speed to the highest varied from 61 to 6.6, with a mean value of 33.

In half of these cases the alteration of speed was brought about solely by variation of the width of the opening between the blinds, and the speed was found to be strictly proportional to this width: in four cases the tension of the spring could be altered in addition to the previous adjustment, but the variation in the speed that could be obtained in this way was always small. The percentage shortening of the exposure obtained by changing from the least to the greatest tension varied from seventeen to thirty-five per cent., with a mean of twenty-six per cent. This is shown in figures 4 and 5, in which width of blind opening is measured horizontally, time vertically, and each of the inclined lines shows the relation between speed and width of blind opening when a definite spring tension is used. The fact that the lines are straight shows that the speed, with a definite spring tension, is proportional to the blind opening.

In one case a single operation both reduced the width of the opening and increased the tension of the spring.

The efficiency of a focal-plane shutter is $\frac{1}{1+\frac{ab}{fw}}$ where $a$ is the diameter * of the aperture used in the lens, $b$ is the distance of the blind of the shutter from the emulsion of the plate, $f$ is the distance of the back unit plane of the lens from the plate, and $w$ is the width of the blind opening. In most cases $f$ will not differ appreciably from the focal length of the lens, and $\frac{a}{f}$ will be the aperture ratio of the stop in use. Thus to get the highest possible efficiency (i.e., to make sure of getting fully exposed negatives of rapidly moving objects) the ratio $\frac{b}{w}$ must be made as small as possible. The efficiency then can only be improved by reducing the separation between the plate and the blind or by increasing the rate at which the blind travels, and thus permitting a wider opening to be used. Figures 4 and 5 show that in the shutters tested no great difference in speed was obtained by increasing the tension: this may be due either to the increase in tension being insufficient or to the near approach to the highest speed that the blind can attain with any tension with the construction adopted. It thus becomes of interest to see what velocities were obtained in these shutters.

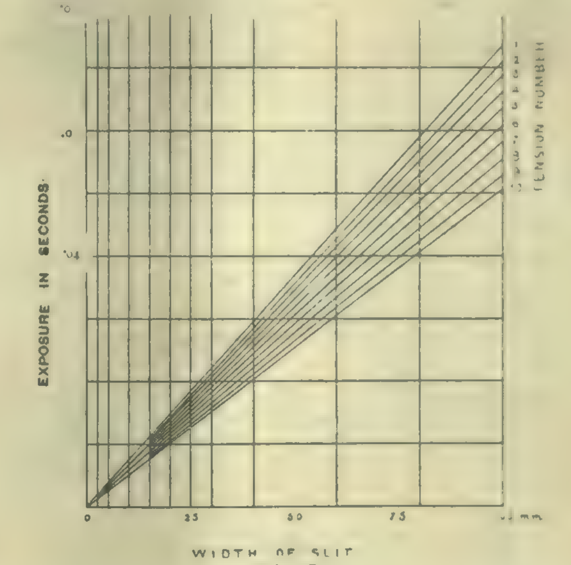

Fig. 5.

Considering only the velocities attained with the highest spring tension, the highest value found was 3.00 metres per second, the lowest 1.15, and the mean 1.84 metres per second. These values do not appear to be so high that they cannot be considerably improved.

The further consideration of the focal-plane shutter may be conveniently postponed until some of the results obtained with between-lens shutters have been considered; it will then

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* This diameter is to be measured in the image space, and not by an actual measurement of the lens mount.

be possible to make a comparison of the results and to consider shortly the relative merits of the two types when either appears suitable for the work proposed.

### Between-Lens Shutters.

The following results are taken from tests on twenty between-lens shutters of sizes suitable for use with such modern lenses as are often fitted to half-plate or 5in. x 4in. cameras. Large between-lens shutters have been excluded, as their speeds are slow in comparison with those of sizes in general use.

The highest speed (duration of exposure) reached by any of these shutters was .0023 sec.; the highest speeds attained by all the shutters were between this and .022 sec.; the mean of all the highest speeds was .0054 sec. In the best case the highest speed was within 0 per cent. of its nominal value; in the worst case it was 2.2 times its nominal value. The mean error for all speeds was in the best case 15 per cent., in the worst case 80 per cent., and the mean error for all the shutters was 46 per cent. The longest exposures were between .17 sec. and 2.3 sec., with a mean value of 1.0 sec. The ratio of the lowest speed to the highest varied from 7.5 to 1,000, with a mean value of 500.

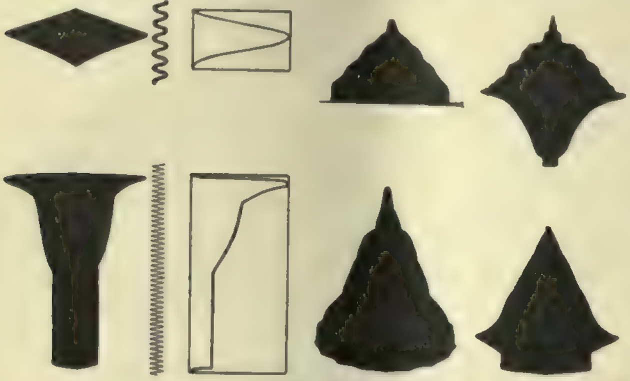


Fig. 6.

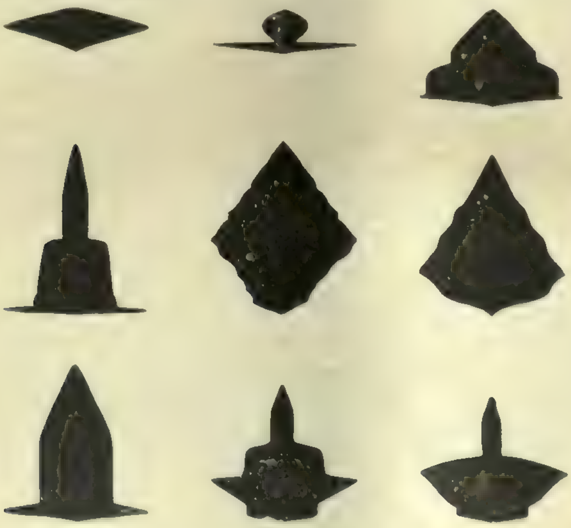


Fig. 7.

In some of these cases the efficiency was determined. In the best case, with a highest speed of .005 sec., the efficiency was 54 per cent.; the efficiency with the lowest speed (.84 sec.) was 100 per cent., and the mean value for all speeds (average value .22 sec.) was 89 per cent. The mean results for all efficiency tests were highest (mean .0054 sec.) 50 per cent.; lowest (mean 1.0 sec.) 100 per cent.; average (mean .22 sec.) 80 per cent.

In the accompanying table the results of tests on between-lens and focal-plane shutters are arranged in a form in which direct comparison is possible.

Most of these between-lens shutters appear to be fitted with a trip gear working in connection with a brake of some kind. In some cases this is in the form of a dash pot with air as the working fluid. In shutters of this type the leaves always open and close very quickly, and the greatest part of the exposure takes place with the full aperture of the lens in use. At the fastest exposure there is no appreciable interval between opening and closing; in these shutters the efficiency at all speeds is good. In some cases, however, the trip arrangement is omitted, and the connection between the air brake and the leaves is direct. Thus the movement of the leaves enables an examination to be made of the way in which the brake works.

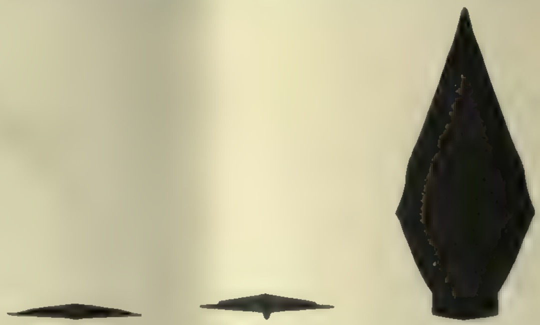


Fig. 8.

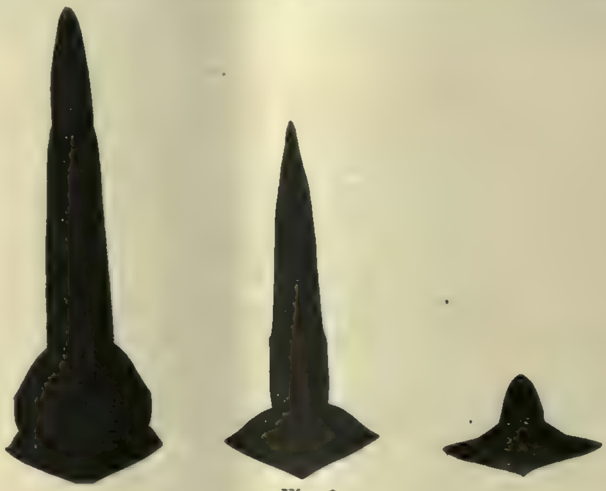


Fig. 9.

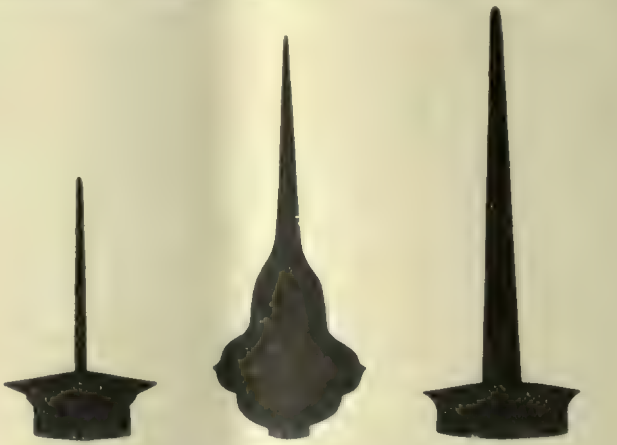


Fig. 10.

The general result does not tend to increase belief in the reliability of the air brake. In some cases it works on suction, in others on compression; the former appears to be the more satisfactory, but in both the movement is liable to be jerky.

This is well illustrated in figures 6 to 10, which are in marked contrast with figure 3. Figures 8 to 10 show sets of three consecutive exposures, each set on the same shutter at the same setting, so that if the shutter were perfectly reliable the three diagrams forming any one figure should be identical in shape and size. In one case the exposure is about ten times as long as on the two previous exposures. In another case the variation is very marked, but not as bad as in the previous case. In the third set the brake had a habit of sticking when the exposure should have been nearly over, so that the diagrams end in a long tail.

T. SMITH.

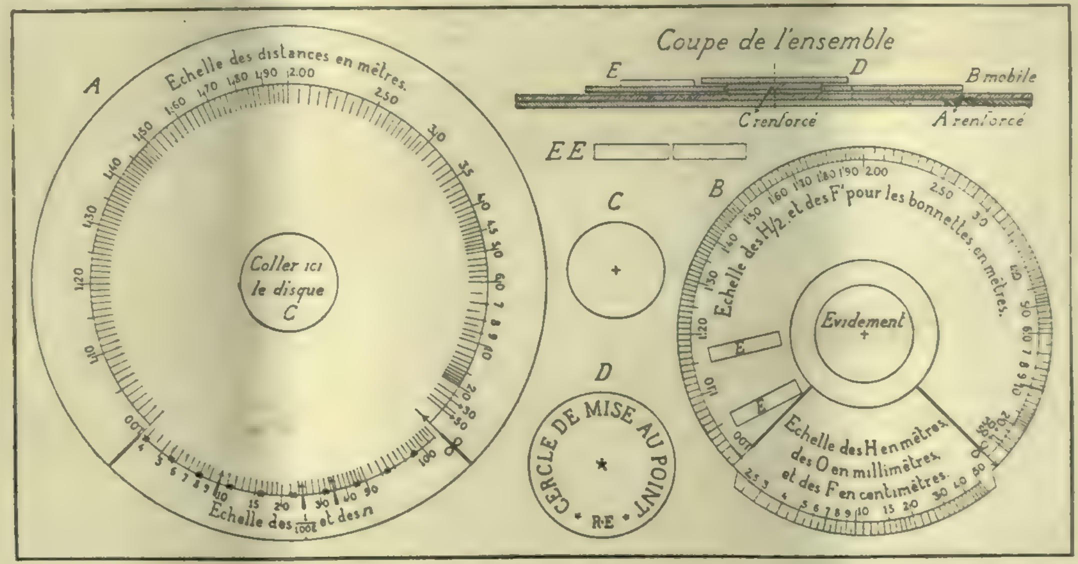
*(To be continued.)*

# DEPTH OF FOCUS IN RELATION TO THE LENS AND THE PLATE.

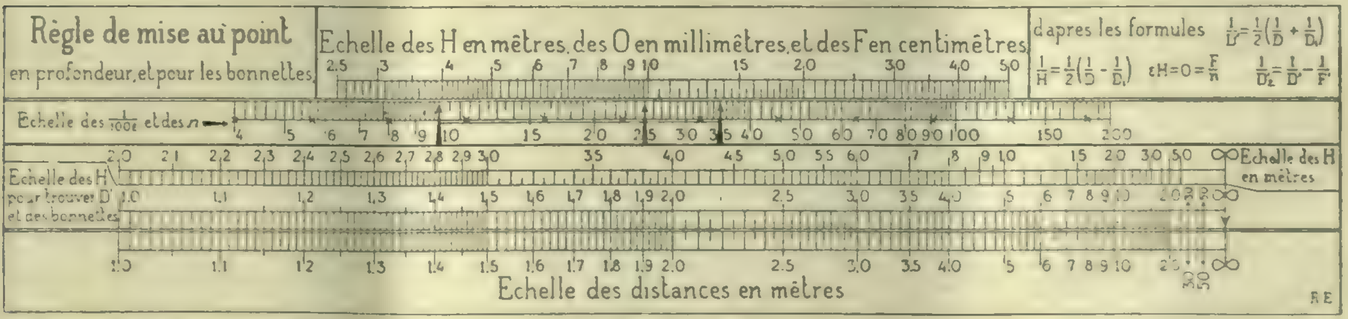
## II.

### Rule for Calculating Focus.

THE formulæ which are based on the use of the co-efficient $\epsilon$ are simple enough to be committed to memory, but their use for the calculation of the distances $D^1$ and H is of such a more complex nature that after having doubled the product of two dimensions one has to divide the result by a sum or a difference. Next, in order to calculate O or $n$, it is necessary to make a division, or a multiplication and a division. For the calculation of magnifiers it is necessary to divide a product by a difference.



Coupe de l'ensemble
E
D
B mobile
C renforcé
A renforcé
EE
A
Echelle des distances en mètres.
Coller ici le disque C
Echelle des $\frac{1}{100\epsilon}$ et des $n$
C
D
CERCLE DE MISE AU POINT
R·E
B
Echelle des H/2 et des F' pour les bonnettes en mètres.
Evidement
E
E
Echelle des H en mètres des O en millimètres et des F en centimètres.



Règle de mise au point en profondeur, et pour les bonnettes.
Echelle des H en mètres, des O en millimètres, et des F en centimètres
d'apres les formules $\frac{1}{D'}=\frac{1}{2}\left(\frac{1}{D}+\frac{1}{D_1}\right)$ $\frac{1}{H}=\frac{1}{2}\left(\frac{1}{D}-\frac{1}{D_1}\right)$ $\epsilon H=O=\frac{F}{n}$ $\frac{1}{D_2}=\frac{1}{D'}-\frac{1}{F'}$
Echelle des $\frac{1}{100\epsilon}$ et des $n$
Echelle des H
Echelle des H en mètres
pour trouver D' et des bonnettes
Echelle des distances en mètres
R E

Fig. 3.

But if the reciprocals of the distances be taken the operations are greatly simplified. Thus, let

$$\frac{1}{D^1}=d^1 \qquad \frac{1}{D}=d \qquad \frac{1}{D_1}=d_1 \qquad \frac{1}{H}=h \qquad \frac{1}{D_2{}^1}=d_2{}^1 \quad \text{and} \quad \frac{1}{F^1}=p^1$$

Formulæ (1), (2) and (8) then become:—

$$d^1=\tfrac{1}{2}(d+d_1) \qquad h=\tfrac{1}{2}(d-d_1) \qquad d_2{}^1=d^1-p^1$$

Moreover, we know that the multiplications or divisions for the calculation of O or of $n$ can be readily reduced to additions or subtractions by the use of logarithms. In accordance with these principles I have devised a slide-rule which allows of problems of depth of focus being very readily made. In my article in "La Photographie des Couleurs" I pointed out two methods of graduating scales of $D^1$ and of H. I have employed the graduation there given as a variant, but with some modifications, which allow of the rule being applied in the calculation of magnifiers.

In consequence of the hypothesis $\epsilon$ = constant the use of this rule can be extended to all lenses up to 50 cm. focal length, the value of $\epsilon$ being moreover chosen as the worker sees fit. In my article I have alluded to different rules, charts, etc., worked out for the calculation of focus, but based on the hypothesis of a constant diameter of the circle of confusion. These, however, can only be used for certain values of F and of $\epsilon$. In a recent article in "Photographische Rundschau," translated in "The British Journal of Photography" of January 14, 1910, Professor R. Luther, while adopting the hypothesis of a co-efficient of angular definition = 1/2,000, has given a table of depth problems in which the calculation is done by simple additions and subtractions. He has also made allowance for the errors which may creep in in the majority of commercial apparatus owing to a want of coincidence between the optical focal-plane and the actual surfaces of the plate. This difference may be as much as 1 mm. in certain cases, and in "B.J." of December 10, 1910, Dr. Scheffer, adopting the same hypothesis with $\epsilon = 1/1000$, has drawn a diagram for focussing. In Fig. 3 I have shown the gradations of this rule, and in Fig. 4 is shown the drawing of one end of the rule which I have made at small expense from pieces of card, grooved strips of pearwood, and small sheets of transparent celluloid, which are cut of L-section to form the "Cursor," shown hatched in the figure. The movable slide (reglet) is formed by the middle band glued to a sliding piece of pearwood.

The graduations of the distance are made according to the law of reciprocals, the two others are logarithmic as for ordinary calculations. On the upper scale of $n$ and of $1/100\ \epsilon$ I have emphasised by means of arrows, the values of $1/100\ \epsilon$ corresponding to values of $\epsilon$ 1/1,000, 1/2,500, and 1/3,500: say 10, 25, and 35, which appear to me to be the values most frequently employed in practice. An arrow could also be marked on 20 corresponding to $\epsilon = 1/2,000$. Moreover, the values of $n$ corresponding to the numbers of diaphragm markings adopted by the Congress of 1900 are indicated by a small cross.

Suppose now that the whole object to be photographed falls between the distances $D = 2.6$ metres and $D_1 = 4.8$ metres measured along the lens axis: with lens of a focal length 12.4 cm. and when a co-efficient of angular definition of 1/2,500 is considered sufficient. We have now to determine the distance $D^1$ (of sharp focus) as also O and $n$. We bring the movable slide into a position such that the line terminated by an arrow and marked infinity is opposite the division 4.8 of the lower fixed scale of distances. Then we slide along the cursor so that its registered line coincides with the division 2.6 on the fixed scale. We at once read $H = 11.3$ on the upper scale under the line of the cursor. Opposite the division $H = 11.3$ of the lower scale of the slide we read $D' = 3.35$ on the scale of distances.

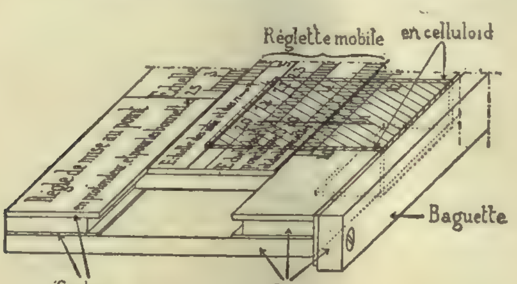


Fig. 4.

In order to calculate O corresponding to $\epsilon = 1/2{,}500$ or to $1/100\ \epsilon = 25$, we bring arrow 25 of the upper scale of the slide opposite $H = 11.3$ on the fixed scale and read opposite the arrow marked 10 the value of O on the fixed scale, which is, in this case, 4.5 mm. Without moving the reglet we should also read the value $n = 27$ opposite the division $F = 12.4$ on the fixed scale. If we had selected $\epsilon = 1/1{,}000$ we should have brought the arrow marked 10 opposite $H = 11.3$ and would have read almost $n = 11$ opposite $F = 12.4$ on the upper fixed scale.

If the arrow marked 10 fell below $O = 2.5$ mm., the minimum value of the working diameter, we should still set it opposite 2.5. For the lens of 12.4 c.m. focal length the value corresponding with $n$ would be 50. The definition would no longer correspond to the coefficient $\epsilon = 1/2{,}500$, but would be the best possible compatible with diffraction phenomena.

It may be noted that the division $D'$ is at an equal distance from D and from $D_1$ on the scale of distances, and that on the slide the division opposite D corresponds exactly with H/2 when the line marked ∞ is opposite $D_1$. We should then dispense with the second scale of H as also with the cursor, mentally doubling H/2 in order to obtain H and reading opposite this value the division $D'$ on the scale of distances. This is what I have done for the focus disc calculator (see below), but the mode of use in this case is less convenient, since it is necessary to double a number.

The graduation of the lower scale of H could be limited at 2 metres, but it has been prolonged up to one meter, as the scale of distances, in view of the eventual use of magnifiers.

The second problem consisting in finding D and $D_1$, knowing F, O, or $n$, and $D^1$, and choosing $\epsilon$, can be easily done with the calculator.

Taking $\epsilon$ as 1/2,500 and using a lens of focal length 12.4 cm., the diaphragm being open to $n = 32$, and finally the exact focussing being made on a distance of 4.5 metres, we shall adjust the slide in such a position that the division 32 of the $n$ scale marked with a cross is opposite $F = 12.4$. The arrow marked 25, corresponding with $\epsilon = 1/2{,}500$, will then indicate $H = 9.7$ metres for the distance of opening. It will be noticed that the arrow marked 10 indicates $O = 3.9$ mm., but it is not very necessary to know this in this case. But if the lens were provided only with a diaphragm scale in millimetres the knowledge of F would not be necessary in order to determine H. If, for example, $O = 3.9$ m.m., one would bring the arrow marked 10 opposite 3.9 and the arrow 25 would indicate $H = 9.7$ metres.

Thus, having determined H and knowing $D^1$, there remains only to calculate $D_1$ and D. For this the line of the cursor is brought to 4.5 metres, that is to say, half-way between the division 4.4 and 4.6 on the distance scale. We then slide the reglet so as to read $H = 9.7$ by interpolation under the line of the cursor. The arrow of the reglet will then indicate $D_1 = 8.4$ metres on the scale of distances. To find D we shall bring the line of the cursor so as to read $H = 9.7$ by interpolation on the second H scale, and in this position the same line will indicate $D = 3.1$ on the distance scale.

It will be noticed that the division of the first H scale opposite D indicates half of H. The second H scale may then be dispensed with, or even the cursor. It would then be necessary to calculate in the head the half of H, and to read the corresponding value D on the scale of distances.

## Calculating Magnifiers.

This calculation is readily done as long as the distance of the nearest point of the object is not less than 1 metre, that is the limit of the marking of the focussing scale.

If the object is a plane surface, or includes a very small depth of field at the distance D, there is no purpose in making calculations of the diaphragm, since the latter can be used at the full aperture. Assuming that the minimum distance T corresponding to the maximum extension of the camera is 2 metres, and that the object is at the distance $D = 1.55$ along the axis of the lens, then the focal length $F^1$ of the magnifier will not be less than 1.55 metres, and in this case the focussing scale, with the magnifier attached, should be set at infinity. In order to calculate the distance $F_1'$ we bring the mark $x$ of the reglet opposite the division $T = 2$ metres on the distance scale, and in this position we read $F_1' = 7$ metres on the lower scale of the reglet opposite the midway point between the gradations 1.54 and 1.56 of the distance scale, this point corresponding to 1.55.

Among the magnifiers at disposal, the focal lengths of which lie between 1.55 and 7 metres, we shall choose that with the greatest focal length, say $F^1 = 5$ metres.

We shall bring the division 5 of the magnifier scale (échelle des bonnettes) opposite the point between 1.54 and 1.56, and in this position of the reglet the arrow marked ∞ will indicate $D_2 = 2.25$ metres, which is the distance on which we should focus when using the magnifier.

If the object includes appreciable depth of field between the distances $D_1$ and D, this latter distance being not less than 1 metre, we shall first calculate $D^1$ as though the magnifier were not being used. If this distance $D^1$ is less than T, corresponding to the maximum extension of the camera, it will be necessary to use a magnifier.

Assume $T = 2$ metres and the object to extend between $D_1 = 1.7$ metres and $D = 1.52$ metres. We shall then calculate $D^1 = 1.44$ as though there were no magnifier, and $H = 9.5$ metres. The value of $n$ or of O is calculated as already done by taking a given value of $\epsilon$, and knowing the focal length F of the lens. Thus, in this case, if F = 12.4 cm. we obtain 32 as the value of $n$, taking $\epsilon = 1/2{,}500$.

The smallest value of $F^1$ for the magnifier will be 1.7 metres, the maximum distance of the field of the actual object. With this distance we focus on H, the hyperfocal distance, and equal to 9.5 metres. To find the greatest possible magnitude of the magnifier we set the arrow ∞ of the calculator to T = 2 metres of the distance scale, and opposite the division $D^1$ = 1.44 metres, on this scale we read $F_1^1$ = 5.2 metres on the magnifier scale. Thus, with a magnifier of 5 metres, focus may be obtained with sufficient approximation at the maximum extension of the camera of 2 metres.

But if we could not provide such a magnifier, we should choose the least convergent among those of focal length between 1.7 and 5 metres, say one of 3 metres. To determine the distance $D_3^1$ of exact focus with this magnifier, we set the division 3 of the reglet opposite 1.44 metres of the distance scale, and the arrow ∞ will then indicate $D^1$ = 2.75 metres on this scale.

The knowledge of the limits of the field of the virtual object is not indispensable. Moreover, it is easy to determine these limits by the rule. For this it is sufficient to set the division H = 9.5 of the reglet opposite $D^1$ = 2.75 on the distance scale. The smallest virtual distance will be read on the distance scale opposite H/2 = 4.8, say 2.15 metres: the greatest distance opposite the arrow ∞, say 3.8 metres.

If we intend to determine the limits D and $D_1$ of the actual sharp field, knowing $D^1$ and H (this latter distance worked out from the given values of $n$, F and $\epsilon$, or more simply from O and $\epsilon$, since the interposition of a magnifier does not alter the value of H), we shall determine these limits as though the magnifier were not in use. Moreover, it will be sufficient to determine the distance $D_2^1$ conjugate to $D^1$, as we have done in the preceding case with the magnifier in use, and the limits of the virtual field would then be determined in the same way.

### A Disc-Calculator of Depth.[5]

I have worked out a disc form of calculator serving the same purpose as the slide rule above described, but more portable and more readily constructed by the amateur. The parts are shown in Fig. 3. The calculator is constructed as follows :—Cut out the large circles A and B, and also the disc D, and strengthen A with a piece of card of the same diameter. In the disc B cut a hole of the diameter of the smaller concentric circle. Cut the card roughly around the disc C, so as to obtain a somewhat larger disc, glue this on thin card, such as a visiting card, and then cut exactly to the circumference, so that this disc can rotate without too much play in the central aperture of disc B, and glue it to the centre of the disc A. Place the movable disc A in place on the large disc, put a little glue on the centre of the disc C, and press down the disc D in order to make it adhere. The disc depth calculator is then complete, but in order to make it more convenient in use it is well to glue a couple of short, stout pieces of card EE on to the disc B on either side of the division 1.10.

The three quadrants or large sectors of the circumferences of the movable and fixed discs are occupied by the graduated scales arranged inversely, and are intended for the calculation of H and the distances, as already indicated for the rule, in which the second scale and the cursor are dispensed with. The four quadrants or small sectors of somewhat greater radius are graduated for the calculation of $n$, O, and H. On these small sectors the movable part includes the scale of H, O, and F, whilst this scale is fixed in the case of the slide rule.

Having determined H and knowing D and $D_1$, with the large sector we bring this value of H, indicated on the small sector of the movable disc opposite the arrow 10, 25, or 35, according to the value chosen for $\epsilon$, and without moving the disc we read O at once opposite the arrow marked 10, and $n$ opposite the division F (the focal length of the lens).

It will be noticed that the divisions of the small sectors are not so complete as those of the slide rule corresponding to them, but the graduation is, nevertheless, sufficient for practical purposes.

. . . . .

The study which we have made above of depth applies to still objects near to the camera or interior subjects in regard to which one has not to trouble about exposure nor to render more detail than the eye can see when placed in the position of the lens. But if the work is done with a very good lens it may be thought necessary for scientific or documentary purposes to obtain the best definition possible on the negative when the latter is examined by a lens or in the microscope, and it would then appear rational to adjust the exact focus on the maximum distance $D_1$, and then to settle the diameter of the diaphragm, taking into consideration the phenomena of diffraction and the influence of the grain. Simple formulæ seem not to be employed in this case.

If the subject contains moving objects, such as a galloping horse, everything requires to be sacrificed to the sharpness of the image, that is to say, the time of exposure must be reduced as far as possible by opening the diaphragm to the maximum, employing an instantaneous shutter, and then adjusting the focus by means of the scale on the distance of the subject as well as this latter can be judged. As in general such a subject does not call for great depth of field, the chief sharpness of the image will be satisfactory so long as the shutter exposure is of sufficient rapidity. An out-of-focus effect of still surrounding objects will be tolerated, and is even an advantage in that it accentuates the sharpness of the moving subject to which it is desired to draw attention.

Lastly, in artistic photography it may be said that no focus rule exists unless it is to focus on the object which appears to present the greatest interest, actual sharpness being considered a drawback. There is even advantage in using a lens in which the presence of certain aberrations allows of fine detail being obliterated. If the whole subject occupies a certain depth, the out-of-focus effect is adjusted by viewing the image on the ground glass and opening the diaphragm as required.

R. Ellie.

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[5] In my article in "La Photographie des Couleurs" I made allusion only to the possibility of constructing this disc. Its construction is analogous to that of the disc which Quintana has constructed for the calculation of exposures ("Photo-Revue," April 11, 1909).

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# THE GOERZ DOUBLE ANASTIGMAT "DAGOR" AND ITS TWO COMPONENT SYSTEMS.

(A Note in "Photographische Rundschau.")

The frequent and numerous enquiries about the position of the principal points in the double objective and in the systems, their focal length, brightness, etc., have convinced me that a detailed description of all these points published in a photographic periodical would be of general interest. I will therefore explain it for a Dagor $f$=120 mm.; the several values for other focal lengths being obtainable quite easily by a process of reduction.

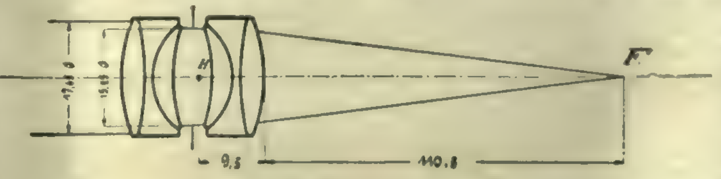

Fig. 1.

Figs. 1 to 3 represent diagrammatically such a Goerz Double Anastigmat "Dagor," the dimensions corresponding to the actual values. $F$ is the focus of the double objective, its distance from the last lens surface being 110.5 mm. The corresponding principal point $H$ lies at a distance of 95 mm. inward from this outer lens surface, or 1.18 mm. behind the plane of the diaphragm, which at the same time is the symmetrical plane. If we determine the focal length as the distance between the ground glass and the diaphragm plane, when focussing "infinity," the result will be 1 per cent. in excess of the actual focal length. Though the distance between the principal point and the plane of the diaphragm is comparatively small, it has to be taken into consideration for very exact work (photogrammetry).

The anterior focus and its principal points are symmetrically situated, with respect to the diaphragm plane, to the posterior points, so that between the two principal points there is a distance of 2.36 mm.

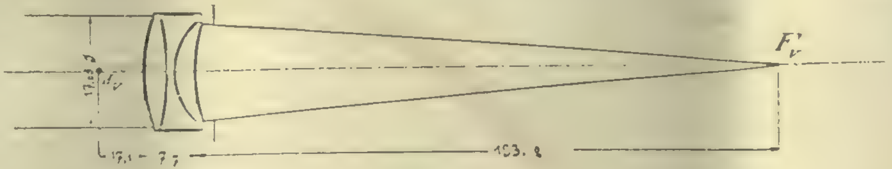

Fig. 2.

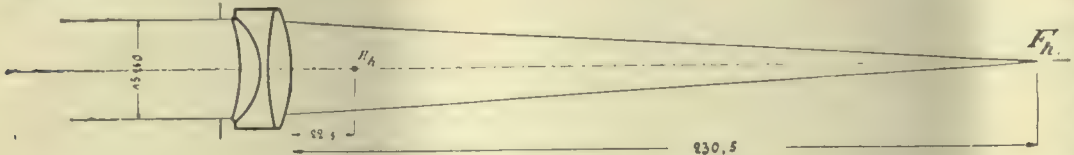

Fig. 3.

For an aperture 1 : 6.8, the diameter of the bundle of rays parallel to the axis which passes through the objective is $\frac{120}{6.8} = 17{\cdot}65$ mm. This bundle is constricted through the front lens, so that its diameter in the plane of the diaphragm will only be 15.25 mm., therefore the aperture of the diaphragm is to the effective aperture :—

15.25 : 17.65 = 1 : 1.16.

The focal distance of the two separate combinations is 208 mm.; the ratio of the focal distances of the double objective to that of the component lens combination is therefore 120 : 208 = 1 : 1.73. The distance between the last concave lens surface of the front lens and its focus *Fv* is 183.2 mm., and that between this surface and the principal point *Hv* is 24.8 mm. As this lens has only a thickness of 7.7 mm., the principal point is still 17.1 mm. in front of the first lens surface. This results in a comparatively short extension of the bellows when using the front lens alone. The diameter of the bundle of axial rays is 17.65 mm., as in the case of the double objective. The relative aperture of the front lens is therefore $\frac{17.65}{208} = \frac{1}{11.8}$

For the back lens the distance between the focus and lens surface is considerably in excess of the focal length, because the principal point *Hh* is 22.5 mm. behind the last surface; it is therefore 208+22.5=230.5 mm. The effective aperture of the back lens is no longer equal to that of the whole objective, but only equal to that of the diaphragm opening, and the aperture ratio is therefore $\frac{15.25}{208} = \frac{1}{13.6}$. It follows, therefore, that the brightness of the front lens is nearly one and a half times as great as that of the back lens.

The anterior focus and the anterior principal point of the back lens are naturally identical with the posterior focus and posterior principal point of the front lens, the positions of which we have characterised above. The distance between the anterior and the posterior principal points of the two lens halves is 5.4 mm.

The equivalent focus of the back lens is not greater than that of the front lens. Both are equal, and if nevertheless different sized images are obtained with the two lenses (always assuming the identical distance of the object) this must be ascribed to the distortion produced by the two separate lenses.

In the front lens the angles which the central rays form with the optical axis after emerging from the lens are greater than those which are included between these same rays and the optical axis before they enter the lens, and this difference increases in proportion to the field. In the case of the back lens, however, the reverse holds good. As a consequence, if we focus, for instance, a square with the front lens, we not only obtain the usual cushion shape, but the image is also larger than would have been the case in an anastigmatic objective of equal equivalent focus. If this lens is used as the back lens we obtain a smaller, bulged image. Both shapes are shown in Fig. 4, in which it is assumed that the enclosed square, which corresponds to the accurate reproduction, embraces an angle of about 40 deg. in the diagonal. W. ZSCHOKKE.

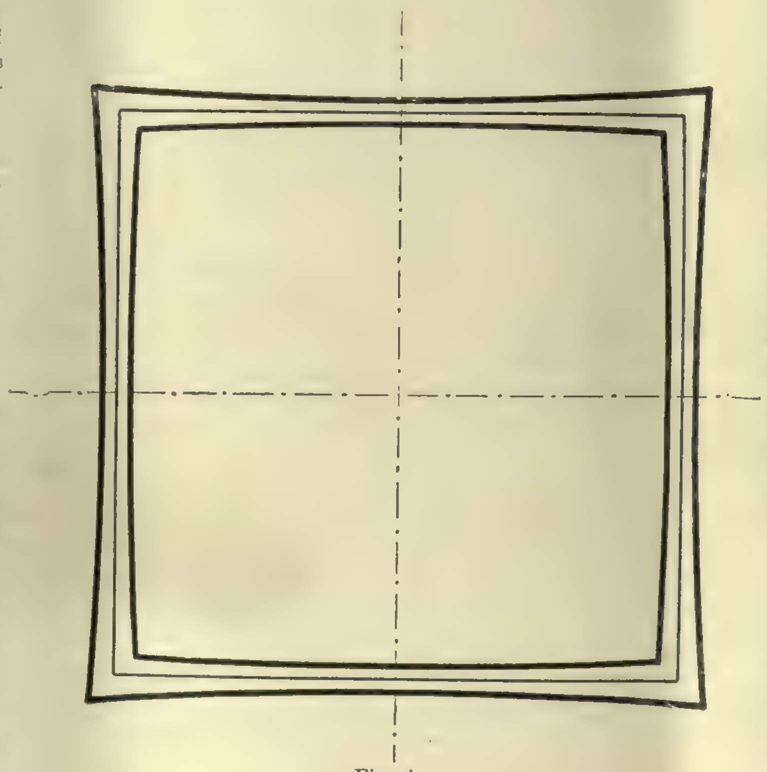

Fig. 4.

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MESSRS. CAMPBELL-GRAY, LTD., photographers, of 88, Edgware Road, London, W., have been awarded the Grand Prix in connection with their exhibit at the Crystal Palace.

ROYAL PHOTOGRAPHIC SOCIETY. — The Society's meetings will recommence on Tuesday, September 19, when a paper on "Reversal and Re-reversal," and another on "Light and Development," both by Mr. John Sterry, Hon. F.R.P.S., will be read. Also, on September 26, a lantern lecture on "English Wild Flowers," illustrated by Autochrome slides, will be delivered by Mr. H. Essenhigh Corke, F.R.P.S.

CHANGE OF ADDRESS.—Mr. B. Rinaldo, from 5, Dianna Place, Euston Road, to 328, Euston Road, London, N.W.

HERR RUDOLF DUHRKOOP and his daughter, who have spent the whole summer in the United States, reached their home in Hamburg on Saturday last, full of new plans and inspirations. They attended the National Convention of the P.P.A. of America, where Herr Dührkoop demonstrated his photographic methods. Just before sailing for home they were entertained by the Professional Photographers' Association of Pennsylvania, at the Goldensky Studio in Philadelphia.

# Photo-Mechanical Notes.

### The Bolt Court Classes.

The prospectus of the classes in photo-engraving, lithography, etc., which are held at the L.C.C. School of Photo-Engraving and Lithography, may now be obtained on application to the Principal, Mr. A. J. Newton. The classes commence on Monday next, September 18, and during the re-building of the school in Bolt Court are held in temporary premises, which have been very efficiently equipped, at Fleet Lane, Farringdon Street, E.C. The courses of instruction include photography for reproduction purposes, the preparation of originals, and the making of negatives for line, half-tone, and three-colour block making. Separate classes for line-etching, half-tone etching, fine-etching, mounting, and proving are also held, the syllabus being planned with full regard to the requirements of the trade. In the lithographic and collotype section, the classes include practical instruction in these surface processes, whilst a further series of courses of instruction are for students of photogravure, mezzotint, and other intaglio methods. Particulars of the day classes, and of prizes, etc., offered to students, may be obtained from the syllabus, whilst it should be added that the Principal and his staff hold themselves at the disposal of intending students, who are advised to consult them in taking up a course of instruction.

### PHOTO-MECHANICAL PATENTS.

The following patent has been applied for :—

SCALE ADJUSTERS.—No. 19,417. Indicating scale adjusters for process cameras. James Tilley.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### How to Make a Magnesium Ribbon Holder, Reflector, and Light Protector at a Cost of One Penny.

PROCURE at the ironmonger's or penny bazaar (writes "T. C. P." in the "Amateur Photographer and Photographic News" for September 11) a tin funnel, then get an inch or so of cane or stick, which you split in two. Pass the magnesium ribbon down the stem of funnel and between the pieces of stick. When you have sufficient length of ribbon protruding, wedge the wood in the stem; it thus becomes firm. The stem of funnel becomes the handle, and its mouth becomes the reflector, which will be found to act as a shade to one's eyes from the glare of the burning ribbon. The reflector can be marked to denote inches.

### Rapid Drying of Negatives.

In "Photography and Focus" recently to hand (writes Mr. B. Schleicher, of Gladesville, New South Wales, in the issue for September 12), I notice a discussion as to the best method of rapidly washing and drying a negative and producing a print from it. It is stated that the drying is one part of the process that is likely to take up most time. In this connection a fact that I have discovered may perhaps be of interest, as it does not seem to be generally known. I always fix my negatives in a fixing bath of the following composition:—

| | |
|---|---|
| Hypo | 4 ozs. |
| Potassium metabisulphite | 150 grs. |
| Chrome alum | 150 grs. |
| Water | 20 ozs. |

This strongly hardens the film, which is a great advantage here, especially in summer, when washing has frequently to be done in warm water. So hard does the film become that a plate can be quite safely dried by heat, e.g., holding over a fire as hot as the hand can bear, without any sign of melting or running of the film. This should be useful if a negative is wanted in a hurry, as the hardening is not an extra operation, but takes place at the same time as fixing, time being thus saved, while the drying should be complete in five minutes, or very little more. This treatment works equally well with bromide paper, which dries, if anything, more quickly than a plate. If as rapid drying as possible is desired, all surface moisture should be blotted off with a clean fluffless cloth, or pure blotting-paper.

### CATALOGUES AND TRADE NOTICES.

"THE CAMERA HOUSE JOURNAL" for September describes the latest patterns of enlarger supplied by Messrs. W. Butcher and Sons, Farringdon Avenue, E.C. Messrs. Butcher have just brought out a "silver" lantern screen for extra brilliant projection, and particularly suitable for showing Autochromes and other colour transparencies. Particulars of this, and also of a new self-feeding arc lamp, will be found in the issue, which is obtainable post free.

PHOTOGRAPHERS' LETTER-HEADINGS. — Mr. W. Knox, Tollcross, Glasgow, sends us a specimen book of designs of letter-headings, etc., printed by him. The examples show great taste in the selection of paper, ink, and type, and we would emphasise to photographers the advantages of adopting this means of creating a favourable impression upon their sitters. This is a topic on which we have often written in the past; with such tasteful work as that of Mr. Knox at photographers' disposal, there is no excuse for many of the wretched examples of stationery which we see week by week.

A FALLOWFIELD PROFESSIONAL LIST.—The firm of Jonathan Fallowfield, 146, Charing Cross Road, London, W.C., have just issued a list of plates, papers, chemicals, and minor professional apparatus, such as dishes and other articles which are in regular demand. The goods are priced throughout at a special figure for cash with order, and many professionals, therefore, should find it a convenience to have this list at hand when taking advantage of the large and varied stock held by Messrs. Fallowfield. The list is sent only on receipt of a photographer's trade card or business heading.

ENAMELS.—Mr. J. W. Beaufort, The Studio, Easy Row, Birmingham, has just issued an extremely dainty list of the ceramic enamels of which he is the actual maker from photographs or photographers' negatives. Mr. Beaufort issues these choice forms of permanent photograph in the shape of lockets and pendants, in handsome leather cases, or mounted in various articles suitable for presentation, such as cigarette cases, sovereign purses, scent-bottles, jewel caskets, and silver christening spoons. These are all excellently illustrated in the list before us, a perusal of which should encourage photographers to offer their work to sitters in these highly attractive forms.

# Meetings of Societies.

### MEETINGS OF SOCIETIES FOR NEXT WEEK.

SATURDAY, SEPTEMBER 16.

Bristol Photographic Society. Outing to Stapleton and Frenchay.

Lincoln Amateur Photographic Society. Outing to Tealby.

TUESDAY, SEPTEMBER 19.

Sheffield Photographic Society. Social Evening.

THURSDAY, SEPTEMBER 21.

Handsworth Photographic Society. "The Development of Negatives with Amidol, Azol and Rodinal." Messrs. Cope, Foster and Teague.

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A PERMANENT exhibition of patents is to be established in London. The exhibition will be situated in a central position, and will be open free to the public all the year round. The object of the exhibition is to establish a centre where inventors may display their patents for the purpose of attracting the attention of possible purchasers, not only in the British Isles, but from all parts of the world. The exhibition has already received a considerable amount of support from important firms, and it is anticipated that when it opens there will undoubtedly be a noteworthy display of great variety. Further particulars with regard to the exhibition are contained in the prospectus which is being issued, and which may be had on application to the Administration Office, 165, Fleet Street, E.C.

# Commercial & Legal Intelligence.

Legal Notice.—A receiving order has been made in the case of Horace Parr Holt, photographer, residing at Brooke Road, Oakham, Rutlandshire, and carrying on business at Church Street, Oakham.

Eastman Kodak Company of New Jersey.—In addition to the usual quarterly dividends payable on October 2, the directors of the Eastman Kodak Company of New Jersey have declared an extra dividend of 2½ per cent. upon the Common Stock, payable on October 2 to stockholders of record on September 15.

The public examination was held at Lynn last week of John William Smith (trading as T. Smith and Sons), photographer, 60, High Street, King's Lynn. The gross liabilities were put at £152; of these £122 were expected to rank; the assets were £58, and the deficiency £64. The debtor stated that he was formerly in his father's employment, and on the latter's death in 1889 he managed the business for his mother. In 1894 he took over the business on a valuation which came out at between £300 and £400. He had only paid £10 towards this sum, as he was unable to afford to pay more owing to heavy expenses in keeping up the establishment. He also suffered loss through a burglary, and had been robbed by two employees to the amount of several hundred pounds. In June, 1897, he made a deed of assignment. He then owed between £800 and £900, and his assets were £542. The business was to be re-assigned to him if he paid 10s. in the £, but he could only afford to pay 5s. in the £, and the trustee sold the stock and furniture. His sister (Mrs. Gibson) bought them for £100, and debtor hired from her the things she had purchased. The business lately had been very small, and towards the end had dwindled almost to nothing. Debtor suffered from deafness, and this had been a great drawback to him. He had been insolvent for years, but had been helped by his wife's relatives a great deal. The examination was closed.

# News and Notes.

Address Wanted.—Mr. S. Hampton, 31, Filmer Road, Fulham, London, S.W., writes to us as follows:—"May I ask any of the kind-hearted readers of the 'B.J.' if they can give me the address of Mr. Willis? He was agent for a brand of French dry ferrotype plates. I used to obtain them at Mr. Roberts, of Houndsditch, but the firm there has been closed for a long time now. I have been told that the address is somewhere in Bermondsey, but have been unable to find it."

How Kitchener "Began."—Some interesting incidents of the youth of Lord Kitchener were related by the great Field-Marshal's cousin, Mr. F. E. Kitchener, of Oulton Old Hall, Stone, chairman of the Staffordshire Education Committee, at a distribution of prizes to evening students at Stone last week. He said he had had something to do with his cousin's early education. Lord Kitchener, it appears, got his first move up in the world when he was appointed on the Palestine Survey, and here he learnt how to manage native soldiers, and acquired a great deal of that command over men which to-day distinguished him. He got that, his first appointment, because some one was wanted to go to Palestine and take photographs, and it was this knowledge that gave Lord Kitchener the lift up.

Classes in Photography.—Some particulars of the courses of instruction in theoretical and practical photography in various educational institutions have reached us. In the Central Technical School, Leeds, the photographic and printing department is under the direction of Mr. S. E. Bottomley, who is assisted in the process classes by Mr. Guy Simmons. A full prospectus, entirely produced both as regards type-setting and half-tone illustration by the department, may be obtained on application to the school at Cookridge Street, Leeds.

At the Blackheath Road Evening Science Centre, Greenwich, S.E., a course of lectures on photography will be given on Monday and Friday evenings, commencing September 25. The teacher is Mr. F. W. Bannister, and the fee for the course 2s. 6d.

Also at the "Oliver Goldsmith" Centre, Peckham Road, Camberwell, S.E., Mr. F. W. Bannister will conduct a photographic class on Tuesday and Thursday evenings from 7.30 to 10. Fee, 2s. 6d.

At the Cavendish Road School, Balham, S.W., which, like the Greenwich institution, is under the direction of the London County Council, a similar series of classes is held, also on Tuesday and Friday evenings, by Mr. W. Francis Brooks. A camera club has been organised in connection with this class, and outings are held during the session.

As in previous years, the instruction in photography by Mr. E. Senior will be continued at the Battersea Polytechnic, also at the Birkbeck Institution, Chancery Lane, where Mr. Senior is also the instructor.

The London Salon of Photography.—The following lectures, chats, and discussions will be held at the exhibition of the London Salon of Photography, in the Gallery of the Royal Society of Painters in Water Colours, 5a, Pall Mall East, London, S.W.:—

Friday, September 15.—Anthony Guest. "The Search for Beauty."

Tuesday, September 19.—William Rothenstein. "Photography the Miracle. Has it any relation to a work of art?"

Friday, September 22.—A. H. Blake, M.A. "Pictorial Work in Great Cities."

Friday, September 29.—Alexander Keighley. "A Tour Round An Old Garden."

Tuesday, October 3.—G. A. Storey, A.R.A. "Does Pictorial Photography Progress?" with references to pictures hanging in the Gallery.

Friday, October 6.—H. Snowden Ward. "Hints to Would-be Picture-makers."

Tuesday, October 10.—Frank L. Emanuel. "Some Forgotten and Some Unknown Etchers," with many examples of their work.

Friday, October 13.—Arthur Marshall, A.R.I.B.A. "With a Camera in Holland."

Friday, October 20.—Charles E. Dawson. "Costume," with coloured designs and sketches.

Wratten and Wainwright at Buda-Pest.—The announcement having been made in a London financial paper that Messrs. Wratten and Wainwright were establishing a factory at Buda-Pest, we took an early opportunity of interviewing the firm with a view to learning something of the new departure. Dr. C. E. Kenneth Mees, who has just returned from Buda-Pest, informed us that the establishment of a factory by themselves in the Hungarian capital arose out of representations which were made to them some time ago by the Buda-Pest Bank, Ltd., a firm which is interested in the business of the First Hungarian Photographic Factory at present manufacturing dry plates in Buda-Pest. As a result of negotiations between Messrs. Wratten and the Buda-Pest Bank, Ltd., a new company has been formed with a capital of £16,500, the directors including representatives of the Hungarian Photographic Societies, Directors of the Buda-Pest Bank, Ltd., Mr. S. H. Wratten, Dr. C. E. Kenneth Mees, and Mr. Leo Weiss, of the First Bohemian Glass Co.

Messrs. Wratten and Wainwright will be entirely responsible for the technical direction of the business. Mr. S. H. Wratten is at present in Buda-Pest superintending the erection of a new factory, where it is Messrs. Wratten's intention to manufacture plates to supply the customary general demand. They will not manufacture panchromatic plates in Buda-Pest for the present, but the Buda-Pest company will act as their agents in Austria-Hungary and Germany for the British-made products. It is hoped within the next few months that the new factory will be in full working order, and that the present staff will remain under the direction of Mr. S. H. Wratten and Dr. C. E. K. Mees. Those who have witnessed the recent marked success which has followed the enterprise of Messrs. Wratten and Wainwright will congratulate them upon their entry under the most favourable auspices into the Continental trade.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## ON A STANDARD SIZE OF PHOTOGRAPHIC PORTRAIT.

To the Editors.

Gentlemen,—The general outrun of the professional photographers seem to be easy-going creatures, and so allow themselves to be overrun by the mount makers or any extravagant notion held out to them at times.

My own experience is that a cabinet size portrait, with a mount about 7 x 5½, or even a trifle less each way, would be a very acceptable size to the public generally, who long have complained of the large mounts and the damage they usually receive by the post.—Yours, etc.,
J. P.

Edinburgh.
September 11, 1911.

## ACID FIXING BATHS AND INTENSIFIERS.

To the Editors.

Gentlemen,—I am inclined to think "the old is better" from experience in clearing and keeping, and I have not found the negatives to deteriorate.

My old acid fixing bath was:—

Hypo, 1½ lb.; water 60 ozs.

Citric acid, 3 drachms; water, 20 ozs.

Pour acid solution into hypo when both are dissolved. Do it outside, and leave it for a day or two with the cover off, as it smells horribly.

The new is the metabisulphite bath in the "B.J. Almanac." I know nothing of the chemistry of either, but when I use the latter I always think the old is better.

Nowadays, one throws a negative away if it is not amenable to the bichromate intensifier; at least, I do. For many years I had stock bottles of Edwards's intensifier, as the enclosed formula, and the longer it was on hand the better it worked on the delicate shadow detail to be built up. Negatives of fifteen years ago are still as good as ever. I expected someone would quote this old favourite during the battle some time ago, but it had no champion. I should be glad if you would state your opinions on these matters.

HOLDERNESS.

The extract containing the formula is the following, from "B.J." of twenty years ago:—

"Many photographers have an aversion to intensifying their negatives when too thin to give satisfactory results, and they try to get over the difficulty by printing in a weak light or through coloured glass. He (Mr. Edwards) never scrupled to strengthen his negatives when necessary, and by these formulæ never had a case of fading, or the negative altered at all by keeping:—

| | |
|---|---|
| A.—Perchloride of mercury | 50 grs. |
| Potassium bromide | 50 grs. |
| Water | 10 ozs. |
| B.—Nitrate of silver | 50 grs. |
| Potassium cyanide (pure crys.) | 50 grs. |
| Water | 10 ozs. |

"After the negative had been well washed to free it from hypo, bleach it in A, and, after another good washing, proceed to darken in B. Mr. Edwards thought that this bleaching gave a purer white than the plain mercury solution, and solution B gave a good blue-black. In many cases the negative only requires slight intensification, in which case the bleaching need not be carried to any extent; and Mr. Edwards's method is to bleach the negative in the proportion of density required, it being a fallacy to always whiten through to the back of the negative.

"Mr. B. J. Edwards then gave a practical demonstration of the process, cutting a stereoscopic negative in two, and intensifying one half, when the two were compared; the one treated was greatly improved."

[We can only say in response to our correspondent's request that we infinitely prefer the new fixing bath. We consider the result of using a mixture of hypo and acid as wholly wrong in theory, and likely to be disastrous in practice. True, our correspondent's formula contains very little acid, and that a weak organic acid, but the decomposition of hypo once having been started, it is difficult to say where it will stop. As regards the intensifier, the formula is not that usually known as Edwards's (mercuric iodide and hypo), but is Monckhoven's. The very fact of its altering in its action with age is, in our judgment, one good reason for preferring newer formulæ, such as the bichromate.—EDS. "B.J."]

## THE RAPIDITY OF LENSES.

To the Editors.

Gentlemen,—When I see in your paper a notice of a new extra rapid lens I think of my own experience with one. I used a 5 in. Busch "Detective Aplanat," *f*/6, for several years with great pleasure. Thinking I might get a quicker lens, I invested in a —— —— *f*.4.8 lens of 4¾ in. focus, list price £5 15s. I used this in a focal-plane camera, and got splendid results, the definition being very fine indeed. Having the Busch in a stereo camera, I one day put the *f*/4.8 in, and packed it up till both were in sharp focus for distance. On racking out front, you can imagine I was surprised to find them a perfect pair, and that they kept in focus for as long as the camera would rack out. One lens was marked 5 in. and the other 4¾ in.!

I now used them in the stereo with a shutter that must give equal exposure to both. Now the worst part of the tale. When both lenses are at *f*/6 the *f*/4.8 is less exposed, and when the Busch is at *f*/6 and the *f*/4.8 lens at *f*/4.8, both sides of stereo have had exactly same exposure. Thus I paid £4 5s. for rapidity that was not there. In fairness I must say I got other things—covering power, for one thing. The *f*/4.8 would cover a postcard easily at full opening, while the definition of the aplanat soon fell off towards the margins of a quarter-plate. The aplanat is an R.R. lens of four glasses, the *f*/4.8 has three lenses in each combination, and is half an inch thick. I suppose loss of rapidity is due to absorption.—Yours faithfully,
R. L. BOYD.

[Our correspondent's experience is certainly a remarkable one. We are not so much surprised at the accidental pairing of the two lenses: an eighth of an inch more on the focal length of the one and the same amount less upon the other would give this. Has our correspondent measured the size of the images? It is quite possible for two lenses to keep in focus together within certain limits, but the images may not agree in size. The fact that the *f*/4.8 lens and the *f*/6 lens give absolutely equal exposures is remarkable, even allowing for the difference in type, which, as we have several times pointed out, does exert a distinct effect. We suggest that our correspondent reduces the exposure until the negatives are really under-exposed. This will show any difference. With full exposures, where the image is not developed right out, the exposures may appear to be equal, but with the minimum exposure a difference should be seen.—EDS. "B.J."]

## BACKING AND THE HYDRAZINE PLATES.

To the Editors.

Gentlemen,—I had not overlooked the halation troubles you refer to, for I was not to know but that the abolishing of this was also one of Saint Hydrazine's miraculous qualities. It is fortunate that so admirable a backing as the Paget Co.'s new one will accompany the plates, for then we shall be "quite all right." One special virtue of the abolishing of over-exposure is that the amateur of infrequent practice is made equal on this ground to the professional in constant practice, for he will know that within even unreasonable limits—say a ten times error—he will be certain of a perfect exposure for printing quality, and when he is in doubt in difficult lighting, yet the whole success of the effect is depending on non-over-exposure, he is still certain of success so long as he gives enough. Verily it is Eureka!

When I try these plates for myself I shall be content with three sorts of subjects: a normal one, such as offers no special difficulty; one of great contrasts; and one of a delicate, high-keyed sort. If this last and the normal one permit of, say, three times and ten times over-exposure, yielding negatives perfect in printing gradations, the plates will be a boon indeed. The great-contrast subject contains the conditions of over-exposure within itself, as the darkest part will, of course, be exposed for; the resulting negative must therefore be one that will print perfectly all over without any recourse to after control, any faking or dodging. Once more, Eureka, indeed!

I should like to express my regret that I was in error as to the absence of patent and other secrecy nonsense. It is not possible for one firm to supply all who will want such a Royal Road of a plate, so perhaps it will lead our other chemical experts to discover some other immunising agent, and Hydrazine will not long hold the entire field. Why not, indeed, look forward to an any-exposure plate. So long as it has seen the subject, it has retained the impression, and can be developed to what is wanted. Who knows?—Yours,

FREDERICK H. EVANS.

## THE PROPOSED PHOTOGRAPHIC ASSISTANTS' UNION.

To the Editors.

Gentlemen,—I thank critics and supporters alike for the interest they have taken in the proposed union. The critics have, perhaps unconsciously, done the cause much good. It would be out of place for me to suggest through these columns what form the union should take. I much prefer to lay any suggestions I have before the assistants personally, and, therefore, have much pleasure in announcing that a meeting for assistants of both sexes will be held at the Eustace Miles Restaurant, 40-42, Chandos Street, Charing Cross, on Tuesday, September 19, at 7.30 prompt. Trusting there will be a good attendance, yours truly,

6, Salisbury Road, Watford. PHIL. JARRETT.

To the Editors.

Gentlemen,—As far as I can judge, none of your correspondents seem to have any very definite ideas for the practical realisation of a union. There is no one who really questions the desirability of having our trade or profession organised. At the present time both employers and employed suffer severely by undue price-cutting, caused very largely by want of organisation. I therefore suggest that steps be taken to form a federation of operative photographers (or photographic operatives), with a constitution moulded on the lines of the Postmen's Federation or the Shop-assistants' Union. We cannot very well adopt the constitution of the shop assistants altogether, as from the nature of our trade there are only a few of us in each town; and we cannot very well adopt the constitution of the Postmen's Federation *in toto*, for the simple reason that the postman has conditions which are exceptional, and which we cannot very well look for in the photographic trade. For instance, the postman is appointed to his position, and once there he is in permanent employment, whereas a photographic operator, maybe, gets a situation which may or may not be permanent. However, my idea is this: if the postmen, who are, on the average, just as much scattered as we are, and also not famous for retiring with fortunes, can manage to have an organisation, there is no reason why we should not manage as well. There is another reason why I instance the postman, and that is, his society has been largely built up on "no strike" lines. I think it would be most foolish of photographic assistants to develop a society with a "strike policy." Firstly, because it would be futile, as the big majority of us are producing portraits, and in the event of a strike among assistants employers would simply undertake no more orders than they could manage to complete themselves. Secondly, because a lot more can be done in the way of securing reasonable conditions of employment by peaceful negotiations.

Another thing which impresses me is this: we should not exclude from such a union the man who starts in a small way on his own account. Personally, I am in business on my own account, and I may say I am not turning out 24 in. by 20 in. carbons and driving about in my motor-car, but am producing the class of photographs which sell, and by which I have managed to make a living and pay my way for the past few years. I don't go in for "stickybacks and postcards" for any particular love for that class of business, nor yet because I couldn't do a better class of work, but simply because I find it easier to keep myself in constant employment, and therefore be more certain of a regular wage each week. It only needs a glance at your advertising columns to show what class of work is required from assistants, and also I have met several really capable photographers in my time who were glad to turn to a cheaper class of work in order to make a living, not to mention men who run high-class establishments in one part of their town and a stickyback shop in another. I am in no way blind to the advantages of a really high-class business turning out the best of work, and when I get the hold of sufficient capital I hope to have a business like that myself. But in the meantime I can't help noticing the number of photographers who are producing cheaper stuff. These men are not all fools, nor yet are they necessarily incapable of doing good work, but they simply realise the necessity of making a living, and realise that the most certain way of doing so is to supply goods at a price low enough to be within reach of the surrounding population. There is another reason why we should include these men who are doing, say, a "stickyback" trade, and that is that if the "stickyback class of photographer" can raise his prices to certain agreed minima, it will always strengthen the hands of the men who are turning out a better class of work. I think this is the rock on which the P.P.A. have struck. As far as I can judge, the P.P.A. membership is not much more than a tenth of the photographers carrying on business in this country, and I also think it futile for the P.P.A. to attempt to ignore the man who cannot command the best of prices. The strength of a chain is the strength of its weakest link, and it is very little use for the strongest links to hold together if they disregard the others. However, all these various points would be, and could be, much better discussed and understood if photographers in each district were organised and met together regularly. Therefore, as above, I suggest that steps be taken to form a federation. In my humble opinion, the best thing to do is for someone in each district to act as a secretary (*pro tem.*), and arrange a meeting of those in favour of affiliation. Mr. Jarrett could possibly help us here, as he has a lot of names, and could suggest men who might be willing to undertake the initial trouble of arranging meetings in different districts. Personally, I would be willing to try and arrange a meeting in this district (Tyneside) if those interested will write me stating which time or place would be most suitable, and enclosing a stamped addressed postcard for reply. Afterwards, we could have local branches which could be linked up by district councils, which in turn could be drawn together by an annual conference, at which all outstanding questions could be fairly dealt with. There should be no difficulty about requiring big subscriptions from members, and I may say that some of the poorest paid workers in the country are organised and manage to pay contributions. The postmen pay an affiliation fee of 2s. 6d. per annum, and added on to this is the local branch expenses, and yet the ordinary contribution runs to about 2d. a week, which includes a fortnightly paper, published by themselves. Therefore, we should be able to manage a union without all having to do without our dinner to pay the contributions. In any case, the expense of an initial meeting should only run to coppers per head.—Yours sincerely,

ROBERT C. PLATT, JNR.

51, Carr Street, Hebburn-on-Tyne.

To the Editors.

Gentlemen,—I have been reading with interest since commencement the correspondence anent the establishment of a union for photographic assistants. Personally, I see nothing against such a move, but everything in its favour, and for the life of me fail to see what any man, whether employer or employee, can have to say to the contrary, if either are prepared to be as just to the other fellow as they expect the other to be to them. All the laws, unions, or organisations in the world have no terrors for the man whose aim is straight and whose hands are clean.

Until Mr. Goodyer and "Non-unionist's" letters appeared, I was "just looking on," like the other thousand-and-odd, but it has been said that "some folks walk where angels fear to tread," so here goes. I would beg of your correspondents to accept my contribution in the spirit of friendliness it is written, and assure them I shall "extenuate nought nor set down anything in malice," while if I "have a tilt at them" it will be in perfect good humour and with the happiest intentions.

Mr. G. takes exception to Mr. Jarrett (whom I don't know from Adam) on account of his not being "influential" or sufficiently "serious." I can see myself consigned to the same box forthwith, and Mr. Cohen with us.

*Re* Mr. Jarrett's remarks *re* pen, ink, or paper, I don't suppose one in twenty who read it gave it a second thought. I believe he was on a "leg-pulling" or "angling" expedition, and to see Mr. G. taking him seriously while he complains that he isn't serious enough is—well, it's great! Anyhow, Mr. J. seems to have succeeded wonderfully well on his "expedition." Mr. G., I am sure, will agree that in every line (I beg pardon, profession) there are men who are quite content to hang on to anyone's coat-tail and be pulled along, rather than take a little trouble themselves for their own betterment. It was to this type, I presume, Mr. J. dispensed the tonic. Mr. G. certainly is not of this type, or he would not have troubled to write you.

Regarding Mr. J.'s lack of seriousness, I think we have enough of the brown and the grey in life every day. As far as I am concerned, any man can romp as much as he likes, so long as he doesn't miss the point. Besides, sir, we are not all of the same temperament. To Mr. G. my effusion may be, to him, in the worst possible taste, or a more gigantic joke than his was to me, but that is simply as it strikes each one, isn't it? Mr. G. says, "Intelligent people like photographic assistants, etc., etc." Most of us gauge intelligence by actions; others, probably, by the letters they write. In this case I think that the intelligence must be gauged by the rate of pay which is peculiar to this "profession." Intelligent, forsooth! Yes, certainly, and more. "Used to handling big quantities," "clean and economical worker," "conscientious control in absence of principal," "clever with children." And the stipend fits the last word, "children"—21s. to 30s. (top rung). Truly by their screw shall ye know them—"Spectenur agendo."

Never mind the old Jarrett (sorry—I mean parrot) cry of incompetents, etc., etc. Has a man got an incompetent assistant? Push 'em! Has he got an admittedly competent one? Pay 'em! Has an assistant got a good employer? Let him or her put their brains, their best, into their service. Encourage a just employer by every means in your power. When found, make a note of.

Have you encountered a "Shylock"? Don't get excited, but organise, and the Shylocks and shufflers can soon be dealt with. Don't worry; bask in the sunlight of a stout heart and a merry one. I know it wants some doing, but it is a marvellous tonic, and better than all, it's infectious—others catch it. This and self-respect, manliness and womanliness, the claiming, not as a favour but as a right, a fair day's pay for a fair day's work, a just and equitable return each to the other, and even in this hustling, cut-throat age it can be done, if men will. Those that won't, just for sheer cussedness—well, there are ways and means to fit the case. The foregoing are, to my mind, the attributes of an intelligent being, and not the reverse.

I heartily re-echo Mr. Goodyer's request, "Let us be serious." It is not a joke, it is a tragedy that in this enlightened age a body of men and women like the photographic assistants generally should be content to remain where they are. Shame on them, with all their imaginary superiority. Theirs is the blame, and not another's.

Why, the shop assistants can even recognise the importance of combination, and are we superior to them? I think not.

But if the P.A.'s are, as Mr. G. infers, intelligent, they certainly do not require, and I don't (with all their failings) believe they would allow themselves to be patronised by any one of the "influential" type of person. I think they would pretty soon send them to the right about with "Thank you! We may not possess all the wisdom, but we have sufficient to know what we want, and however well-intentioned you may be, we are of the opinion that we who wear the shoe know best where it pinches." Mr. Jarrett may not know a pig from a popgun, but I take it he knows something of P.A.'s conditions, and although, like me, he may only be one of the genus ordinaire, this alone enables him, or any other P.A., to be a better and more reliable judge than anyone of the class influential. Who does Mr. G. expect to take the job on? You, who are kept alive by "the trade," certainly not by the assistant, who only reads your paper when he wants a berth, or a camera, probably? I have never known any paper give such publicity to a question of this kind as yours has done. Would the "Grocer," "Draper," or "Schoolmaster" do it for their assistants? I don't think so.

No, sir. If the rank and file themselves are so intelligent, superbly superior, and content with the crumbs as to display no interest in things that concern themselves, let them remain where they are. All the editors, Jarretts, Goodyers, or "Tutuses" are impotent if the assistants themselves are indifferent: it is their fight or cause, and no one else's. I trust they will prove themselves the intelligent beings Mr. G. believes them to be, and show it by their actions, remembering that the world respects those who respect themselves, although they may differ from their views. I'm sorry to see Mr. G. advise the assistants to "drop" it. Why, they haven't got hold yet!

*Re* "Non-unionist"—well, he goes several better than Mr. G. I once heard an old gent. of the genus smock frock say as "a bounder on a bike" flew by him, "Ugh! Tarnation things! What d' they want they for? Never did want 'em. Hope 'e breeks 'is nick! Didn't want 'em in my time. Don't see why they want 'em now. Orter be locked up!" etc., etc. But the community could see that it was a question of "getting there" quicker, and we have them to-day, only more so.

P.A.'s may, and are, thinking differently to what they did a very few years ago, and are beginning to think they'll never "get there" by everyone "doing what is right in his own eyes." "No necessity for one," "nothing got by combination," etc., etc. Well, well, well! Words fail me.

"The assistant must be pushful, energetic, persevering, increase his knowledge, etc., etc., *ad lib.*" "Take pains," eh? Some of them are all pains and no take already. The assistant can "put a value on his ability." True, O King. But there's another factor "Non-unionist" appears to have overlooked, and that is the other fellow of the genus influential, who will tell you, and speak truth too, that there are scores to choose from who can do quite as much as you for considerably less, but he rather liked the tone of your letter, and accordingly sent for you, but he is going to re-adjust your valuation all the same, and he can all the time the market is full; and it is not of duffers only. Oh, no. Plenty of capable and conscientious men amongst them. Facts known to all of us.

Those outside are victims of the law of supply and demand, etc., a law which did not die when Queen Anne did. There is a "deep down" reason for all this, but our business for the time is with the surface. The things we all can see and know if we care to. They will keep us busy enough.

I have nothing to sell nor an axe to grind, and hold no brief for anyone or any cause apart from the cause of justice to all parties concerned, master and man.

Much has been made of the "quantity" man. If some of the employers would move with the times and get the hustle on themselves they are so prone to prate about to their workers, much that slips and slides through their fingers could be retained, and new channels of work could be found. The "cutters" and "quantity" people are the product (like the H. and C., Lipton's, Internationals, etc., etc) of the apathy and conservatism of "the trade," who attach so much importance to traditions.

"Sunday trading" is a debatable point, a subject of many views. If the public want it, "they will have it," and there is an end of it. But if a studio does do business on a Sunday, another day should be substituted as a rest day, and fixed by legislation, not left to the good will of the influential individuals. "Non-unionist" seems to be very solicitous *re* the welfare of employers. "They will shut up," etc., etc. I think they, like the "quantity" men, can be left to look after themselves. Let us do likewise, and leave the Sunday traders and patrons to keep them company.

The question before us is: Is an organisation necessary? To this I think there is only one answer, and that is, Yes, most emphatically. Its main objects, I should say, would be to establish a minimum wage, according to position; adjustment of hours; equal wages for equal work, regardless of sex; early closing one day per week; where Sunday work obtains, another full day to be substituted. An employer can choose any day most convenient to his business, of course, but that must be fixed and decided. I trust, as "Non-unionist" disapproves of a trades union or organisation on the part of the P.A.'s, that he will be true to himself—*i.e.*, he will be logical, and in the event of any improvement being brought about by the tactful and courteous representations made by such union, he will decline to accept that which, I am sure, he will allow he is not entitled to. As far as I am concerned, he that is not with me must of necessity be against me. I want to be gentlemanly and generous, tempering my judgment with charity, but I also have to be just to myself and my class. By all means, sir, let us be serious, but let us be just to others and true to our better selves, and all can be worked harmoniously and with absolute equity to master and man. To the assistants of all classes I say: Quit you like men (and women); be strong, for your cause is a just one, remembering that the Being who created you did not intend you to be "penny-in-the-slot machines," but endowed you with brains, bodies, souls to work and to fight with, ever onward and upward, not grovelling like worms and caterpillars. Your heritage is the right to live, not to exist, to be eventually consigned to the scrap-heap. Don't waste time over things that don't count. I don't care twopence about positions. I've seen as much brains and manliness in a canvasser as I have any time in one who styles himself artist. Close-up. Join hands, and there are plenty of masters who will help you.

Mr. Goodyer wants a "strong" man, a "serious" man, etc., etc. How about Horatio Bottomley, Tom Mann, F. E. Smith, M.P., Mr. Balfour, Mr. Churchill, or myself, for instance? I place myself last, as I am naturally of a retiring nature. I also tender an apology for the great length of my letter.—Yours faithfuly,

"CAVENDO TUTUS."

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPHS REGISTERED:

G. W. Garard, Barrack Street, Kilkenny. *Photograph of the Kilkenny War Pipe Band.*

Miss E. L. Candy, Strathmore, Littlehampton. *Two photographs. Opening of the New Hospital, Littlehampton.*

W. H. Harris, 39, Mill Lane, Cardiff. *Photograph. Cardiff City Football Club.*

P. O. Collier, 13, Thames Bank, Reading. *Photograph of Reading Football Team* 1911 *and* 1912.

S. Carter, 54, Dover Road, Walmer, Kent. *Photograph taken in the Royal Marine Barracks, Deal, of a group of N.C. Officers of the R.M. watching a photograph being taken of Burgess, the Channel swimmer, with his Mother and Father, and the crew that crossed with him.*

C. S. Baynton, Exchange Buildings, New Street, Birmingham. *Photograph of Mr. Lewis Waller, as Barrister, in "The Butterfly on the Wheel."*

**DOUBTFUL.**—The retouching is bad. The spottiness of the faces is the result of the bad work of the retoucher.

**H. FANE** (Ladybrand).—The only camera we know which comes near your requirements is the Cirkut, of Kodak, Ltd., Clerkenwell Road, London, E.C. So far as we know, portable dark-rooms of the kind you refer to are not now manufactured.

**COLOUR-SCREEN.**—Can I use the Lumière Autochrome colour-screen successfully with an Imperial Special Rapid plate, and if so, how much must I increase the exposure?—ENTHU.

The screen is suitable only for the Autochrome plate; in fact, no light filter is of service for a non-colour sensitive plate.

**WESTERN CANADA.**—Can you give me any information about our brethren in West America (Vancouver and Seattle in particular)? I am anxious to get a post out there, but cannot get in touch with them.—BROMINE.

We can only say to you, as we have said to many others, that in the towns in the Canadian western provinces, which are rapidly growing, opportunities are greater than here.

**STARCH PASTE.**—Would a drop or two of oil of cloves added to starch paste as a preservative affect in any way the permanency of prints mounted with same?—T. B.

No, the oil will not affect the prints, but, of course, paste which has "gone bad"—oil of cloves does not preserve it indefinitely—will be harmful.

**RECEPTACLE FOR PLATINUM RESIDUES.**—Can you kindly inform me of the best receptacle for holding waste platinum baths and the acid clearing baths for the purpose of precipitation of the residues? I find earthenware jars with glazing on the inside only are permeated by the acid, and loss of the bath ensues.—J. M.

Earthenware is too porous for use with chemicals. You can get stoneware precipitating jars from Doulton and Co., Lambeth, who make a speciality of acid-proof ware. We believe that they issue a special list.

**SPOTS ON NEGATIVE.**—Shall be glad if you will tell me the cause of spots on negative, as per specimen, in the next issue of your valuable paper. Have had a lot of similar trouble lately.—A. W. BURNS.

We should say that the spots were caused by too prolonged washing during the hot weather, thus causing incipient decomposition of the gelatine. In hot weather the alum bath should never be omitted, and the plates should be washed for not more than an hour.

**BLEACH-OUT PAPER.**—1. Could you let me know through the medium of the "Journal" whether "Uto" bleach-out paper is commercially obtainable, and if so, where? 2. Also where I can read details, experimental and otherwise, of the bleach-out process?—C. J.

1. The paper is not now manufactured. 2. The paper by Dr. J. H. Smith, read before the R.P.S., was reprinted in the "B.J." for May 6, 1910. It is about the most recent review of the process. For other details see the short articles in the "B.J. Almanacs," 1906 to 1911.

**TWO-COLOUR PROCESS.**—Please let me know the best way to make projection filters for two lanterns (incandescent gas) on the Kinemacolor principle (red and green), and is the requirement that the super-position of the two colours shall give as white a yellow as possible?—R. L. BOYD.

As embodied in the "Kinemacolor" system, the two lights together make what is practically white. We have no information of the composition of the filters, but should advise you to state your requirements to Messrs. Wratten and Wainwright. In any case, we are afraid an incandescent gas mantle will not be of any use as the light-source.

**METAL FOR DARK-ROOM BENCH.**—Will you kindly tell me which is the most suitable metal to cover the bench at the side of the sink, in order to prevent hypo and other chemicals from soaking in and afterwards crystallising out and floating about the room in the form of dust? I was thinking of using either zinc or lead.—A. HILL.

Lead is the better of the two; not that it is less porous to hypo solution, but it will not corrode by the action of alkali solutions so readily as zinc. The only way to keep the hypo from crystallising is to wash all hypo splashes, etc., down the sink with water, and to keep the fixing baths themselves well covered.

**PHOTOMETER.**—1. Can you recommend a simple photometer giving quantitative results (comparable with the H. and D. original instrument), and of moderate cost, for amateur's use? I have seen references to a Martin's photometer, but can learn nothing of price or maker. 2. Can Mr. D. Carnegie's modification of H. and D. Bunsen Indicator be purchased instead of having to make it? A reply will very much help.—A BACHELOR OF LAW.

1. The H. and D. type is the least costly. The Martin's polarisation photometer is much more expensive. Apply to Adam Hilger, 75A, Camden Road, N.W. 2. We believe not, but apply to Messrs. Baird and Tatlock, Cross Street, Hatton Garden, who we believe made some of the late Mr. Carnegie's apparatus.

RESTORING DAGUERREOTYPES.—I shall be very much obliged if you will give me, in your next issue, a formula for removing stains and discoloration from old Daguerreotypes.—OLD PROCESS.

A formula alone is not much good to you: without some experience in handling Daguerreotypes, you may easily damage them. Blow off any dust, flood with alcohol for a minute or two, rinse off under the tap, and then flow over a weak solution of potass cyanide, pouring on and off. This removes the tarnish, after which rinse first with tap water and lastly with distilled. The plate must now be carefully dried by holding it by one corner with a pair of pliers over a spirit lamp. Bring the flame of the spirit lamp under the highest corner, and as this dries, bring the flame lower down, so that the plate dries regularly downwards. Of course, only a very moderate heat must be used, as the image is of mercury.

TEST FOR WASHING.—Re the paragraph in the "Journal" for September 1:—1. Do I buy yellow or blue eosine? 2. To how many ounces of fixing-bath do I add the one-fiftieth of 1 per cent. solution, as I presume the smaller the fixing-bath the stronger red colour the prints would have, and, consequently, the longer it would take to wash out.—H. W.

1. Eosine is a red dye of bluish or yellowish shade. It does not matter which you use. 2. We take it that Dr. Power's direction is to add 1-50 per cent. of eosine to the bath, that is 1-50 oz. eosine (= 8 grs.) to 100 ozs. of fixing-bath. Try this, and use less if the colour is too intense. A larger proportion of dye will not make much difference to the time of washing, as the first one or two washings remove the greater portion of the dye. The method is a test for the removal of the last traces and for the even treatment of prints in the wash-baths.

VARIOUS.—Will you please answer me the following under "Answers to Correspondents?"—1. How many grains equal 1 gram? 2. How many fluid ounces equal one litre? 3. How much soda sulphite, crystal, must be used in place of one ounce sulphite soda anhydrous? 4. How much carbonate soda, crystal, in place of one ounce anhydrous? 5. Will you state name and price of book which gives a clear understanding of electrical terms, such as volts, amperes, ohms, vibration of light waves, and electrical lighting as applied to photography? 6. Is there a book published which would help me to learn water-colour tinting of photographs?—C. GRAHAM.

1. 15.432 grains. 2. Thirty-five ounces and 1 dram. 3. Practically, 2 ounces. 4. 2.7 ounces, or, roughly, 2¾ ounces. 5. The best book is "Elementary Electricity and Magnetism," by Silvanus P. Thompson. 6. Apply to Messrs. Winsor and Newton, Rathbone Place, London, W.

HYPO ELIMINATOR.—1. I am sending hypo eliminator, and would you please tell me what it is composed of? I only know that there is chloride of lime in it. Would you kindly tell me the ingredients? Perhaps you could tell me of some other, if not this. Please tell me in the "British Journal." 2. Could you also tell me where I shall be able to get a book for different tones?—L. R.

1. It is out of our province to examine such preparations as the one you send, but it is evident that this latter contains a good deal of chloride of lime, as shown by its strong chlorous odour. It is a most unsafe form of hypo-eliminator, since it may easily ruin a negative if allowed to act for too long a time. We advise you to have nothing to do with it if you value your negatives. One hypo-eliminator which we advise is the permanganate, used as described in the "Almanac," page 739. 2. "Toning Bromide and Gaslight Prints" ("The Photo-Miniature," No. 103, Routledge and Co., Carter Lane, London, E.C., 6d.).

DEPTH OF FOCUS.—Please let me know best position to place a 3¾ in. focus $f/6.3$ (Carfac) lens, so as to get greatest depth of focus. I focussed at 21 ft. H. F. distance. Objects 11 ft. are badly out of focus, so is distance. I thought I would have great depth of field at this short focus, but cannot find it much better, if anything, than 5 in. $f/6$ lens. I want it for figure studies. Can you help?—R. L. BOYD.

The depth of focus of a lens is governed by definite rules, to which the Carfac must conform. There is no position for obtaining greatest depth of focus. You must ascertain by trial at what distance you get the best average results for your purpose. We can hardly believe that the depth of focus with this lens would be no better than with the $f/6$ lens of longer focus. Have you verified the focal lengths and working apertures of the two lenses? This is an important preliminary to comparing them. Spherical aberration often gives an appearance of depth, this being due to the fact that no part of the image is really sharp, so that by comparison a number of planes appear fairly well defined.

METOL HYDROQUINONE DEVELOPER.—I am using the enclosed formula for my developing of plates—

METOL-HYDROQUINONE (SINGLE SOLUTION).

| | | |
|---|---|---|
| Water ................................ | 20 oz. | 568 ccs. |
| Metol ................................ | 40 grs. | 2.6 gms. |
| Sodium sulphite ...................... | 1 oz. | 31 gms. |
| Hydroquinone ......................... | 40 grs. | 2.6 gms. |
| Soda carbonate ....................... | 1 oz. | 31 gms. |

Dissolve the above chemicals in the order given.

but it makes them too contrasty for portrait work. Can you inform me what chemicals I could add to make the portrait more soft, or what chemical I could reduce to make the portrait more soft? They come out so black and white. Or can you recommend one out of "Almanac," 1910, to my requirements?—METOL-HYDROQUINONE.

It is probable that other things than the developer formula are the cause of the hardness of the negatives—*e.g.*, too concentrated a lighting, under-exposure, or development for too long a time. You can amend the formula by increasing the metol to 60 grs. and reducing the hydroquinone to 20 or 30.

TITLE NEGATIVES.—I have been experimenting with process plates for titling purposes. I cannot obtain sufficient density without veiling the letters. Have been trying the —— process plates, and worked to their formula, and I find they only take 15 seconds to expose correctly. Surely this is too fast for a process plate. I should be glad if you would recommend me a good plate to use for this purpose; also a formula for obtaining density with clear glass lettering. I have looked up a method for stripping the film in the "British Journal," and find that acts splendidly. Would it be advisable to intensify the negatives?—H. B.

Without knowing what stop or light were used, we cannot say that 15 seconds is a short exposure. Hydroquinone and caustic soda is a very good developer for such subjects. Use the formula on page 730 of the "Almanac," and, if necessary, over-develop considerably, and bring back with Farmer's reducer. This will help considerably in yielding clear lines and dense ground, and it is all the better to apply it fairly strong with a tuft of cotton wool. But if you expose the process plates correctly this after treatment should not be necessary. Certainly you can intensify if the plates require it: mercury and ammonia. The "Almanac," page 742, is the best for this purpose.

COPYRIGHT.—1. Seven months ago I photographed, without payment, our local football team, and I was to have sole right to sell same on postcards and large copies, which I have already done in hundreds. This season, a Jack of all trades has had printed several thousand fixture cards, and has reproduced by block my photograph of last year's team (without permission or acknowledgment). As I received no payment from team, I presume the copyright is mine absolutely, and wish to know if I am correct in placing in my solicitor's hands for damages. It has not been registered until this week, and these fixture cards were published last week, thus stopping the sale of all my cards by these free cards. 2. Are there any books published on the Copyright law?—G. H. H.

1. You can take action only in respect to infringement done

*after* registration. We can only suggest that you keep an eye on any sale of the fixture cards, if such there should be, and then address a solicitor's letter to the seller, pointing out that you own the registered copyright, and asking what they propose doing in the matter. 2. There is no book. We refer you to the article in the "B.J. Almanac" for 1906, a copy of which you can perhaps buy or borrow. Our publishers cannot supply.

**Studio.**—I am thinking of building a "single" slant studio, 21 ft. by 12 ft., on a space 21 ft. square at the rear of my house as enclosed sketch. Would you kindly inform me:—1. Is the single slant preferable with the small space at my disposal? 2. How much higher would you carry the south wall? 3. What should be the height to eaves, as shown in sketch at B? 4. How far would you glaze the roof "in depth" from the eaves B to A? 5. At what distance from the ground should the side-light commence, and would you glaze for the entire length; also roof, the full length?—Suffolk.

1. The single slant will answer well if the out-buildings do not obstruct the light as seen from the proposed position of the sitter, otherwise the ridge roof will probably be better. 2. The south wall should be at least 8 ft. high, and if the ridge roof is adopted, this would also be the height of the eaves. In the single slant the glass commences at 4 ft. 6 in. from the floor, and goes up to 12 ft. 4. We should glaze right up to the ridge, but 4 ft. at each end may be ordinary roofing. 5. See No. 4 as to single slant. For ridge pattern studio the side-light may commence at 3 ft. from ground. We should leave three or four feet opaque at each end, but if more convenient, the whole length may be glazed, with good opaque blinds to cover the glass not required. We think that you will find 12 ft. rather narrow for the single slant; 14 ft. would be better.

**Payment of Commission.**—I was engaged as manager, operator, ret., etc., at 25s. a week and 5 per cent. over £4, agreeing to take this quarterly. At the end of my eighth week I was guilty of a foolish indiscretion (not theft or roguery in any way), for which a reprimand would have been sufficient. My employer gave me notice, saying he should not give me a week's salary in lieu of a week's notice. To this I did not object, and we did not part bad friends. I had promptly paid up all money due, and taken my last week's salary. A few days after, since they had left the town earlier than I thought for, I wrote the firm (two partners), and reminded them I had received none of my commission (about £2). They replied, and said that since I had not been with them three months I was not due to any commission, and they believe they are right in withholding it. I propose writing again, and maintain, though I agreed to accept it quarterly, it was mine just the same each week. Would you say how I stand legally? They have no duplicate agreeing to pay the commission quarterly; the letter was written in ink. I used to work fifteen hours daily—ninety a week—for 25s. a week, and did my duty faithfully, and in my sixth week of opening the place I took over £10.—H. W.

Undoubtedly you are entitled to such commission as you have earned, irrespective of the fact that you did not serve the full term at the end of which the money was to be paid.

**Assistants at a Pageant.**—Would you kindly give me your opinion in the following matter? About three weeks back the Hon. Miss ——— called on me as to a pageant in ——— Park taking place the same day, and would I care to attend for photographing? No order was given, but I was assured of some groups being arranged, and here I must state that, there being no bona-fide order, I took two of my assistants (ladies) with myself to carry apparatus, etc., a distance of two miles. All I was able to do was to take a few snapshots; could get no help whatever as to groups, and—this is the point—the entrance fee to park was 2s. I have been asked now to pay 4s. for my two assistants. This, I think, being professionally engaged, a most unusual proceeding, and during thirty years of work it has never occurred before. Whatever appointments I may have, it is quite usual to take what assistance I might require. No mention was made previously of any entrance fee being expected. Finished proofs were sent the next day, and no reply as to same: only letters, expecting me to send above amount. The pageant was in connection with "National Service League." Mention was made in the park by her ladyship as to the "two women" with me, and my reply was that they were my two lady assistants. Do you consider it fair treatment? is the query, and also, should I be asked to pay? I may add that I have since, should the order be sufficient, promised a donation to the society, not being anxious to give offence, this being simply a gift, and not to be considered as gate-money for my assistants.—G. H.

We think you have been very rudely treated. Your best course is to treat applications for the admission money with the contempt they deserve.

**Toning Bromides.**—I enclose a toned bromide print, and would be greatly obliged if you could give me any idea of the cause of the stains which appear on it. It is a print on Wellington and Ward's "Carbona" bromide, developed in metol and hydroquinine, and toned with ferri-cyanide potass and sulphide sodium. My method is to expose and develop the prints one day and tone when dry. When I first got those stains I feared uneven drying might have caused them, and pressed out the superfluous moisture and allowed the prints to hang an entire day between developing and toning. As the papers I spread them on had been in use some time, I tried using pegs, hanging the prints by the corner, so that they came in contact with nothing which could stain them. I wrote to Messrs. Wellington and Ward, but they could only suggest uneven drying or uneven fixing. I know it is neither, as I developed and fixed a small number to make sure, and still got the same stain. I have taken every care I can think of, made up an entirely new set of solutions, washed every dish thoroughly—all to no purpose. I can only think it must be something in the paper. Nothing shows after developing, the prints then appearing perfect. Once in the bleaching I saw a part take longer to bleach out than the rest, and marked the print, and found a stain on that spot, but that is the only time I have seen that, all the others bleaching quite evenly and quickly. I have done a large quantity of prints, and the first few gross were not so bad as those I am doing now. I have formerly used a great deal of Imperial Matt Bromide, and did not have any stains on it, but of course must use the paper which is ordered and preferred. Pardon my writing so fully, but I wanted to make it quite clear that I had worked with all possible care and so that you might have a better means of judging what might cause these stains. I shall be much obliged if you can enlighten me in any way about this.—Toned Bromide.

Obviously it is better to tone prints without letting them dry in the interval. Why do you not do this? Toning takes a very few minutes. The marking must be due to some irregularity in the film which is subjected to the bleacher. The most probable cause of this is the fixing bath. Have you, with a view to perfect fixing, transferred each print singly to a second hypo bath? We suspect that if you do that, and keep prints constantly turned over in each bath, you will not get the stains. They certainly have the appearance of incompletely fixed patches in the prints.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2681. Vol. LVIII. FRIDAY, SEPTEMBER 22, 1911. Price Twopence.

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## SUMMARY.

Herr Dührkoop, on his recent visit to the United States, delivered, before the Convention of the Photographers' Association of America, an address in which he dealt with both the idealistic and practical aspects of his well-known portrait work. The first part of this discourse will be found on page 720.

We draw attention to the opportunity of cultivating taste in the pleasing framing of photographs which is afforded by the window displays of such firms in the West End of London as the Medici Society, in Grafton Street. (P. 718.)

A short account of the chief photographic exhibits at the Turin Exhibition reaches us from Mr. W. E. Dunmore. (P. 724.)

Mr. A. J. Newton, who was one of the jurors in the photo-mechanical section at Turin, sends us some notes on these exhibits. (P. 730.)

The meeting convened by Mr. P. Jarrett for the discussion of the formation of a photographic assistants' union was held on Tuesday evening last. A brief report of the discussion and the text of the proposed constitution of the society will be found on page 727.

In view of the visit to Holland next year, members of the Photographic Convention are asked to assemble at the lecture to be delivered by Mr. Arthur Marshall at the London Salon on October 13, on "With a Camera in Holland." The President of the Convention, Mr. J. B. B. Wellington, and other members will be present. (P. 734.)

In a further editorial article on the preservation of soda sulphite solutions the chemical methods of testing the composition of mixtures which have been produced as the result of storing sulphite solution are described. (P. 718.)

At the Royal Photographic Society, on Tuesday evening last, Mr. J. Sterry read a paper describing the production by himself of the phenomenon of re-reversal on gelatine plates. (P. 732.)

A writer in the "Amateur Photographer" has given a formula for a Bromoil bleacher requiring no acid bath. (P. 731.)

The conclusion of the paper by Mr. T. Smith on the results of speed and efficiency tests of shutters at the National Physical Laboratory contains a number of interesting data in the way of comparisons between focal-plane and diaphragm shutters. (P. 722.)

## EX CATHEDRA.

**The 1912 "Almanac."** Almost simultaneously with the appearance of this issue of the "British Journal" we are requesting photographic firms introducing new items of apparatus for the 1912 season to give us the opportunity of reviewing these latter in the section, "Novelties in Apparatus," in the forthcoming "Almanac." We believe that our letters of invitation have been addressed to every firm in the trade, but any who, by omission or ignorance on our part, should not find themselves so addressed, are begged to consider themselves invited to submit to us any distinctly novel introductions in the way of photographic appliances. In accordance with our invariable custom, we must ask that the apparatus itself should be sent to us for inspection or trial, and that any electrotypes to be used in the illustration of our review must not exceed 3¼ inches in width.

* * *

**Commercial Stereographs.** A Canadian correspondent in a recent issue draws attention to a field of work which is for some reason shunned by British photographers as if infected by a plague. As the writer points out, the stereoscopic print gives detail, and what is more, relief to an extent which is impossible with an ordinary print. Possibly more photographers would make stereographs did they know how easy they are to make. For nearly all subjects a pair of single lenses, costing only a few shillings, is necessary, if simultaneous exposure is required, while even this slight addition to the kit is not necessary for still-life subjects, a central division in the camera and a laterally sliding front for the lens being all that is required. A little care is necessary in trimming and mounting, the pictures having to be cut and transposed after printing. A very simple plan is to use Kodoid or other thin films, and to trim them into their proper size, and to fasten them upon a glass plate so that no cutting of the print is necessary. Jewellery, scientific and natural history specimens, are especially suitable for stereoscopic work, while we are certain that many householders and amateur gardeners would be glad to have "relief" pictures of their homes and gardens. It would be something different from the ordinary snap-shot which they can do themselves. We may ask our professional friends why they should not put a cheap stereoscope, with a few topical slides, upon the reception-room table, not forgetting to mention that similar pictures can be made of any subject at a moderate price. Even large prints may be so offered by means of the Dixio stereoscope.

* * *

**Boxing Contests and the Camera.** It is rather remarkable that through all the discussion which is raging on the subject of the Johnson-Wells match, the disputants on either side have not referred to the cinematograph records of previous contests to prove either that boxing as practised by its leading exponents is or is not brutal. Although obviously only Kinemacolor could do full justice to the subject, a black and white film gives a sufficiently accurate record for the purpose in question. It cannot be denied that the motion picture plays an important part in preventing any foul play, for each combatant knows that an absolutely impartial and unemotional eye is watching every movement, and that in the case of his behaviour being questioned he has to face a referee whose decision cannot be gainsaid. Naturally, the judgment of such pictures must be left to experts, because what might appear to be terrible punishment to the untrained observer is in reality only child's play to the performers, while really intentional injury would be undetected by him. We predict that the decline of the cinematograph, when it comes, will be due, not to the inclusion of sporting subjects, but to the sickly emotional "dramas" which already monopolise so large a space in the programmes.

* * *

**The Lost Leonardo.** The disappearance of "La Giaconda" or "Monna Lisa," by Leonardo da Vinci, from the Louvre, has occasioned a large amount of business for the makers of reproductions, particularly for those photographers holding negatives of the picture, and those engravers holding colour blocks of it. Orders for reprints of large size colour reproductions have been taken in England for editions running into tens of thousands. At present every print shop window (and many others) in Paris is filled with all sorts of reproductions of the masterpiece, and postcards are being sold everywhere in the streets. This is a striking instance of press publicity, for famous as the picture is, it is certain that most of those buying the reproductions have never seen it. Probably many have never even heard of it until now.

* * *

**The Frame and the Picture.** We can recommend, as a profitable expedition for the professional photographer, a stroll round the picture shops in the West End of London, not so much for the sake of the pictures as for the frames. Photographers are very apt to run in grooves, and to copy a prevailing fashion without studying its general desirability. One year we have all spoon oak; the next, rococo patterns, and these are followed by Sheraton and Chippendale mouldings. The same thing occurs more or less with engravings and drawings, but occasionally one finds a brilliant exception. At the present moment the window of the Medici Society in Grafton Street is especially worthy of study, the framing of many of the beautiful reproductions of old masters giving a highly decorative effect. There are some very fine examples of massive-looking frames, built up from comparatively narrow mouldings, with a wide flat decorated in colour or plain, as the subject demands, which should suggest novel combinations to the artistic photographer.

## EXPERIMENTS ON THE DECOMPOSITION AND PRESERVATION OF SODA SULPHITE SOLUTIONS.

### III.

We have dealt with all such phenomena as we have observed which seem sufficiently definite and clear to be considered proved facts, but in the course of our experiments other matters were also noticed which should be placed on record, seeing that their further investigation may lead to useful results. First, however, it will be necessary to explain in more or less detail the methods of analysis that we adopted.

The volumetric analysis of solutions of soda sulphite is generally conducted by the simple method of titration with iodine. Up to a certain point this method is good enough, for it will at once show whether the solution is useless or of fair strength. From the point of view of the practical user of sulphite, it is therefore quite efficient, even when conducted in a somewhat rough-and-ready fashion, but for the purposes of an accurate scientific investigation it is useless, for several reasons. First, it is not certain that the readings obtained represent sulphite alone. If the solution is contaminated with thiosulphate or with sulphides, the reading will include these as well as the sulphite, and it is not impossible for these impurities to exist as the result of contamination, while it is not exceedingly improbable that they may be produced as the result of decomposition. Then again, if the alkali content of the sulphite solution is neglected, the iodine readings cannot be absolutely relied on, for hydrates affect them to a considerable extent, while even carbonate may vitiate them in a very uncertain degree. Bicarbonate has no effect, therefore the preliminary to an iodine titration should invariably be the neutralisa-

## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

The 1912 British Journal Photographic Almanac will be published December 1 next.

As in previous years, the edition will consist of 25,000 copies, and readers are asked to place an early order with their dealer or newsagent, as this issue, like its immediate predecessors, is certain to be sold out on publication. Advertisers who have not hitherto tested its business-bringing powers would do well to consider the fact that the volume is one which is at the elbow of every purchaser—for the purpose of ordering photographic goods—throughout the twelve months.

The 1912 Almanac will contain an article by the Editor dealing fully and in detail with lantern-slide making, a practical treatise on this popular branch of photography.

"At-home Portraiture, Indoor and Outdoor," is the subject of an illustrated article by Mr. C. H. Hewitt, F.R.P.S.—a reliable guide to the essential things in portraiture without a studio.

"How to do it" is the title of a series of illustrated articles showing in pictures exactly how to do things which the photographic beginner finds difficult.

The other features which have made the Almanac for fifty-one years the most popular photographic book will be maintained, e.g., the record of practical progress of which an authority has recently written:—"As long as we possess a bookshelf the volumes of this Almanac will find an honoured place thereon."

⁂ Important Notice.—The attention of advertisers is specially directed to the announcement that the entire edition of the Almanac (25,000 copies) will again be placed in the hands of dealers and the trade on December 1, and the co-operation of advertisers to that end will be appreciated by the publishers.

tion of the solution to phenolphthalein, as the result of which all hydrate is converted to a neutral salt, while carbonate is changed to bicarbonate. This being so, it is just as well to conduct this preliminary neutralisation in such a way as to get a measurement of the alkali present. Before using iodine, we should therefore titrate with an acid to neutralise, and also measure the alkali, and when we have reached that stage we may just as well go a little farther, and gain yet more information. Sulphite can be measured by titration with an acid, as well as with iodine, and so, when we have ascertained the alkali, we can go on and measure the sulphite with the same acid solution. We can then follow with the iodine, and so obtain duplicate readings for the sulphite, which will serve to check each other. This is known as Thompson's method, and is the one we employed.

All this series of titrations is conducted with the same portion of sample, but before starting the series it is as well to test for hydrates with a separate portion. To do this phenolphthalein is added, which turns the solution pink. An excess of barium chloride is then poured in, whereupon if no hydrate is present the solution loses its colour. If, however, it retains the pink colour the barium insoluble salts must be allowed to settle, and a portion of the supernatant liquid must be titrated with acid to measure the hydrate.

The general procedure we followed was therefore as follows:—

1. Take fresh sample and titrate with acid (we prefer sulphuric) and phenolphthalein. The result gives half the carbonate.

2. Add methyl orange to same solution and titrate with the same acid solution to point of neutrality. The result gives the other half of the carbonate and half the sulphite. Twice the difference between these readings then gives the sulphite.

3. Titrate same solution with iodine and starch as a second measure of the sulphite.

If no hydrate is found bicarbonate can be looked for in the following way:—Add a known excess of caustic soda, and after this an excess of baric chloride. Then titrate with acid and phenolphthalein. The difference between the alkalinity thus formed and that of the soda added gives the bicarbonate.

We have, however, never found either hydrate or bicarbonate in a quite fresh sample, so after a little while we discarded both tests. They are, however, necessary with starch solutions.

It may be as well here to point out the reactions which occur in Thompson's method of analysis, as they are different from those which take place when we simply titrate a sulphite solution with iodine.

Sulphite is alkaline to methyl orange, while acid sulphite is neutral. Therefore at the end of the acid titration the sulphite is converted to acid sulphite. Following this with iodine, the acid sulphite is converted to acid sulphate while hydriodic acid is formed. If, then, we titrate again with alkali, a measure of the total acid thus produced is obtained, and, therefore, also a yet more accurate measure of the sulphite originally existing, for neither sulphides nor thiosulphate will leave an acid residue. This is an extra refinement due to Richardson and Akyroyd, and though we did not employ it, it would obviously be advisable to do so in any further tests. The second and third titrations showed by their variations that unexpected difficulties were to be met with, and that a much more elaborate method of analysis was required to elucidate the knotty points. During the time at our disposal we failed to devise any method likely to be fully satisfactory, so the analysis stopped short of completion.

We now can note the various curious features observed in the incomplete system we adopted. If we assume the original solution to consist of nothing but alkali and sulphite, with inert impurities, such as sulphate or dithionate, it is obvious that the acid and the iodine titrations should give the same quantity of sulphite. It is also obvious that the same results would ensue if two impurities existed in equal amounts, one of which would affect the acid and the other the iodine titration. An alkaline sulphite or bicarbonate would fulfil the one condition, and thiosulphate the second.

On the other hand, if sulphide or bicarbonate alone were present, then the acid reading should be the higher, while with thiosulphate alone as an impurity the iodine reading should be the higher.

As the results of many tests we found that with fresh samples of B and D, the two with the best and the worst keeping qualities respectively, the acid and iodine readings were nearly always the same, while with A and C the iodine readings were always the higher. As the solutions became stale, then, in the case of B and D, while both readings of course fell, the iodine reading began to show an excess which suggested the formation of thiosulphate as a decomposition product, but a temporary one only, as the final reading was always *nil.* This effect was accompanied by a similar excess in the acid reading, which, being due to the formation of bicarbonate, was a permanent one. The actual presence of bicarbonate being determined, we turned our attention to searching for thiosulphate, the result being total failure, either owing to its absence or to the difficulty of identifying a very minute quantity in a very large excess of sulphite. Less than half a milligramme must have been the maximum amount present in any case, the average being much less.

As the iodine excess reading is only temporary, while that of the acid reading is permanent, it follows that the two again agree before the solution is exhausted, after which the acid reading is always in excess. The same conditions were observable with A and C samples. With these the iodine reading is higher at the start, but sooner or later the two readings agree, after which the acid reading is in excess. The following tables will afford examples of the results obtained with each of the four samples:—

| Sample. | Date. | Reading for carbonate. | Reading for sulphite + bicarbonate | Reading for sulphite + (?) |
|---|---|---|---|---|
| B | 26/3/07 (fresh) | 6 | 86 | 86 |
| | 28/3/07 | 5 | 75 | 78 |
| | 3/4/07 | 5 | 51 | 54 |
| | 8/4/07 | 3 | 33 | 33 |
| | 14/4/07 | 3.5 | 1.5 | 1 |
| D | 26/3/07 (fresh) | 5 | 91 | 91 |
| | 28/3/07 | 4.3 | 76.6 | 80 |
| | 1/4/07 | 4 | 8.7 | 8.5 |
| | 3/4/07 | 1 | 5 | 0 |
| A | 25/3/07 | 6 | 80 | 83 |
| | 28/3/07 | 5 | 76 | 76 |
| | 3/4/07 | 3 | 14 | 11 |
| | 8/3/07 | 2 | 2 | 0 |
| C | 26/3/07 | 5 | 85 | 90 |
| | 28/3/07 | 4 | 80 | 84 |
| | 3/4/07 | 3 | 35 | 37 |
| | 8/4/07 | 0 | 3 | 0 |

These figures are all percentages of the weight of sulphite first taken. Those in the first column only represent carbonate weighed as sulphite, and require correction (multiplication by .84) to give the true percentage. The same thing, of course, applies to the excess readings in the second column, which, so far as they represent bicarbonate, should be multiplied by $1\frac{1}{3}$, but as further tests would be required to ascertain exactly how much of the excess is really due to bicarbonate, we have not attempted the corrections. If they are made it will, of course, be evident that the difference between the acid and iodine readings will be even greater than they are at present in the case of partially exhausted solutions.

The initial and the final readings may, however, be roughly compared as follows:—

Sample B, which originally contained 5 per cent. of carbonate, at the end contains 3 per cent. carbonate and 7 per cent. bicarbonate, so that carbonic acid is apparently lost.

Sample D contained at first 4.2 per cent. carbonate, and finally .8 per cent. carbonate and 6.7 per cent. bicarbonate, so that either carbonic acid has been gained from the atmosphere, or else bicarbonate existed in the first instance.

Sample A originally contained 5 per cent. carbonate, and finally 1.7 per cent. carbonate, plus 2.7 per cent. bicarbonate. Here again a little carbonic acid is lost.

Sample C contained 4.2 per cent. carbonate at first, and finally 4 per cent. bicarbonate alone. Here there is little or no loss of carbonic acid.

If in the case of D bicarbonate existed in the first instance, then of course the acid reading of 91 cannot all represent sulphite, in which case the iodine reading shows an excess, just as with samples A and C. The next and final article will suggest what appears to be the best method of analysis for future work.

# HERR R. DÜHRKOOP ON PORTRAIT PHOTOGRAPHY.

[Our contemporary the "Bulletin of Photography" has now published the text of the lecture given by Herr R. Dührkoop before the recent Convention of the Photographers' Association of America. Herr Dührkoop dwelt not only on ideals, but on the practical details of the methods employed by his daughter and himself.]

As I have already stated elsewhere, it may be asserted that in America photography has attained a very high standard, technically perhaps the highest. There has been much discussion on photography as an art. I myself do not occupy any extreme standpoint, but study art zealously, so as to get a comprehensive view of the subject. I do my best to produce excellent work, but do not argue as to whether my work is art; at the most, I should like people to feel that it has been made under the influence of art. The picture itself, or, rather, the composing it in the space, the animation of the background by a skilful effect of spots, lights—these are the things which we always learn anew from the painters. However, we ought to avoid any slavish imitation. It does not do to give all one's pictures the character of reproductions from Gainsborough or Reynolds. To reproduce a pictorial effect of a sitting, everything depends on a delicate feeling for the proportions of space and light, of the lines and forms of the subject of the likeness, on the composition of the space given or presupposed by the frame. In these concrete elements lies the secret of the effect of a picture on the soul of the observer. He who wishes to produce a psychic impression by a picture cannot do it without mastering these details, but if he employs them with skill and taste we ought not to designate such a leaning on knowledge and experience as a mechanical procedure, but as artistic work.

The photographer has to be an absolute master of his technique if he wishes to attain something artistically valuable by photography. He must remain within reach of photographic possibilities. In a way, he must train his eye to a photographic objective and learn to be as sensitive to the values of colour and light as the photographic plate. Then he will be able to judge what seems good or disturbing to him in the photographic placing of his subject, and he will accordingly influence the posing of his picture.

Photography is the art of a Raphael without hands, the art of those men possessing a delicate and finely organised feeling for painting, a vivid sense of beauty and originality, of the character and soul of corporeal phenomena, and yet to whom is denied the power of creating and producing from within themselves what they see and grasp. Only by the astonishing improvement of technique has the photographer gained the faculty of expressing his individual conception of the subject.

The cry for nature, for simplicity and truth, that issued from all the arts in the nineteenth century is now resounding in the photographic world. Everywhere we find the endeavour to elevate photograph-taking from a mere reproduction of nature, to imbue it with artistic feeling, and, as far as it is possible, to give it the character of an individual work of art. In producing the negative we no longer demand an equalised sharpness of the picture, which used to be considered the glory of a technically perfect photographer. The neglect of the unimportant detail in favour of the greater form, no more superficiality, but soul—that is an aim worthy of artistic endeavours, even if it seems to be unattainable.

### A Studio without Skylight.

If I am to describe how I work, I must at first mention that I work under quite different conditions than prevail in America. In Germany the big, old glass box is still in almost general use; whereas in America a comparatively small skylight is employed. The big glass roofs are little calculated to give the studio a comfortable look, the American studio offering a far more habitable appearance. I have neither,—working absolutely without a skylight. Rather high side-windows must give me all the light I want for sufficient exposure, and with what success—that you may judge from the pictures I have exhibited here. Certainly I must acknowledge that with very tall people the height is not sufficient to light up the head, if the figure is to be taken standing. Then the chief light falls on the chest or waist, and I must have recourse to electric light. But in most cases I can manage very well with the light and attain the most varied effects with it. I am not able to alter the light as easily as can be done in most studios, but rather am obliged to try and place the persons at once in the best light of the room. These are disadvantages which make the sittings difficult, but I and my assistants are so used to them that we can always manage to get the right thing. There is doubtless for us a certain necessity which obliges us to occupy ourselves with this kind of lighting and to study it.

### The At-Home Portrait.

Far more is the case than in America, as we are obliged to go to private residences to take portrait-sittings there. You seem to have a dislike to such sittings here, but unjustly so. For, in the first place, there is a great charm for the proprietor of such picture to be able to say, after the lapse of several years: "This portrait was taken in the house of my betrothed, my parents, or in some other spot forever dear to me, and with which certain dear associations are connected." On the other hand, pictures taken in private rooms offer far more diversity than those taken under the same conditions in the studio. This view-point, taken by many a notable photographer, would also find much applause from the rich customers. Of course, higher prices must be charged for such sittings, but rich people would be quite willing to pay if their portrait had the attraction of something out of the common run. Surely such work is not easy, but my daughter and myself undertake such tasks unhesitatingly, and many of our pictures exhibited here have been taken in private rooms, and the diversity that people praise in our work has certainly been founded in our taking advantage of all possibilities.

### Difficulties and Expedients in At-Home Portraiture.

In private residences it is always difficult to find a quiet wall which permits the production of a good portrait. For this purpose we always make use of a piece of cloth that we take with us, mostly of an orange colour, for a background. The capability of quickly discovering the suitable light for a sitting is a matter of experience and constant practice. Certain it is that ladies and children particularly show themselves much more at their ease in their own rooms, and that in consequence very original pictures are produced. If you photograph children in their playroom, at their dinner table, in the garden, you get the most charming pictures. Ladies have the possibilities of using the most different articles and costumes, and thus in boudoirs, and in the frequently beautiful rooms of private houses, photographs are made that absolutely do away with all the conventionality that the studios in the daily rush of business cannot help producing. Of course, people often wish to have portraits taken in places where there is no light for it; then flashlight or electric light, if to be had, must be used. Flashlight is altogether an excellent thing, which I am fond of using, particularly for difficult groups and children. With it you get instantaneous exposures that could not be obtained by any other means. The disadvantage of private rooms (that is, the insufficient lighting) of course forms a great difficulty. This must be helped out by white cloths. It can, however, be calculated that a reflecting cloth reflects about a quarter of the light, and that will suffice in most cases to light the shadows up well. The conquest of these difficulties gradually becomes as easy for the skilled operator as the setting of the picture in the equal light of the studio produced by the drawing of curtains. But it is a delight and a great satisfaction to be able to produce excellent photographs under such difficulties. If I or my assistants seem to be having too much trouble and labour, I always say: "The aviator, the engineers, the North Pole explorers had quite other obstacles to overcome than we with our photography."

### Portraits Out of Doors.

If you are once accustomed to go into private residences, you will then also gladly avail yourselves of the gardens and parks of the rich for photographic purposes. And how wonderfully fresh and animated can ladies, children, and groups be reproduced if you are accustomed to finding the right light in the open air, which is not excessively difficult. Of course, you must not look for the accustomed lights of the studio, but also test and study all other possibilities of light. Taking photographs is possible in every light that our rooms or the open air afford; and if you have once occupied yourself deeply with portraits in "the open," you will feel great delight in the numerous and picturesque possibilities offered to your creative feeling.

If you wish to take a sitting in "the open" the subject must be placed so that it is near the wall of a house or a planking, a group of trees or such like to obtain some shade, while the other side is exposed to the sharp light. If you lead the model to and fro under the trees the trained eye will easily find a place where the light is so constituted as to make a good exposure possible, and where light and shade suitably alternate. Of course, you must endeavour to choose the background not crossed by too many spots and lines and made too restless. Perfect smoothness and rest, however, are equally unnecessary, and we must observe how painters treat such things. Nor is it necessary that the portraits show the usual change of light and shade. On the contrary, it is highly important to operate with lights such as modern painters love, thus also with front light, which produces less plastic but more surface pictures.

Compared with the frequently stereotyped uniformity of the studio light, the great diversity of open air and interior exposures, with their continually varying scenery, is immensely more interesting, and every thinking photographer ought to endeavour to master and develop this side of photography and to turn this delightful diversity to account also in a business way.

### Dealing with Sitters.

Well, how do I take my sittings? I do not go to work with any preconceived notions, but offer the person a chair, beg him to make himself comfortable, and meanwhile begin a conversation adapted to the character of the person in question, concerning his wishes, etc. During this I study him and try to fix a position which seems suitable, but which devolves upon the sitter himself. I remain constantly with the sitter. The fixing is done by assistants, and only rarely do I creep under the cloth to make corrections. Hints from me must be sufficient for the efficiently trained operator to grasp and fix the pictures as I desire.

I try to obtain the truly natural in an unconstrained position and surroundings, and to avoid everything obtrusive.

The portrait of a man is generally looked upon in photography as a gratifying and easy task compared with those of children, ladies, and groups, the conditions for success being here simpler and more favourable. The woman's portrait has to all appearance richer variations; clothing, ornaments, and accessories can afford more multifarious forms and motives, but require a peculiar psychological gift. From the history of art we know that even great portrait painters, such as Rembrandt, failed to grasp the female psyche.

The man's portrait is more limited and decisive—the simpler, the better it is. It is difficult (nay, in many cases impossible) to influence a man's expression and mentality. The photographer will be able to do little to influence a man of work, a scientist, a soldier, to approach his own conception, to get him to sit or stand differently from what he is accustomed to do. He will have to lay more stress on the lighting so as to let the head be thrown into more relief; he will choose the lighter background if he wishes the contours of the figure to say something; he will choose a narrower cutting to make the reproduction appear great and positive, will suppress all petty accessories, will try to subdue too violent high-lights, for instance, here and there, the linen, etc., but will, on the whole, do nothing to obtain a particular conception, gesture, or picturesque arrangement. Besides, many male customers only go to the photographer's with great reluctance, and are grateful to him if the work is done quickly and without much bother to themselves.

Nevertheless, if the photographer finds himself bound within seemingly narrow limits here, on the other hand he runs less risk of producing work which does not please or is unsuccessful, as often happens with women's, girls', or children's portraits. The problem of similarity, for instance, which otherwise gives rise to disagreeable discussions and misunderstandings, will cause less trouble in men's portraits. A more pronounced formation of the skull, more definite features, are of great assistance to the photographer, who can heighten their effect by intelligent management of light.

Too great an insistence on the pose, etc., always seems to me an infringement on the rights of the other person, who ought to have his own position and not that which another man wants him to have and which is not natural to him. An individual must remain an individual. My daughter, Mdme.

Diez, on the contrary, has developed other opinions for herself. She arranges a good deal, particularly with ladies and children, but that is more necessary than with men. I have noticed that with lady sitters, particularly ladies of good society, a much easier and freer intercourse takes place if the sitting is taken by a lady; whereas a man is hampered by considerations due to a lady sitter, a woman is able and willing to fulfil all their wishes as far as they are conducive to an artistic arrangement. You will have made this observation, too. At any rate, I possess in my daughter a supremely valuable partner, who earnestly studies to raise the standard of the photograph as high as possible, and she attains great success with her method.

### Photograph Numerous Phases of the Sitter.

So we can well distinguish two principal kinds of portraits: firstly, those where the photographer's aim is to leave the sitter during the sitting as much to himself as possible, and only by a judiciously chosen and animated conversation to cause him to reveal his real self and not remain in a lifeless attitude before the camera. During the conversation many different phases of position will be shown, and to fix the finest and most characteristic of them is now the affair of the photographer. He will seldom succeed in doing so with one exposure, and so it is certainly right to take rather many. For even if the subject fulfils all technical and artistic conditions, it is not out of the question that just in the moment of taking he will suddenly change the expression, and you often see just during the exposure one corner of the mouth droop. *During* the exposure, but not before, I am fond of placing a beautiful picture—not a photograph—just before the eyes of the sitter. I select another picture for every exposure, to divert the sitter's attention from the process of exposure. We all know how often a strained expression appears during the moment of exposure. That is the way I try to grasp the personality of the sitter in the greatest simplicity without influencing him too much.

The second way is to take the photograph with all the means of artistic aspiration, and for this purpose to arrange and include within the picture the charm of an ideal portrait, a manner which finds great favour, particularly with ladies, but which may possibly greatly influence the likeness, but similarity is a very relative idea. Every sitting we take with another light or other dress gives us a quite new impression of the person photographed, and among a number of portraits it is mostly difficult to decide which is the best likeness. In general, that one will be chosen which in the opinion of the person in question is the most beautiful.

R. DÜHRKOOP.

(*To be continued.*)

# ON THE RESULTS OF SOME TESTS OF PHOTOGRAPHIC SHUTTERS AT THE NATIONAL PHYSICAL LABORATORY.

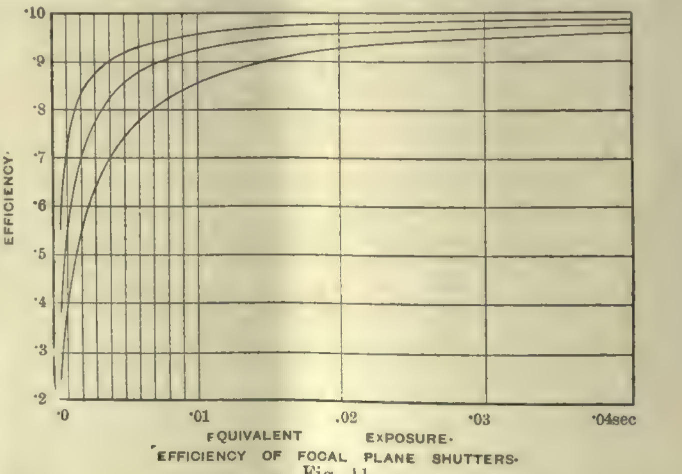
## II.

THE movement of the piston is more likely to be discontinuous when the brake works on compression than when it works on suction. In the former case the first part of the motion is rapid, as the pressure on either side of the piston is the same, and the spring exerts its full effort. After some motion, however, the air gets compressed, and before long the difference in pressure is enough to neutralise the force due to the spring, and the shutter leaves come to a full stop. At times a very curious effect is obtained; the momentum of the moving parts is such that the piston is carried past the point where the air pressure overcomes the force of the spring, and after coming to rest the motion of the piston, and consequently of the leaves, is reversed; the case is similar to that of an elastic ball rebounding after collision with a fixed solid body. This rebound is most marked in the second diagram in the top row of figure 7.

This unreliability of the air brake will, of course, affect the speeds of any shutter in which such an arrangement is fitted, whether a trip gear is provided or not, but where the trip gear is omitted the efficiency is adversely affected as well as the reliability of the speed. It has, in fact, been observed in some shutters fitted with a trip gear that particular speeds are very uncertain—in one or two cases the exposure has at times been about five times as long as at others. It should, however, be understood that the remarks made above about air brakes are only intended to apply to a few particular shutters tested at the Laboratory. Many of the shutters that have been examined show no appreciable variation.

It is evident from these results that there is a great deal of room for investigation into the suitability of brakes of various types for use in shutters. It would be of interest to know what results are obtained when oil is used in the dash pot instead of air. By a method of testing such as is used at the Laboratory, results in investigations of this kind may be obtained without difficulty, and it would certainly be of great interest to manufacturers if someone were enterprising enough to carry out such an investigation and publish the results.

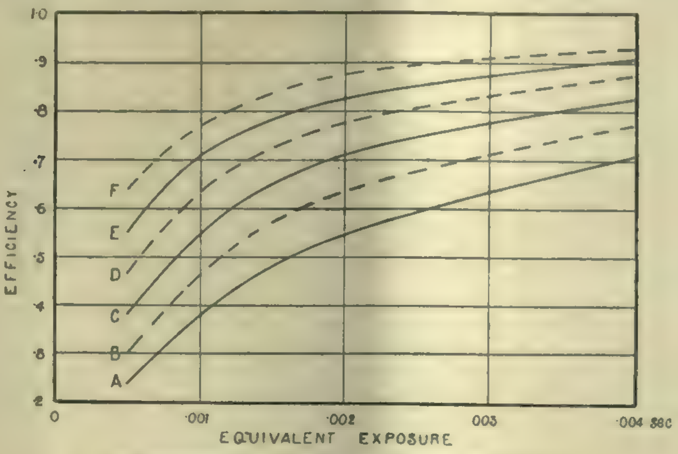
We will now return for a few minutes to the focal-plane shutter and consider how it may be improved. Figure 11 shows how the efficiency varies with the equivalent exposure, when if $\frac{a}{f}$ is the relative aperture, $b$ the separation between plate and blind in inches, and $v$ the velocity of the blind in metres per second, the values of $\frac{a\,b}{f\,v}$ are $\frac{1}{64}$, $\frac{}{32}$ and $\frac{1}{16}$ for the three curves shown. Thus, for example, with a relative aperture of $f/4$, and a separation of blind from plate of ¼ in., the top curve will correspond to a blind velocity of four metres per second, and the middle one to a velocity of two metres per



EFFICIENCY OF FOCAL PLANE SHUTTERS.

Fig. 11.

second; or if the separation is ½ in. the middle curve will correspond to a velocity of four metres per second, and the lowest to a velocity of two metres per second. At comparatively slow speeds the efficiency is sufficiently good, but at the higher speeds under average conditions—½ in. separation and 2 m.p.s. velocity—it is far from satisfactory. Figure 12 shows the efficiency for the higher speeds on a scale ten times as great



EFFICIENCY OF FOCAL PLANE SHUTTERS

Fig. 12.

The full curves in this figure correspond to those shown in the previous diagram. For all practical purposes these curves may be interpreted with the following table:—

| Aperture f/4. | Aperture f/5 6. | Separation between blind and plate in inches. | Velocity of blind in metres per second. |
|---|---|---|---|
| Curve. | Curve. | | |
| A | B | ½ | 2 |
| B | C | ⅜ | 2 |
| C | D | ¼ | 2 |
| C | D | ½ | 4 |
| D | E | ⅜ | 4 |
| E | F | ¼ | 4 |

To improve the shutters at high speeds we have to increase the spring tension or reduce the separation between the blind and plate. The latter probably cannot be made less than ¼ in., but by using metal at the back of the camera and for the dark slides it should be possible to do this. There are, however, many reasons why a special effort should be made to increase the spring tension; among the advantages to be gained by doing this, besides increased possibilities in the way of speed and improved efficiency, are lessened distortion, due to the decrease in the total time during which any part of the plate is exposed, and improvement of definition owing to the reduced effects of diffraction and any disturbance of the light by the edges of the blind opening. This difference in the definition between the two types of shutter working under the same conditions will only, of course, be apparent at the very highest speeds, if at all.

There is one defect possessed by the focal-plane shutter, as at present made, for one particular class of work, to which insufficient attention has been directed. In photographing birds and shy animals it is very desirable to have a noiseless shutter, or, failing this, a shutter in which the exposure will be over before any movement can have taken place due to the noise made by releasing the shutter.

At high speeds the time that elapses between the beginning of the exposure at the top of the plate and the conclusion at the bottom is independent of the length of time for which any one point of the plate has been exposed; it depends upon the length of the plate and the velocity of the blind. Thus, with a half-plate, and blind-velocity of two metres per second, parts of the plate will be exposed throughout an interval of 1-12th sec., though the "speed" may be only 1-1,000th sec. Thus, it is very likely—particularly with a reflex camera, in which a good deal of noise is made by releasing the mirror—that the subject will have started before the exposure is over, and a pose other than that desired, if not a blurred image, may result. On the other hand, with a between-lens shutter, the exposure would be at an end within the time called the "speed" of the beginning of the noise. For work of such a character as this the between-lens shutter is evidently very much to be preferred.

COMPARISON OF FOCAL PLANE AND BETWEEN-LENS SHUTTERS USED WITH LENS WORKING AT APERTURE f/4.

| | | Focal plane. | Between-lens. |
|---|---|---|---|
| **SHUTTERS GIVING HIGHEST SPEEDS.** | | | |
| At highest speed | Total duration of exposure ... ... ... ... ... | ·0017 | ·0 23 |
| | Equivalent exposure ... ... ... ... ... ... | ·0005 | ·0011 |
| | Efficiency ... ... ... ... ... .. .. | ·30 | ·47 |
| | Ratio of equivalent exposures—longest / shortest ... | 60 | 1,000 |
| **MOST ACCURATELY MARKED SHUTTERS.** | | | |
| At highest speed | Total duration of exposure ... ... ... ... | ·0024 | ·005 |
| | Equivalent exposure ... ... ... ... ... .. | ·0006 | ·0027 |
| | Efficiency ... ... ... ... ... ... | ·25 | ·54 |
| At lowest speed | Total duration of exposure ... ... ... ... ... | ·072 | ·84 |
| | Equivalent exposure ... ... ... ... ... ... | ·071 | 84 |
| | Efficiency ... ... ... ... ... ... ... | ·99 | 1·00 |
| | Percentage error of markings ... ... ... .. | 14 | 15 |
| | Ratio of equivalent exposures—longest / shortest ... | 120 | 300 |
| **MEAN OF RESULTS ON ALL SHUTTERS.** | | | |
| At highest speed | Total duration of exposure ... ... ... ... .. | ·005 | ·0054 |
| | Equivalent exposure ... ... ... ... ... ... | ·0025 | ·0027 |
| | Efficiency ... ... ... ... ... ... ... | ·5 | ·5 |
| At lowest speed | Total duration of exposure ... ... ... ... ... | ·056 | 1·0 |
| | Equivalent exposure ... ... ... ... ... ... | ·056 | 1·0 |
| | Efficiency ... ... ... ... ... ... ... | 1·0 | 1·0 |
| | Percentage error of markings ... ... ... ... | 43 | 46 |
| | Ratio of equivalent exposures—longest / shortest .. | 33 | [illegible] |

The table given above shows some of the results of these tests reduced to a form in which direct comparison is possible. These comparisons are given in three cases: (1) For the fastest shutters of each type; (2) for the most accurately marked shutters of each type; (3) the mean results of the examination of all the shutters. It is possible to attain with a focal-plane shutter a shorter exposure than is reached by any of these between-lens shutters, but the difference is not so great as might have been expected. In the average results there is in this respect nothing to choose between the two types.

The most remarkable difference shown by this comparison is in the range of exposure obtainable, as measured by the ratio of the longest equivalent exposure to the shortest equivalent exposure. The between-lens shutter is in this respect out of comparison superior to the focal-plane shutter.

In conclusion, the author desires to thank the editors of some of the photographic papers, the manufacturers and others who have given permission for some particulars of tests on shutters carried out for them to be published; to express his indebtedness to Mr. A. F. Clayden, who has taken some of the records on which these results are based, and has prepared copies of these diagrams for the Press; and to thank Dr. Glazebrook for the interest he has taken in the tests and for allowing these results and test diagrams to be placed before you.

T. SMITH.

In reply to questions raised in discussion, the author stated that he had not any figures to give showing the difference in the speed of the blind of a focal-plane shutter at the beginning and ending of the exposure. With the between-lens shutters examined the highest and lowest speeds were usually stated with fair accuracy, but the errors in the intermediate speeds were frequently considerably greater. No determination had been made of the speed of the blinds of roller-blind shutters (shutter near to lens).[*]

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[*] Since the date of this paper some determinations have been made of this the values attained were very approximately 5 metres per second at the highest tension.—T. S.

# PHOTOGRAPHY AT THE TURIN EXHIBITION.

There is no doubt whatever that the photographic trades on the Continent have gained great commercial advantage, and that many professional reputations have been gained by the willingness of foreign workers to exhibit their work in all international exhibitions, whilst British manufacturers and professionals have been content with a more local reputation. But this is no longer the case, for we are able to record with pride that the British photographic section of the Turin Exhibition is the finest both from the point of view of numbers and quality, for not only are our best manufacturers well represented, but we have as fine a show of portraiture by well-known workers as has ever been shown at any international exhibition.

This collection of fine exhibits has the place of honour in the British section, being placed in the centre of the main entrance in a beautifully decorated salon; its position and the quality of the goods and work shown have created considerable attention, and must be the means of increased business for the manufacturers and bring great credit to the professional. All branches of photography are represented—cameras, plates, papers, dry-mounters, chemicals, etc., trade printing, portraits, miniatures, and photographic reproductions, all showing excellent work.

Messrs. Wratten and Wainwright, Ltd., have a most interesting exhibit showing the results obtained by the "Panchromatic" plates, screen negatives used for three-colour half-tone block-making made direct through the half-tone screen, a set of light-filters, including orthochromatic and tri-colour filters, and a beautiful set of transparencies illustrating the theory of colour and its application to photography. Transparencies, lantern slides and negatives are illuminated by powerful electric lights, and make a show which attracts immediate attention. Messrs. Houghtons, Ltd., show a full range of their Sanderson and other cameras, devoting one case to a display of Ensignette cameras. Messrs. J. J. Griffin and Sons, Ltd., have a screen one side of which is filled with specimens of their Goldona Paper, the other with specimens of "Noctona." Messrs. Wellington and Ward have designed and built a special stand in which to display some very fine examples of their different papers and plates. The Acme Art Association have a large show of tastefully painted ivory miniatures and water-colour portraits. The large open stand of the Platinotype Company fills the centre of the court, the walls around being covered with fine specimens of platinotype work by English and American photographers. The Company's representatives give demonstrations in printing, development and mounting daily, the whole process from printing to the mounted print being completed at each demonstration, much to the interest of the public. Mr. Fredk. Hollyer exhibits two large panels of his masterly reproductions. Messrs. W. Butcher and Son, Ltd., have a display of all their best selling lines. Messrs. Burroughs Wellcome and Co. have a large case of their well-known tabloid chemicals, etc. The Autotype Co. show some excellent prints on carbon, a night picture of the White City attracting much attention. Messrs. T. Illingworth and Co., Ltd.'s exhibit is a large one, made more interesting by the very large size and excellent quality of the prints shown. Mr. J. W. Beaufort, of Birmingham, has a most interesting and novel exhibit of photography in enamel—a fine series of "Vitramic" enamels on gold, silver, and copper. This exhibit has created a great deal of attention from both the professional photographers and the public. The specimens, both plain or coloured, are beautiful in execution, and the subjects chosen with taste. The Thornton-Pickard Manufacturing Co., Ltd., have two large wall cases filled with a representative stock of their well-known cameras; their new Reflex camera, with its many new and simple movements, is a great advance in this popular type of camera. Messrs. Hyde and Co., of Chester, show their new dry-mounting machines. One large machine fitted with an electric heater is shown at work on the Platinotype Co.'s stand: the correct temperature is obtained in about ten minutes, when the current may be switched off, and the heater will keep then hot for upwards of half an hour without further attention. These electric dry mounters can be fitted to any ordinary electric plug, no extra fitting being required. Messrs. W. A. Mansell and Co. have a large exhibit of their reproductions of famous pictures which for correct rendering of colour values and fine detail cannot be beaten.

There is a very fine show of work by professional photographers which is certainly as fine, if not finer, than any professional work in this or any other exhibition. Messrs. Jas. Bacon and Son show a large and very fine panel of portraits taken against a white background. The work is very fine; the delicate half-tone and clever treatment of mounting, combined with the artistic posing of the sitter, give a most pleasing and artistic result. Mr. C. Vandyk exhibits a panel of sepia platinotypes rich and warm in tone and very pleasing. His latest photograph of H.M. King George V. is most successful, and makes a fine centre to an excellent exhibit. "Histed" shows a fine and powerful series of studies of men photographed with that breadth which makes Histed work unique. The centre portrait is a "command" photograph of the Pope. The portrait of the late Mark Twain is one of the finest pieces of portraiture in the exhibition. Medringtons, Ltd., have a set of "Head Studies" containing some fine examples of portraiture. Alf. A. Ellis and Walery have a panel of some most delicate platinotype prints of beautiful women and children treated with great delicacy and feeling. Walton Adams and Co. are exhibiting a collection of portrait mezzotints; some excellent portraiture full of life and vigour printed in a low tone sepia platinotype. Mr. W. Illingworth, of Northampton, exhibit is small but of excellent quality, his study of "A Philosopher" is a very fine work. T. Chidley has a nice series of portraits which he rightly titles "Portraits of beautiful English women and children." Edwin Hadley's exhibit is worthy of great praise, his portraits are good, and the artistically coloured prints add the only touch wanted to make this exhibit a complete success. The one thing missing from this otherwise excellent British exhibition is a show of some kind of colour photography. France and Italy have some fine colour work, but I feel sure the English workers could have made as fine a show of this work as in the other branches of photography had they so desired.

W. E. Dunmore.

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The London Salon. — In addition to the lectures already announced to be delivered at 5a, Pall Mall East, during the run of the Salon Exhibition, a discourse on "Art and Photography" will be given on October 17 by Mr. Haldane Macfall.

Mr. Sydney A. Pitcher, of Gloucester, has just returned home after a visit to Schloss Heessen, Westphalia, the residence of Baron Von Boselarger, where he has been carrying out a commission to take a series of photographs—about one hundred in number—of the castle, which has been restored on a most elaborate scale. For example, a new chapel has been erected at a cost of some £70,000, a feature of this building which is of particular interest being that the vaulting of the roof is a copy of the celebrated fan vaulting in the cloisters of Gloucester Cathedral.

Photographic Instruction.—We have received the prospectus of the "Hugh Myddelton" Evening Centre, St. James's Walk, Clerkenwell Green, where an advanced class starts on Monday, September 25, at seven o'clock, and an elementary class at the same hour on Wednesday, September 27. The classes are stated to be practical in character. Hand-camera work looms large in the elementary class; in the advanced, the science and practice of a large variety of processes will be explained and practical class work undertaken. The Autochrome process is included in both grades. The fee is 2s. 6d. per session of seven months. A similar set of classes will commence at Choumert Road schools (Bellenden Road branch), Peckham, on Tuesday (26th) and Thursday (28th), from 7.15. The teacher of both classes is Mr. A. G. Field.

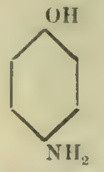
# THE EFFECT OF THE ALKALI IN PHOTOGRAPHIC DEVELOPMENT.

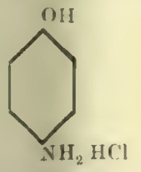
[The following is a translation made with some abridgment of a thesis describing an investigation carried out by M. Louis Bourgeois for the doctorate of science of the Lausanne University. The full text of the paper forms a volume of 116 pages, published by E. Lavanchy, Morges, Switzerland.—Eds. "B.J."]

## IV.

### Para-amidophenol.

We used both the free base and its hydrochloride of formulæ as follows:—





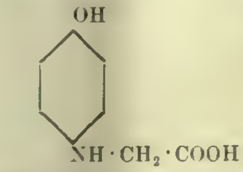
The hydrochloride is much more soluble in cold water than the base, but it is decomposed by the alkaline carbonates according to the following equation:—

$$2\,C_6H_4OH(NH_2HCl) + K_2\,CO_3 = 2C_6\,H_4OHNH_2 + 2KCl + CO_2 + H_2O$$

The same result is obtained when using the free base, but avoiding then the 2 molecules of potassium chloride which act as a restrainer. The free base being difficultly soluble in water, to the extent of 1.1 per cent. at 0 deg. C., the developer cannot be used in very concentrated solutions. MM. Lumière have advised the use of caustic lithia, which allows of the base being dissolved to the extent of 20 gms. per 1,000 ccs. The great advantage of this substance is that the products of oxidation are insoluble in water, and that liability to fog by staining of the gelatine is thus lessened. For the tests we used solutions of E/200 and E/1,000 strength. With the E/200 the reducing power was found to be .130 to .135; with the E/1,000 .132 to .135. Confirmatory tests indicated that the figure which may be taken as most exact is .135. The result obtained by MM. Lumière is .14.

### Glycin.

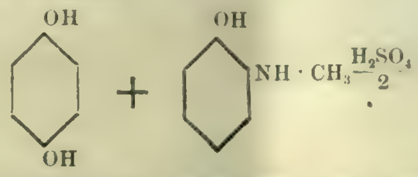
This developer is para-oxyphenyl-glycin, obtained by the action of chlor-acetic acid on para-amidophenol. Its probable formula is:—



Glycin is somewhat difficultly soluble in water, but its solubility is greatly increased by the presence of a small quantity of alkali or sulphite. Our tests were made with two solutions, made without previous addition of sulphite, namely, E/400 (made with aid of heat) and E/1,000. In the case of the E/400, the figure obtained for the reducing power was .135; with the E/1,000 solution, .130 to .132. Probably the most accurate figure to take for this developer is .132.

### Ortol.

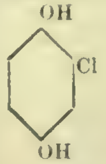
This reducer is the result of a mixture of one molecule of hydroquinone and one of methyl-ortho-amidophenol. The formula may thus be taken as follows:—



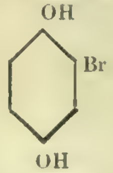
The sample used was that obtained from Hauff, tests being made with solutions of E/200 and E/1,000 strength. It is somewhat difficult to make concentrated solutions, since the sulphate of methyl-ortho-amidophenol is but slightly soluble, whilst the hydroquinone would dissolve in its full proportion, thus altering the composition of the mixture. In the case of the E/200 solution, the reducing power obtained was .160, whilst for the E/1,000 solution, the value was .157 to .160. We thus take the reducing power of ortol as .160, that is to say, the same as amidol, and half that of hydroquinone.

### Adurol.

This developer, as made by Hauff, is ortho-chlor-hydroquinone



whilst the Schering product is orthobrom—hydroquinone



Adurol being a developer of which relatively little is known, tests were made on the following solutions:—E/10, E/50, E/100, E/200, E/500, and E/1,000. The values obtained in this series for the reducing power were, respectively, as follows:—.120, .120, .120, .120, .118, .120, and .119. We have made some measurements to determine the effect of an increasing quantity of alkali. In a first experiment we used the usual quantities, namely, 10 ccs. of silver nitrate solution, and 11ccs. of caustic potash. In the second test we took 20 ccs. of caustic potash, in the third 40 ccs, and in the fourth 60 ccs., keeping the same quantity of silver nitrate. The results obtained in the cold were very irregular from no apparent cause, but when using heat the agreement, without being good, was somewhat better, though not to a degree to allow of satisfactory conclusions being drawn.

### Calculation of Theoretical Formulæ.

All the foregoing measurements of reducing power have been made in reference to 1 gm. of silver nitrate. The experiments were made with anhydrous soda carbonate. The reaction of the silver nitrate with the carbonates of the alkaline metals, and the caustic alkalies, is expressed as follows:—

$$\underset{340}{2AgNO_3} + \underset{106}{Na_2CO_3} = \underset{232}{Ag_2O} + \underset{170}{2NaNO_3} + \underset{44}{CO_2}$$
$$\underset{340}{2AgNO_3} + \underset{80}{2NaOH} = \underset{232}{Ag_2O} + \underset{170}{2NaNO_3} + \underset{18}{H_2O}$$

The following formulæ[13] have been drawn up, using anhydrous soda carbonate. In opposition to figures which are sometimes given, it is not possible to replace the carbonate of soda in these formulæ by an equivalent quantity of caustic alkali without altering the properties of the developer.[14]

*Hydroquinone.*—For 1 gm. of silver nitrate, .08 gm. of hydroquinone is required. Thus the quantity of sodium carbonate anhydrous required for .08 gm. hydroquinone is 106/170, or .624. Thus, for 1 gm. of hydroquinone we require 7.8 gms. anhydrous sodium carbonate. Taking the quantities of sulphite usually employed,[15] we obtained the following formula:—

| | |
|---|---|
| Hydroquinone | 10 gms. |
| Soda sulphite anhydrous | 40 gms. |
| Sodium carbonate anhydrous | 78 gms. |
| Water | 1,000 ccs. |

This formula, when used, would completely degrade the half-tones, and would give only harsh negatives, the quantity of alkali being actually much too great. In practice, the best results were obtained with carbonate not exceeding 13.3 gms. per litre.

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[13] Reeb, "Hydroquinone." Gauthier Villars, 1890.
[14] Lumière, "Zeit. für Wiss. Phot.," 1907, p. 130.
[15] Lumière, "Bull. Soc. Fr. Phot.," 1906.

*Eikonogen.*—Following a similar method of calculation, a theoretical formula is arrived at as follows:—

| | |
|---|---|
| Eikonogen | 10 gms. |
| Soda sulphite anhydrous | 10 gms. |
| Soda carbonate anhydrous | 18.4 gms. |
| Water | 1,000 ccs. |

Here, owing to the low reducing power of eikonogen, the quantity of water should be only 400 ccs., and the quantity of anhydrous sodium carbonate should not exceed 10 gms. per litre.

*Pyrogallic Acid.*—The reducing power of pyro being .1, a theoretical formula is:—

| | |
|---|---|
| Pyro | 10 gms. |
| Soda sulphite anhydrous | 30 gms. |
| Sodium carbonate anhydrous | 52.4 gms. |
| Water | 1,000 ccs. |

Lumière has advised only 25 gms. of sulphite, but it is best to use 30, in order to avoid yellow stain, and no harm would result in increasing it to 50 gms. In use the developer can stand a fair amount of alkali, but it is best not to exceed 50 gms. of the carbonate per litre.

*Pyrocatechin.*—A reducing power of .07 gives a theoretical formula of:—

| | |
|---|---|
| Pyrocatechin | 10 gms. |
| Anhydrous carbonate | 89 gms. |
| Soda sulphite | 40 gms. |
| Water | 1,000 ccs. |

The developer will stand alkali up to 35 gms. per litre, but it should in no case exceed 20 gms., the theoretical quantity being too great.

*Metol.*—A reducing power of .12 yields a formula of:—

| | |
|---|---|
| Metol | 10 gms. |
| Soda carbonate anhydrous | 53 gms. |
| Soda sulphite anhydrous | 50 gms. |
| Water | 1,000 ccs. |

The quantity of carbonate should not exceed 20 gms. if it is desired to preserve the fine half-tones.

*Para-amidophenol.*—A reducing power of .13 gives a theoretical formula of:—

| | |
|---|---|
| Para-amidophenol (free base) | 10 gms |
| Soda carbonate anhydrous | 48 gms. |
| Soda sulphite anhydrous | 100 gms |
| Water | 1,000 ccs. |

But this formula is too strong for practical use, the para-amidophenol not dissolving completely.

*Glycin.*—A reducing power of .13 gives 48 gms. anhydrous sodium carbonate to 10 gms. of glycin in 1,000 ccs. of water, but in practice for good gradation it is not advisable to exceed 10 gms. per litre.

*Ortol.*—Here the theoretical quantity of carbonate is 39 gms., but ortol is a developer which can be used without carbonate; the half-tones are eaten out by the alkali. In any case the theoretical 39 gms. is much too large a proportion.

*Adurol.*—The theoretical formula will contain adurol, 10 gms.; sodium carbonate anhydrous, 53 gms.; sulphite, 40 gms.; water, 1,000 ccs. In practice the best results are obtained with carbonate from 3.3 to 25 gms. per litre.

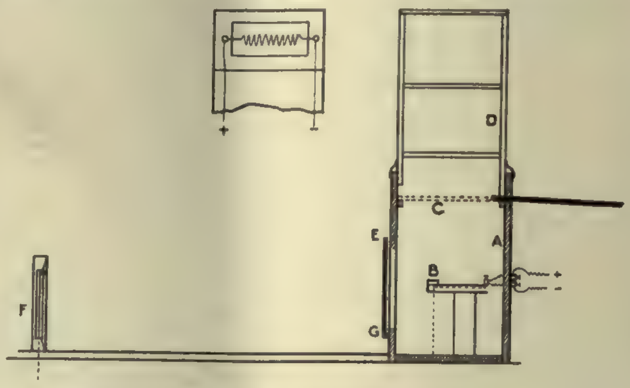
When using crystallised sodium carbonate, the quantities given above require to be multiplied by 2.7.

As regards the effect of increase or reduction of the alkali in the developer, opposite opinions have been expressed by the various authorities, but it may be of interest to digress for a moment in order to record the conclusions drawn by M. Mathet from experiments with the pyro-soda developer. M. Mathet finds that contrast is increased by reducing the quantity of carbonate, that the time for reaching a given density is increased by reducing the proportion of alkali, and that the contrasts are lessened to a marked degree by dilution of the developer with water. On the other hand, by increasing the quantity of alkali, negatives are obtained with more detail in both the shadows and the high-lights, the time of development is shorter, and in the case of developing solutions containing anhydrous carbonate from .5 to .3 gms., dilution appears to have a greater effect in increasing softness than when the proportions of the alkali are greater.

## PART II.

We must now describe the means employed for giving a series of increasing exposures upon a plate. The light used was that of magnesium, placed on gun-cotton, and ignited by an electric spark (see diagram).

The exposures were made by contact from a transparency plate prepared by photographing an original consisting of two parts:—(A) A series of wash areas ranging from dense black to pure white; and (B) a series of white lines on a black ground placed at increasingly small distances apart. We thus obtained, on the same negative, a sufficient number of half-tones of fine detail, of intense black, and pure white. The various negatives made for this purpose were developed with ferrous oxalate prepared as follows:—



A. Combustion chamber.
B. Burner of platinum spiral.
C. Shutter, enclosing magnesia fumes.
D. Box fitted with muslin to arrest magnesia fumes.
E. Ground glass.
F. Plate-holder.
G. Sliding carrier for ground glass.

Chart A.

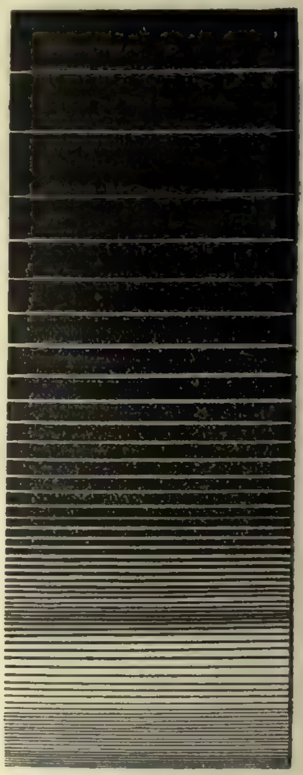


Chart B.

| | |
|---|---|
| A.—Potass oxalate neutral | 30 gms. |
| Water | 100 ccs. |
| B.—Ferrous sulphate | 30 gms. |
| Water | 100 ccs. |

15 ccs of B and 45 ccs. of A were used to make up the developer.

The opacities obtained were measured in the following way:—A series of lines at first very fine, and gradually becoming wider, were drawn at equal distances on a sheet of tracing paper. This paper was attached to a glass plate and applied to the negative to be examined, passing the lines from the coarse to the fine behind the dense portions of the negative. The lines of this chart were numbered from 1 (the heaviest) to 15 (the finest). In the case of a negative through the densest portions of which line 6 could just be seen, but line 7 remained invisible, the density of this portion was denoted by 6. In the case of some specially dense negatives, none of the lines, not even No. 1, could be seen, and in this case the line chart was examined successively under the lighter tints 11, 10, 9, etc. (chart A), until the strongest line of the chart became readable. This measure of the density was made for all the plates examined, at the same distance from an incandescent lamp, and in all cases the plates used were the Lumière Blue Label.

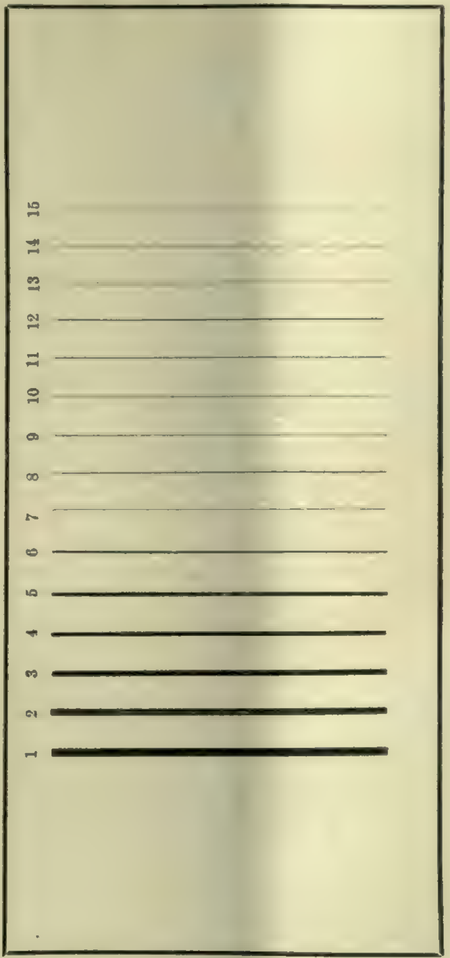


Chart C.

L. Bourgeois.

* * *

**Rajar Monthly Competition.**—The prizes offered by Messrs. Rajar, Ltd., Mobberley, Cheshire, for the best prints on paper or postcards of their manufacture submitted for the competition for the month of August have been awarded as follows.—Class 1: Open competition, to Mr. J. W. Whittaker, 25, Belvedere Avenue, Dewsbury Road, Leeds, for print on paper purchased from J. Mason, photographic dealer, 13, Queen Victoria Street, Leeds. Class 2: For those who have never previously won a prize in any class of competition, to Miss A. Clarke, 62, Prestage Street, Brooks' Bar, Manchester, for print on paper purchased from Messrs. J. T. Chapman, Ltd., Albert Square, Manchester. Remittances for the prizes have been posted to the respective winners.

## UNION OF PHOTOGRAPHIC ASSISTANTS.

On Tuesday night the meeting of photographers' assistants, concerning which an intimation appeared in the last issue of the "Journal," was held at the Eustace Miles Restaurant, Charing Cross, to consider the proposed formation of a Union. There was a fairly good attendance. In convening the meeting the promoters did not commit themselves to any definite scheme, preferring to lay their suggestions before those interested in a less formal manner. In this course they were following the procedure usually adopted in regard to the organisation of trade employees, and the discussion which ensued ranged over numerous questions connected with ways and means.

Mr. Jarrett, of Watford, who has done the preliminary work, made a statement, in the course of which he said he had not been moved to take action by the present unrest in the labour world. The matter had been in his mind ever since the attempt made about five years ago to form a Union. Up to quite recently he was working in the provinces, but he felt strongly that a Union, to be effective, must be centred in London, and so he took the earliest opportunity of transferring himself to the London district. In regard to the question whether a Union was needed, he had always held the opinion that it would, if properly worked, be a power for good in the trade. If the trade was to be raised in standard it must be largely through the assistants. In response to the action he had already taken, he had received about one hundred replies, many from assistants, some from assistants who had been masters, and several from masters themselves. One assistant, for instance, wrote that after fifteen years' work as an operator he was in the same position as regards remuneration as he was fifteen years ago. Touching the constitution of the proposed Union, Mr. Jarrett said he was in favour of it being such as to include all photographic assistants, not only managers, operators, and printers, but those indirectly concerned in the trade, such as workers in photographic factories.

During a long discussion, much was said regarding the objects of a Union. Several speakers, while disclaiming any belief in the efficacy of strike methods, said the curse of the trade was cheap labour, and advocated limitation by law of the number of young persons employed. In the case of those who were employed, there was a need for some evidence that they were being properly taught. Other things for which it was thought a Union should work were the exclusion from all institutions receiving grants of all students not engaged in photography, and the abolition of Sunday labour. As to the last-named question, there was some difference of opinion as to the possibility of total abolition. It was remarked that the photographic trade was to some degree a "luxury trade," and that this fact had a bearing on the Sunday question. The chairman (Mr. H. T. Wilkinson, of New Cross) pointed out that a Union, once formed, had the means by which it could, if it desired, affiliate with larger organisations of workers, and thus make its influence felt in the promotion of legislation.

Ultimately a resolution in favour of the formation of a Union was carried unanimously, on the proposition of Mr. Jarrett, seconded by Mr. C. O. Haslett, of Watford. A provisional committee was appointed, and it was announced that a meeting of photographic assistants had been fixed for Friday, September 29, at the County Forum, Cromford Court (behind Lyons' Café), Market Street, Manchester.

The drafting of rules and other matters were held over, the proceedings concluding with the voting of a sum for preliminary expenses.

The chairman threw out the suggestion that the Union should, in addition to trade organisation, provide opportunities for discussion and debate on technical matters connected with photography, such as were afforded by various other bodies, professional and amateur.

The following rules of the proposed Union were submitted for discussion at the meeting reported above:—

### I.—Name.

This society shall be called "The National Society of Photographic Assistants and Allied Workers."

### II.—Objects.

The object of this society shall be the raising and maintaining of funds for mutual benefit by weekly, monthly, half-yearly, or annual contributions of the members, which shall be applied for the following purposes :—

(*a*) The definite grading of assistants in the photographic trade.

(*b*) Establishment of a minimum wage for each grade.

(*c*) Adjustment of working hours, and obtaining of half-day holiday weekly.

(*d*) Proper sanitation and ventilation of all workrooms provided by employers for employees.

(*e*) Regulation of relations between employer and employed.

(*f*) The rendering of legal aid to members.

(*g*) To provide a weekly allowance for members when sick.

(*h*) To assist members who, for having rendered service to the society, shall have lost their situations.

And to endeavour to obtain

1. The payment of travelling expenses when taking up a fresh situation.

2. Where Sunday work is made a condition of employment :—

(*a*) The substitution of another full day in place of Sunday ; or

(*b*) The payment of a six days' wage, *plus* overtime rate for the Sunday.

### III.—Constitution of the Society.

This society shall be divided into (1) Town Branches ; (2) County Councils.

The limit of each branch or council shall be defined and set forth by the governing body. Each branch or council shall have powers provided by the rules, and shall be subject in accordance with them to the governing body of the society.

Each branch shall appoint its own officers and conduct its own business.

Each council shall have its officers appointed by the governing body of the society from amongst the branch officers, and each town branch shall be under the supervision of its own county council.

The county councils shall be directly responsible to the governing body of the society for the proper conduct of the branches and for deciding what action is necessary to maintain the society within its own area.

### IV.—Membership.

Any person of either sex employed in the photographic, process, or allied trades as assistants shall be eligible for full membership. Any employer in these trades may become an honorary member, and be entitled to ordinary benefits, but shall have no voice in the management of the society.

Members of the society who are forced by circumstances to take up temporary employment outside the photographic or allied trades shall remain members of the society, but shall have no voice in the management of the society, and shall not be eligible for election as delegates or officers until their return thereto.

### V.—Entrance Fee.

The entrance fee shall be one shilling, payable on application for membership.

### VI.—Management.

The management of the society shall be entrusted to an Executive Committee, consisting of nine members, in addition to a President and the necessary officials.

Any member elected to the Executive Committee shall hold office for twelve months, and shall be eligible for re-election.

The Executive Committee shall have power to appoint a sub-committee from their number to conduct the business of the society or to inquire into the working of the society in any particular area.

The Executive Committee shall meet immediately after their election at the annual delegates' meeting for transacting any necessary business. They shall also meet once quarterly for general business, five to form a quorum. A special meeting of the Executive Committee may be called, should business necessitate same, by the President or officials of the society.

The Executive Committee shall exercise a close supervision over the income and expenditure of the society with a view to economical management.

In the event of any question arising on which the rules are silent, the Executive Committee shall have power to decide thereon.

### VII.—Trustees.

Three Trustees shall be elected at the first annual delegates' meeting, who shall continue in office during the pleasure of the governing body of the society.

The Trustees shall have vested in them all real and personal estate belonging to the society, and shall invest the funds as may be determined by the Executive Committee.

### VIII.—Annual Delegates' Meeting.

The government of the society shall be vested in the annual delegates' meeting, such meeting to be composed of delegates from the branches and councils of the society. For the purposes of the first annual meeting each branch or council may send a delegate. The number of delegates from each branch or council to be limited to one for each thirty members. In the event of there being a group of assistants in a town or county not formed into a branch by the time of the first meeting, such group may select one of their number to act as a delegate, providing

(*a*) they are twelve or more in number ;

(*b*) notice is sent fourteen days prior to the meeting to the Secretary clearly setting forth the names and particulars of the nominees, and which of the group they have selected as a delegate.

The first annual delegates' meeting shall be held on Friday, April 5, 1912, and the following day, at a place to be determined by the Executive Committee.

All delegates attending the first annual meeting shall have their expenses paid by the branch council, or group sending the delegates.

All questions brought forward at the annual meeting shall be decided by a show of hands. Delegates attending the first annual meeting will be required to wear a badge to be provided by the Executive Committee.

No delegate will be allowed to vote on any question before the meeting unless he or she is wearing the official badge.

### IX.—Legal Aid.

The Executive Committee shall appoint a law agent to act for the society in all matters as they may direct.

In cases of disputes arising between members and their employers, or unlawful treatment of members by their employers, the Executive Committee shall, after a full investigation of the case, provide legal aid for members if they consider the merits of the case justify such a course.

All applications for legal aid must be made through the local secretary, who shall immediately forward a clear statement of the facts to the General Secretary.

### X.—Fraud and Expulsion.

Should any member be found guilty of attempting to break or injure the society, the Executive Committee shall have power to expel such member from the society. Should any member receive moneys on behalf of the society and not duly account for same, or knowingly receive any benefit not being entitled to the same, he or she shall refund such moneys, forfeit all contributions, and be immediately expelled.

### XI.—Levies.

If at any time the funds of the society decrease through any legitimate cause, the Executive Committee shall have power to order a levy to be made to bring up the funds, such levy to be equal on all members.

### XII.—Dissolution.

The Union may be dissolved, and its funds divided, with the consent of five-sixths of the whole members.

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The Kodak New Premises in Kingsway.—We are informed that the new Kodak building, Kingsway, London, is now ready for occupation. The removal of offices and stock departments will take place to-day, Friday, September 22, at 4 p.m., and all business will be suspended from that hour until Monday, September 25, at 9 a.m., when the new headquarters will be open for resumption of business. From the latter date all communications should be addressed to Kodak, Limited, Kingsway, London, W.C.

## MESSRS. MARION'S NEW PROFESSIONAL SHOW ROOM.

On Tuesday next, September 26, and during the remainder of the week, Messrs. Marion and Co. will be "at home" to their many professional customers. The occasion is the opening, at their premises, 22 and 23, Soho Square, of a large new show-room exclusively devoted to the requirements of the professional photographer. As many of our readers must know, Messrs. Marion's history in the photographic trade has been one of long, intimate, and, we may be allowed to say, honourable connection with professional photographers. Commencing their business in the days of the wet-collodion process, the firm has witnessed continuous expansion, a process which gained an immense impetus with the introduction of the gelatine dry-plate, for the manufacture of which Messrs. Marion established a factory at Southgate some 30 years ago. Their manufacturing business has since been greatly extended to all varieties of dry plates and papers, and, at the same time, their interests in the supply of all varieties of professional photographers' requisites have undergone a similar development. At the present time they are actively engaged in the manufacture of many pieces of the apparatus which they sell, have their own workshops for the production of electric-lighting equipment and, of course, still continue to manufacture mounts of all descriptions.

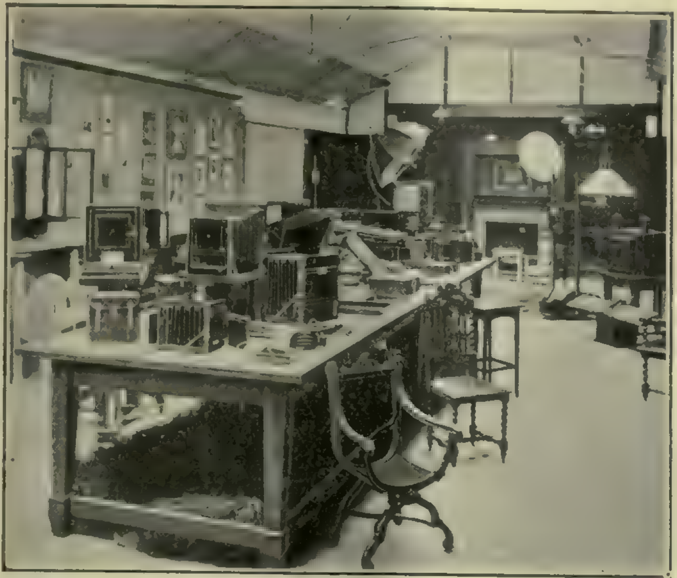

Fig. 1.

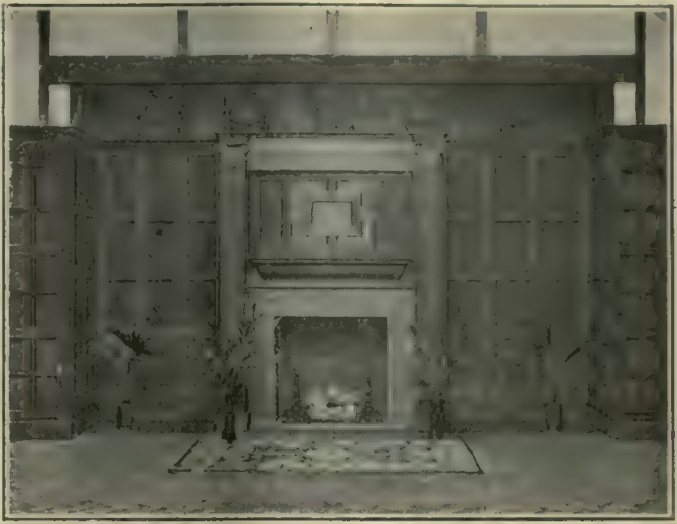

Fig. 2.

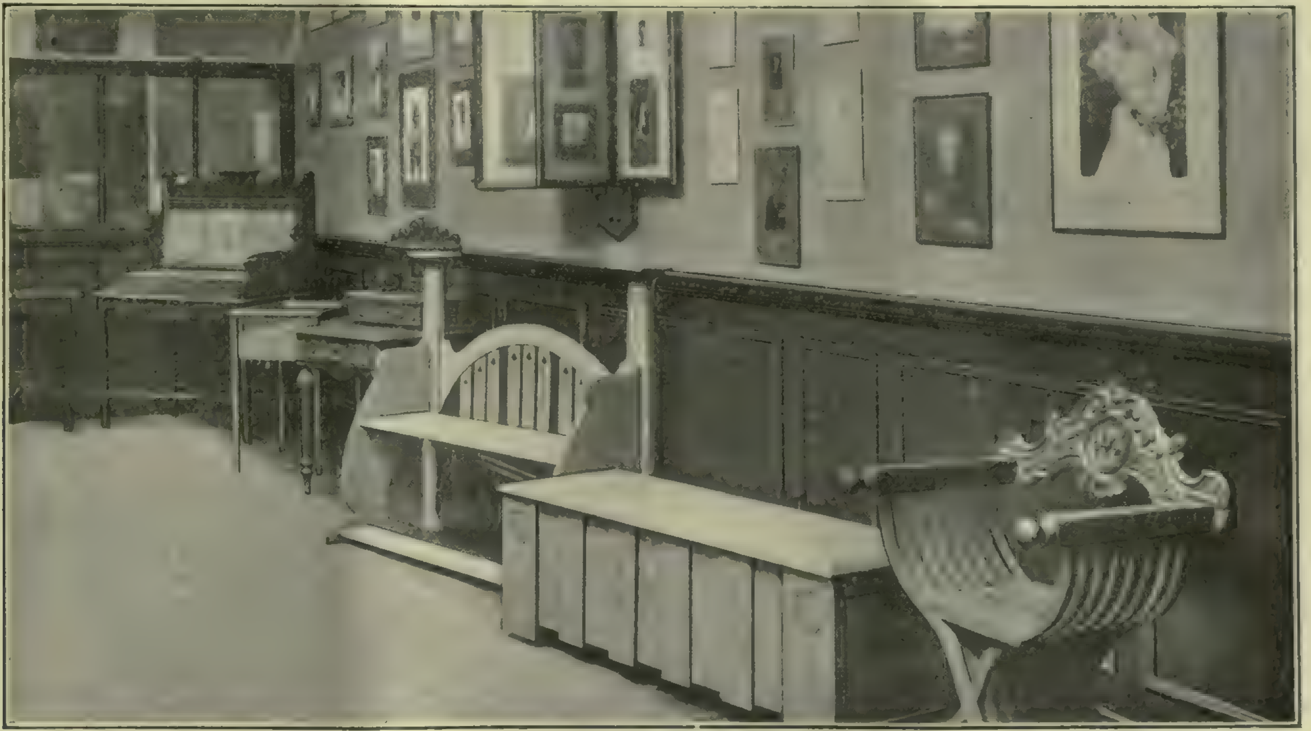

Fig. 3.

A crystallisation, as it were, of these various activities is afforded in the new show and reception rooms now open on the ground floor of the premises on the eastern side of Soho Square. The show-room is a light and lofty room measuring about 60 by 20 feet. On a centre table, seen in the first illustration, are exhibited cameras, shutters, retouching desks, enlargers, printing machines, and the many other accessories of which the firm has its own distinctive patterns. To the right of this table, but not visible in the photograph, is a large stock of backgrounds, all of which can be rapidly inspected by the visitor. The series includes many choice designs in plain and coloured grounds. The walls of the show-room are decorated in sections to show the various descriptions of wood-work, panelling and other decoration which can be applied to a photographer's studio, or reception gallery. Thus the visitor can see, side by side, a light form of panelling in the Wedgwood style, old English oak with simple but decorative carving in the Jacobean style, as well as various wall coverings in imitation art leathers, the decorative effect of which is extremely good, whilst the cost is quite moderate. At the end of the room and grouped around an artistic fireplace with carved overmantel (Fig. 2) are arranged the larger accessories, including the various types of "Northlight" lamp, the highly efficient "Hana" studio stand, as well as essential accessories such as shading screens, eye-rests, and studio mats and rugs.

In the matter of furniture for the reception-room or studio, Messrs. Marion have examples in all styles and to suit all purses. While they do not ignore the cheaper class of accessory, we are glad to see that they are responding to the growing demand among photographers for furniture which has genuine qualities of style and solidity. The day of the sham carved chair or settee is past, we are glad to think, in many studios, and photographers who are of this view can here make choice among many patterns of chairs, garden seats and chests, as shown in Fig. 3. We further illustrate one accessory of this kind, a coffer, one side of which is in Jacobean style, whilst the other is of more modern formal design (Figs. 4 and 5). The top, upholstered in dark green imitation crocodile leather, completes a very handsome-looking piece of furniture, which a photographer will perhaps appreciate none the less for the reason that it provides a receptacle for odds and ends which would otherwise litter the studio. This chest, which is priced at £3, is but one example of the substantial accessories made by Messrs. Marion in fumed oak and other materials.

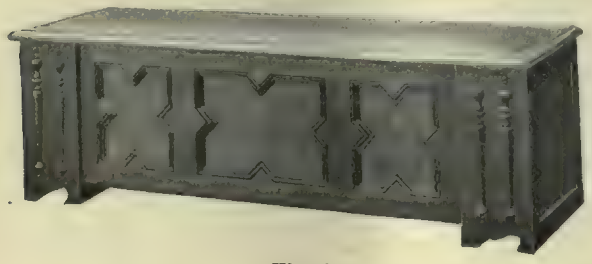

Fig. 4.

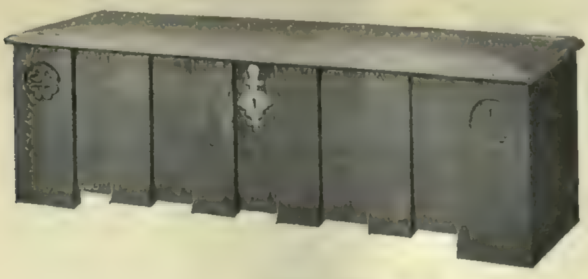

Fig. 5.

On the walls of the room, as will be seen from the third illustration, are exhibited prints on the various Marion papers from negatives on the firm's dry plates taken, in many instances, with the "Northlight" lamp. These include the work of leading photographers, such as Mr. William Gill, of Colchester, Messrs. Speaight, Ltd., Mr. F. A. Swaine, Mr. Esmé Collings, and Miss Rita Martin. Apart from their interest as technical specimens of Messrs. Marion's products, they should interest portrait photographers as the work of leading studios.

Of the many other accessories and pieces of apparatus which we examined on our visit exigencies of space compel us to withhold reference, but we must refer to a very neat cabinet (seen to the extreme left in Fig. 3), providing the means of rapidly displaying a photographer's specimens, and ensuring that these shall be shown to the sitter in a given order. Examples of show cases for the street front, or for railway stations, are also among Messrs. Marion's specialties, and one cannot leave this spacious show-room, which we believe is the only ground-floor professional show-room in London, without feeling that photographers have here every opportunity for filling their most varied requirements. Lastly, it should be emphasised that Messrs. Marion's expressed wish is that their professional customers may feel themselves at all times welcome to inspect goods at their leisure without obligation to purchase.

# Photo-Mechanical Notes.

### The International Exhibition at Turin.

As one of the Jurors at Turin, it was a great disappointment to me to find no direct representation of English process work there with the exceptions of the excellent collotypes and photolithos included in the exhibit of the Oxford University Press, the very fine show of reproductions of G. F. Watts' pictures, photogravures etched by Mr. Emery Walker and printed in colours in the tampon manner by C. H. Thompson at Compton, and the exhibit of Messrs. Wratten and Wainwright showing the materials they make for the process worker, together with results which included a set of three-colour negatives taken through the cross line screen with their filters and panchromatic plates.

Germany, France and Belgium have capital exhibits from process firms, and this is likely to lead the visitor to entertain the ridiculous notion that if good process work is required, particularly in colour, it must be obtained on the Continent rather than in England. It must not be forgotten that such an Exhibition as this, having a very large and generally admirable British section, attracts a large number of English visitors—possible customers for process work. A good collective exhibit from English firms would have at once exploded the idea that we cannot hold our own against the world, and the explanation of their absence must surely be that they have not been properly approached. The same is true of the scientific applications of photography; England, the country having probably the largest harvest of results in this field, showing practically nothing.

But Germany has a collective process exhibit arranged by the Union of Photo-engravers; indeed, it is stated that this is the result of the expressed wish of the Emperor himself. The consequence is that no branch of the work is neglected, whilst on the other hand no one firm, nor any kind of work, is allowed to predominate. The most noticeable exhibits are perhaps the enormous photogravures of Meisenbach Riffarth, about a square metre in size, the fine colour collotypes from several firms, particularly Kolbe and Schlicht, and the photogravures coloured in the tampon manner. The Reichsdruckerei show a large series of reproductions of old English colour prints.

I do not say there is not plenty of evidence indirectly of English process work, because the example of the German book exhibit at Brussels last year has evidently influenced our publishers, who have put up a really good display of books. It also seems to have had the same effect on other countries, the exhibits of books being better generally than at Brussels.

Colour collotype seems to be making headway; among the French books several are illustrated by it. I noticed also in this section several medical subjects, tissue sections, etc., which it is usually stated must be drawn by hand by the lithographic artist and printed lithographically, reproduced by ordinary three-colour relief blocks. There are also some very large photolithos in colour, but the most interesting application of process is perhaps one in which half-tones are used to reproduce the patterns produced by the crystallization of various substances on glass. Such blocks are then printed on paper or on fabric in appropriate coloured inks to provide decorations such as wall papers. Messrs. Braun have a very good show of reproductions in carbon and also some coloured photogravures. Louis Ducos Du Hauron shows a frame of his early work in three-colour carbon; Lumières show the finest collection of Autochromes yet displayed, including some beautiful landscapes over twelve inches long, and several instantaneous flashlight portraits, in which the colour rendering is remarkably faithful. The corresponding display of Dufay plates suffers by comparison; they are not all new, and only a few are really first class. M. Belin shows his latest results in telephotography, exhibiting also his apparatus in operation. In the Italian section, though particularly strong in ordinary photography and its scientific applications (two exhibitors show results of attempts to make colour photographs on paper), I noticed only the process work of Modiano of Milan and the remarkable all-iron camera for process studios of Gantzini and Co. The stand for this is composed of huge tubes braced together, and altogether the apparatus struck me as being extremely massive for the work required of it. In the Belgian section Messrs. Malvaux made a good display, as was only to be expected. In the United States the painstaking and artistic photographs of disappearing Indian tribes by A. H. Curtis were all shown as tastefully framed photogravures, whereby they lost nothing of their effect. From Siam came a collection of maps produced by means of photo-lithography, the work being done entirely by natives; and A. H. Duke sends a number of Autochromes showing that in spite of the high temperature it is possible to work these plates satisfactorily. The Venezuela section contains one frame of half-tones and etched labels on metal; the last-mentioned exhibits prove that "process" is gradually being mastered all over the world.

The Exhibition remains open until the middle of November, and the present is the best time to visit it, the heat during the summer having been almost intolerable. The exhibition is vast in extent, and any photo-engraver or photographer would be certain to find it most interesting. A. J. Newton.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between August 28 and September 9:—

Drying-Rack.—No. 19,412. Collapsible drying-rack for photographic prints. Philip Sweatman Hedgeland.

Blue-Prints.—No. 19,593. Apparatus for and method of producing copies of blue prints.

Cinematographs.—No. 19,358. Projection screens for use with cinematograph apparatus and the like. Wilfred Ernest Lytton Day and Salo Baar.

Animated Pictures.—No. 19,440. Apparatus for exhibiting animated pictures. Arthur Henry Perrier.

Time-Recording Apparatus.—No. 19,436. Photographic time-recording apparatus. Edmund Philip Grove and William Thomas Coulson.

Cameras.—No. 19,735. Photographic cameras. Oliver Trevelyan Dawson and Harold Evelyn Dawson.

Print Washers.—No. 19,754. Photographic print washers. David Charles McCandless and James Bura Wently.

Cinematographs.—No. 19,644. Method and apparatus for printing cinematographic films by projection. Stanislaus Kucharski.

Cinematographs.—No. 19,823. Arrangement for producing cinematographic pictures with plastic effect. Karl Juhasz and Franz Haushofer.

Cinematography.—No. 19,928. Treatment of films used in the exhibition of cinematograph pictures. William Friese-Greene and William Jackson Pope.

Cinematography.—No. 19,929. Cinematograph photography and projection. William Friese-Greene and William Jackson Pope.

Colour Cinematography.—No. 19,930. Cinematography in colours. William Friese-Greene and William Jackson Pope.

Cinematography.—No. 20,015. Apparatus for use in connection with the preparation and joining of lengths of cinematograph films together. Percival Edwin Stow.

Cinematography.—No. 19,952. Cinematograph films. John Mitchell.

# New Trade Names.

Mostol.—No. 335,526. Photographic developers, developing solutions, toning and fixing solutions. Mawson and Swan, Ltd., Mawson's Buildings, Mosley Street, Newcastle-on-Tyne, manufacturers. August 5, 1911.

Kalem (Design).—No. 334,455. Cinematograph films for exhibition purposes. Samuel Long, 45, Gerrard Street, London, W., manufacturer. June 19, 1911.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### A Bromoil Bleacher that Dispenses with the Acid Bath.

The hold that the Bromoil process has now secured upon artistic workers (writes A. B. W. in the "Amateur Photographer and Photographic News" for September 18) demonstrates that it is both expeditious in method and satisfying in results. The fact that all Bromoil prints are not successes is merely incidental to the individual shortcomings of the producer, and in no way a fault of the process. The following method of preparing a bromide print for pigmenting is at once rapid and certain. It has the added advantage of dispensing with the acid bath, which is regarded by some as a drawback to the ease of the procedure, as originally recommended. Make up the following solutions:—

| | |
|---|---|
| (1) Sulphate of copper ......... | 1 oz. in 10 ozs. of water. |
| (2) Bromide of potassium ...... | 1 oz. in 10 ozs. of water. |
| (3) Bichromate of potassium... | 1 oz. in 10 ozs. of water. |

Of these three ten per cent. solutions, take 2 ozs. of No. 1, 1 oz. of No. 2, 1 oz. of No. 3, add water to make up to 10 ozs., and the Bromoil bleacher is ready for use.

It should be used at a temperature of 65 deg. F. When the print is well bleached, wash in water at a temperature of at least 65 deg. A higher temperature—70 deg. to 80 deg.—will give greater relief, but may tend to soften the gelatine. If this occurs, add 2 ozs. of a ten per cent. solution of alum to the above formula.

After washing, fix in an ordinary acid fixing bath, made as follows:—Hypo, 3 ozs.; metabisulphite of potash, ½ oz.; water, 20 ozs., for five minutes. Wash in a couple or three changes of water, and the print is ready for pigmenting as usual.

# New Books.

"Illumination: Its Distribution and Measurement." By Alexander Pelham Trotter. London: Macmillan and Co. 8s. 6d. net.

In this volume the author addresses himself to those interested in the methods of directing and using light to the best advantage, that is, to "illuminating engineers," as members of this growing profession have styled themselves. Although, therefore, not of direct importance to those engaged in photographic work, the treatise, nevertheless, contains a number of chapters which form useful sources of reference to workers engaged in sensitometry. The author deals in Chapter I. with standard lights, and in Chapters V. and VI. with instruments for measuring both direct sources of light and illuminated areas. An instrument of the "lumenmeter" type having been suggested for the gauging of photographic exposures, this part of the subject is of particular interest, and should, moreover, prove of value to those engaged on scientific measurements of the distribution of light in studios supplied either with natural or artificial illuminants. The volume has evidently been most carefully edited and revised, and is supplemented by a useful bibliography and index.

"Photography: Its Principles and Applications." By Alfred Watkins. London: Constable and Co. 6s. net.

This volume forms one of the "Westminster" series of handbooks dealing with various branches of technology. Mr. Watkins, consistently, no doubt, with the character of the series as a whole, confines himself strictly to the present-day photographic processes. His treatment of his subject is quite on the lines which would be expected of the author of the Watkins Manual; in fact, a large portion of the text is the subject-matter of this latter work expressed somewhat more fully and less familiarly. The first chapter is a readable elementary description of what takes place in the making of a photographic negative. Chapter II. deals with the general properties of lenses, and gives useful advice on the choice of the type of lens and the advisable focal length for different classes of work. It is when we come to Chapters III. to VI., which deal with exposure and development, that we find the author most at home with his subject. What he has to say in later chapters—say, on printing processes, or photo-mechanical work—might have equally well been written by any careful reader of the photographic Press of the past ten years, but in the chapters which relate to the effect of various conditions on the exposure of a plate and on advisable methods of development, the subject is most clearly and convincingly treated in a way in which scarcely anyone but the author could have treated it. Printing processes are precisely, though very briefly, dealt with in Chapter IX. This section, unlike the others on exposure and development, can scarcely be taken as a working guide, but it gives a clear and accurate account of the processes of printing in use at the present time. The section on colour photography likewise excellently sums up the methods in use among the scattered workers who practise not only screen-plate colour photography, but also the methods of separate negative making and printing. Special branches of photographic work, such as portraiture, stereoscopy, panoramic photography, flashlight and night photography, cinematography and the telegraphic transmission of pictures, are dealt with in Chapter XIII., whilst the succeeding chapter includes the use of the camera in surveying, and the practice of tele-photography. Further scientific applications of the photographic process, for example, in photo-micrography, X-ray work, and astronomy, together with a brief account of sensitometric work and of the various photo-mechanical processes, occupy the concluding pages. The volume is admirably free from technical and literal errors. As the result of an interested reading of its 330 pages we came across only the misprint of "Manley," page 177, and of the alleged geometrical series of numbers, 2, 3, 4, 6, 8, 12, 16 (page 297). The merit of the volume is that it clearly and honestly describes the chief activities in practical photography at the present time; though the author dwells, quite naturally, upon the methods of exposure and development worked out by himself, his very insistence upon these is sufficient implication that there are still numbers of photographers who obtain their results without these aids.

The Watkins Manual.—A fifth edition of the Watkins manual of exposure and development reaches our table from the Watkins Meter Co., Hereford. The subject matter of this useful guide is so well known that it is sufficient to say that in this latest edition Mr. Watkins has brought it up to date by revising certain parts dealing with development by time, and has added a section on the use of the Watkins thermometer. The volume, by its repeated appearance in new editions, evidently secures the appreciation of photographers which its practical contents merit.

Platinum Printing.—In No. 115 of the "Photo-Miniature" modern methods of platinum printing are dealt with in a way which will provide the beginner with a useful working knowledge of the process and, at the same time, will give the practised printer in the process several useful hints. The monograph deals with all the platinum papers on the (American) market, and devotes several pages to the production of red, blue, and other tones, which, in conjunction with platinum paper, have apparently found more favour among workers in the United States than here. The special treatment required for the "Japine" platinotype papers and the grades of contrast obtainable by a suitable choice of developer for this paper are dealt with, and generally the monograph is one which forms a useful guide to this premier printing process.

Hand Work on Negatives.—No. 116 of our New York contemporary, "The Photo-Miniature," is a short, practical manual on retouching methods. The author, Mr. Arthur Whiting, deals with his subject on the general lines of his handbook "Retouching," published in this country, but devotes chief attention to the working-up of landscape and other negatives, blocking-out, introducing backgrounds, etc. The little volume, which we notice now bears the imprimatur only of the American publishers, Messrs. Tennant and Ward, 122, East Twenty-Fifth Street, New York, is a useful guide to these miscellanea of retouching methods. It is not in any sense a manual of portrait retouching.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

Friday, September 22.

Cowlairs Co-operative Camera Club. Bromides and Enlarging.

Tuesday, September 26.

Royal Photographic Society. "More English Wild Flowers." Illustrated with Autochrome Slides. H. Essenhigh Corke, F.R.P.S.

Thursday, September 28.

Handsworth Photographic Society. Discussion on the Developers Demonstrated at the Previous Meetings.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, September 19, Dr. C. E. Kenneth Mees in the chair.

Mr. John Sterry read two papers, one on "Reversal and Re-reversal," and a second on "Light and Development." These dealt with recent experiments on the phenomenon of reversal and on the theory of a dual latent image, but without the accompanying reproductions and diagrams are not readily reported. Mr. Sterry, however, showed that by exposure of extra-rapid plates under a scale of densities, affording light-intensities from 1 to approximately 3,000,000, he had been able to show the occurrence of the phenomenon of re-reversal. The scale of gradations was built up from pieces of celluloid film exposed to light and developed to a somewhat high density, so that each layer of film reduced the light-intensity to about one-fifth. The exposure was made to brightest sunlight (in Australia), Mr. Sterry endeavouring to approximate the conditions of intense lighting under which re-reversal had been obtained by the late Dr. Jannsen. It was found, however, that sharply marked re-reversal results were greatly dependent on the choice and manner of development, and from the way in which the tones of the original and reversed image developed, Mr. Sterry deduced confirmation of his theory of a primary and secondary latent image. In the second paper the author dealt with further experiments on plates exposed in the ordinary way to a scale of densities, and developed some by the ordinary developer, others by a developing solution weak in alkali, but strong in the reducing body, and still others by a highly dilute developer. The results obtained fitted in with the action which would be expected on the theory of a primary and secondary latent image. In the discussion which followed Mr. W. B. Ferguson put forward the view that the difference in the curve obtained by Mr. Sterry with a developer of the second class named above compared with that produced with an ordinary developer might be explained by the presence of a large quantity of the developer proper in the solution. The effect was to shift the curve of the plate roughly parallel to itself, an effect which had been noticed by Hurter and Driffield. After further discussion, in which Mr. F. F. Renwick and the chairman took part, the proceedings closed with a hearty vote of thanks to Mr. Sterry.

# Commercial & Legal Intelligence.

**Eastman Kodak Company of New Jersey.**—The directors of the Eastman Kodak Company of New Jersey have declared an extra dividend of 7½ per cent. upon the common stock, payable on December 1 to stockholders of record at the close of business on October 31.

**The first meeting** was held at Bristol on September 13 *re* Elizabeth Baird Hamilton, photographer, carrying on business under the style of Allan Hamilton and Sons, 7, Paul Street, Kingsdown. The gross liabilities were put at £65, and the deficiency at £35, and the cause of failure was alleged to be bad trade. The Official Receiver in his observations said that the debtor was 65 years of age. She informed him that her deceased husband, the late Allan Hamilton, carried on business from 1880 to the time of his death in June, 1910, at the premises. The widow put the value of the personal estate of her husband at £86, and the liabilities at £81. He had also some freehold property, which, however, was mortgaged up to its full value. The case remains in the hands of the Official Receiver.

**Legal Notices.** — Notice of intended dividend is given in the bankrupt estate of Frederick George Clapham, dealer in photographic apparatus, etc., The Medical Hall, 110, West Street, Farnham, Surrey. Proofs must be lodged on or before September 20 with Mr. E. W. J. Savill, 132, York Road, Westminster Bridge Road, S.E.

# News and Notes.

**Beaufort Enamels.**—In reference last week to the mention of his price-list of enamels, Mr. J. W. Beaufort writes us that the enamels are not "mounted" into cigarette cases, jewel caskets, and the like, but are actually enamelled upon the silver or gold articles themselves.

**A New Postal Club**, under the title of The Anglo-Indian Postal Photographic Club, has recently been formed, and is now in full working order. The hon. secretary for England is Miss M. H. Mann, Swaton Vicarage, Folkington, Lincs., and for India, Mr. P. C. Sinha, 146, Baranashi Ghose's Street, Calcutta.

**Industrial Spirit.**—According to a recent report issued by the Board of Trade, the quantity of industrial methylated spirit used in the manufacture of photographic plates and papers and for other photographic purposes during the year ending March 31, 1911, was 42,294 gallons. For the previous twelve months the quantity was 42,077 gallons.

**History.**—A writer in the financial column of a London daily newspaper begins a paragraph with the statement: "Photographic science has developed rapidly since 1813, when Niepce prepared prints by the process known as Daguerreotype." Niepce did not commence his photographic researches until after the discovery of lithography in 1814: he died some years before the Daguerreotype process took shape, and this process is not one by which prints can be produced. Otherwise, little fault can be found with the financial writer's reference.

**Hypo-Eliminators.**—Messrs. Marion and Co. write:—"In your last issue appears a reply to a correspondent who sent you a hypo-eliminator (name not given), containing chloride of lime, against which you warned your correspondent. We should like to state most emphatically that 'Hypono' is a non-corrosive fluid, which does not contain any chloride of lime or other injurious chemical. As your correspondent did not name the eliminator, and 'Hypono' is now so widely known, we trust we may claim the hospitality of your columns to prevent any suspicion falling upon a product which is being used increasingly by the profession."

**Rotherham Photographic Society.**—The twenty-second annual exhibition of this society will be held in the Drill Hall, Rotherham, from October 18 to 21, inclusive. There will be six open classes, in one of which—that for lantern slides—Autochrome and other colour transparencies will be included. The entries will be judged by Mr. Godfrey Bingley, and two silver and a number of bronze medals placed at his disposal for award. Entries close October 9, on or before which date entry forms, duly filled up, should reach the hon. secretary, Mr. H. C. Hemmingway, Tooker Road, Rotherham, from whom also the forms may be obtained. There are no entrance fees.

**The City of London and Cripplegate Photographic Society** open their 1911-12 session on October 9. An excellent syllabus has been arranged, including lectures, etc., by such well-known men as Messrs. F. C. Boyes, F.R.P.S., W. L. F. Wastell, F.R.P.S., P. Bale Rider, C. H. Hewitt, F.R.P.S., E. Seymour, C. F. Lan-Davis, F.R.P.S., and others, and demonstrations on developing, enlarging, colour photography, etc. The thirteenth annual exhibition, which will contain a number of attractive open classes, will be held from November 27 to 30. Further particulars of membership and of the Exhibition can be obtained from the Hon. Secretary, Mr. Frank W. Gardner, 135, Vaughan Road, Harrow.

**Electro-plating China and Glass.**—A new process for the electrical deposition of metals on porcelain and glassware is being introduced by Messrs. H. A. Harvey and Co., Limited. Previous efforts in this direction (writes the "Times" Engineering Supplement) have been of two classes. In one it has been sought to obtain the electrically conducting surface which is necessary by applying a film of graphite or plumbago by means of varnish, rubber solution, etc. In this case the deposited metal is evidently not in direct contact with the porcelain or glass, and there is the defect that the deposit is uneven and that it cannot readily be polished because the heat generated is apt to soften the varnish. In another class of processes the surface of the porcelain has been rendered conductive by burning in non-oxidisable metals such as gold and platinum, but the objections here are that the system is complicated and that the metals available for the purpose are expensive. In the new method invented by Mr. Q. Marino, the surface to be coated is rendered a conductor by a chemical reaction which does not involve the application of heat and which results in the metal and the china or glass being rendered one homogeneous body. It is claimed that the process is simple and inexpensive, that the amount of the deposit can be varied to suit different requirements, that the deposited surface can be polished, burnished, oxidised, lacquered, and heated like ordinary electro-plated ware, and that the strength of china or glass articles is greatly increased so that they become practically unbreakable.

**The Possible Origin of the Carte-de-Visite.** — I have been reading (a correspondent writes) through a book which during the past week has caused a very great sensation, namely, "My Own Story," by Luisa of Tuscany, ex-Crown Princess of Saxony. In it, as one may have learned from most of the daily papers, the unhappy princess throws some peculiar side-lights on her history and the lives of her relatives. In one part of the book she describes a visit to her great-grandfather, the Duke Charles of Parma, and records a conversation of no particular photographic interest. Now if my memory serves me well, and I have traced this old duke's and other records correctly, this old gentleman must have been the individual who was in a way the inventor of the carte-de-visite portrait. We are told by writers of photographic history that in the year 1857 professional photography derived considerable benefit from a fancy of the Duke of Parma, who had his portrait gummed on his visiting cards in the place of his name. He was, the princess tells us, a very handsome man, and enjoyed life, and other records tell us that he was gay and fashionable, and would in all probability be just the man to inaugurate a fashion. Anyway, the idea was taken up by Ferrier, of Nice, who, it is thought, was the real inventor of the carte-de-visite size, and I was able, when living in Nice eleven years ago, to trace several of Ferrier's originals. The popularity the c.d.v. size enjoyed, however, was due more to Disderi, the Parisian photographer to the court of Napoleon III., who pushed the size in aristocratic circles, and it very soon became the correct thing for every person in society to present their cartes-de-visite to friends. Many of the older French photographers are of opinion that Disderi, and he alone, was the first to introduce the size, but from investigation on the spot I think the honour should go to Ferrier. In any case, the frequent references of late to the old duke are extremely interesting to photographers should I be correct—and I think I am—in assuming that the duke mentioned by the princess is the one who instituted the c.d.v. craze in France, a craze which spread to England two or three years later.

The Search for Beauty.—Mr. Antony Guest, in a lecture on "The Search for Beauty," before the London Salon of Photography last Friday evening, said that seekers for beauty were richer than many millionaires, for they could never be bored. One artist saw more in the human form, another in landscape, a third in flowers, a fourth in the sea, and a fifth in architecture, than his fellows, and, consequently, each was inclined to make a specialty of his particular subject in his work. In a general way, however, it was better to stray in the by-paths occasionally, in searching for æsthetic and artistic enrichment, for a peculiar and essential property of Beauty was inter-dependence. No aspect of Beauty could be isolated; it was all part of a great scheme. Beauty was the pervading love, order, and justice of the universe. It must be sought in love. Charles Dickens came with love in his heart—the love of human life and nature—and discovered beauty where none had suspected its existence, in the patient endurance, tenderness, self-sacrifice, and good humour under difficulties that flourished unrecognised amid the wretchedness of the very poor. He created a new bond of sympathy between class and class. Human love, through him, gained wider scope. If he had lived in France in the eighteenth century the horrors of the French Revolution would not have occurred. How could we estimate what he had done to improve class relations in England? The influence of the artist did not end with the completion of his work. He directed great forces in Love and Beauty, but he knew not how far they would carry. Even if they were not strengthened by great knowledge they had extraordinary vitality, as in the devotional work of some of the early Italian painters, whose simple but intense love had emanated like an aura from their ancient canvases all through the centuries. In our old cathedrals there were carvings that could speak to us almost as living things. It was because they were actually alive. Ages ago they were created in love and endowed with love, and how could that eternal endowment perish? It seemed that the authors of some of those works lived still—not the material part of them, which was perhaps very gross indeed, but the flower of their nature, vitalised by a pure spark drawn from the all-pervading Love, of which Beauty was the expression.

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

## THE LONDON SALON OF PHOTOGRAPHY.

To the Editors.

Gentlemen,—In response to numerous enquiries from visitors to the London Salon of Photography, season tickets for the exhibition, including admission to all evening lectures (of which you kindly published a list in your last issue), have been issued at five shillings each.—Yours truly,
R. M. Cocks,
Hon. Secretary.

5a, Pall Mall East, S.W.

To the Editors.

Gentlemen,—The committee of the London Salon, in arranging its list of lectures, has chosen "With a Camera in Holland," by Mr. Arthur Marshall, A.R.I.B.A., for Friday, October 13, hoping that—in view of next year's meeting—the subject will prove specially interesting to Conventioners.

Mr. J. B. B. Wellington (the president of the Convention), Mrs. Wellington, and a number of other friends have signified their intention to be present, and we shall be pleased to meet as many members as can make it convenient to attend on the occasion.

The Gallery will be open from 7.0 to 9.30. The lecture will commence at 8 o'clock, and the admission will be one shilling.—Yours truly,
F. A. Bridge.

September 14, 1911.

## A PROPOSED PHOTOGRAPHIC ASSISTANTS' UNION.

To the Editors.

Gentlemen,—A meeting for photographic assistants in Manchester and district will be held in the County Forum, Cromford Court (behind Lyons' Café, Market Street), Manchester, on Friday, September 29, to commence at 8.15. It is hoped there will be a good rally round.
Phil Jarrett.

To the Editors.

Gentlemen,—The little yarn by "Cavendo Tutus" ("B.J.," September 15, page 713, column 2, line 17) does not fit the case. Had "the old gent. of the genus smock-frock" suggested a motor bike or a motor car as a quicker and easier means, it might be more applicable.

I am certainly in favour of progress, and have suggested in my letter of the 4th inst. a way of improving conditions, a suggestion based on a twenty years' experience in several of the largest towns in the country.—Yours truly,
Non-Unionist.

## DEPTH OF FOCUS CHARTS.

To the Editors.

Gentlemen,—The article on p. 705 on "Depth of Focus," is of immense interest to a large number of photographers, who would all doubtless like to possess a disc-calculator as illustrated.

However, cutting out the one in the "Journal" has its drawbacks (apart from the fact that I have my "B.J." bound), as the printing on the other side works through, especially if a coat of celluloid varnish is given as a protection. This hampers the reading off of the result.

Might I suggest that the "B.J." print the diagram on thin card, and supply it at a price? This would cause no great trouble or expense, as the plate is still in the possession of the "Journal."—Yours faithfully,
Walter Ed. Zehetmayr.

85, Gracechurch Street, London, E.C.
September 15, 1911.

[We have had a few proofs of M. Ellie's diagrams pulled on stout super-calendered paper, and will be pleased to send them to others interested on receipt of one penny stamp.—Eds. "B.J."]

To the Editors.

Gentlemen,—In an article in the last issue of the "British Journal of Photography," you class the definition depth of focus which I have advocated, equally with that implied in the tables, based on the false assumption—not even approximately true in the case of short-focus lenses—which states that all objects are in focus independent of the scale of the image, if the circle of confusion does not exceed the one hundredth of an inch, as "crude, and both practically and theoretically unsound."

My contention has always been that depth of focus should be measured by the distinctness of the representation of objects at different distances, and I instanced the case of three clocks; one near, one far, and one intermediate, and claimed that if in two photographs the details on the near and far clocks were reproduced so that the time could be equally read (with the help of a magnifier or by enlargement if the negative is too small for full examination without), then the depth of focus is equal. If you can point out anything "crude" or "both practically and theoretically unsound" in this contention, I shall be open to conviction. Meantime, I am satisfied to know that, according to reports in the "British Journal of Photography," Dr. Van Rohr, Dr. Scheffer, Dr. Wandersleb, and other eminent authorities hold a similar view. You have yourself said, in January, 1909, that "Dr. Wandersleb stated and proved very clearly that depth depends on the size of the pupil, and the distance between pupil and object, and is quite unaffected by any constructional consideration even by focal length." Again, on December 16 last, in a commendatory article on a paper by Dr. Scheffer, you refer to "the point of view advocated by Mr. Debenham and now by Dr. Scheffer."

Tables of depth of focus, in which it is assumed that objects are in focus independent of the scale of the image, if the circle of confusion does not exceed a certain amount (1/100th of an inch in England, 1/250th of an inch in France), I have always held to be for the uninstructed, not only useless but misleading, and the photographer following them and taking small photographs for subsequent enlargement may find his hundredths magnified to tenths of inches, with a result fatal to definition. W. E. Debenham.

[In the article of last week, which is the subject of the above criticism, we endeavoured to make it clear that a depth-rule requires to be applied with regard to the closeness at which a print will be inspected. Theoretically, a print should be viewed at the focal distance of the lens with which it was taken, but to ignore the fact that many subjects taken with long-focus lenses are minutely inspected is, as we wrote, "both practically and theoretically unsound." Precisely this view is implied in our paragraph of December 16 last.—Eds. "B.J."]

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**Photographs Registered:**

H. A. Chapman, 235, High Street, Swansea. *Photograph of the Right Hon. D. Lloyd George with his Daughter (Miss Megan).*

A. Needham, 87, Union Street, Oldham. *Photograph (combination) of a placed group, entitled "Oldham Past and Present," shewing three views.*

G. Adams, 18, Station Road, Whitley Bay, Northumberland. *Photograph of The Newcastle United Football Club, Season* 1911 *and* 1912.

G. H. Henshall, 57, Park Green, Macclesfield. *Photograph entitled "Macclesfield Football Club*, 1910-1911.

**C. O'Thea.**—Sir David Brewster died in 1868.

**Metol.**—I should be very grateful if you will tell me what the metol, such as used for photographic purposes, is composed of, or give me any information in this direction, and oblige.—H. P. S.

Metol is a distinct chemical compound: it is not "composed" of anything in the sense of being a mixture. Its chemical formula is $(C_6H_4OH\,NHCH_3)_2H_2SO_4$.

**Acid Sulphocyanide Toning Bath.**—In issue of September 9, 1910, page 681, an article by Prof. Namias mentions "the acidified sulphocyanide toning bath worked out by author." Can you please give me this formula?—Toning.

It is the ordinary sulphocyanide gold bath *plus* ½ gm. per litre of lactic acid (sp. gr., 1.2). See article by Prof. Namias, "B.J.," September 10, 1909.

**Lens, Etc.**—1.—Kindly oblige me in your next issue: Could something be done to a lens so as to give sharp contrasts? 2. Also state where to obtain guide on block making.—Sepia-Llandyssul.

1. We do not understand what you mean. If your trouble is flatness of the negatives, the cause may be that parts of the lens mount are worn bright and want re-blacking. But you must make your query clearer. 2. Penrose and Co., 109, Farringdon Road, London, E.C.

**Notice.**—I accepted a situation and went on a fortnight's trial, which proved satisfactory. After being there twelve months, receiving a weekly wage, I gave a week's notice, but was told I could not leave for a fortnight. Would you kindly inform me in your next issue which is correct?—Trial.

If you are paid weekly you can give a week's notice unless there is an agreement in writing to the contrary. The period of the trial has nothing to do with it.

**Use of Sea Water for Washing Bromide Prints.**—Could you inform me whether sea water will have any injurious effects on negatives and bromide prints being washed in it, as owing to scarcity of fresh water we are compelled to use sea water for washing? Will it affect the permanency of the prints? Do you know of any case where sea water has been used for the purpose?—W. J. G.

Sea water can be used quite well for the bulk of the washing. You should give a final wash in three changes of ordinary river, spring, or rain water.

**Various.**—1. In "B.J. Almanac," page 783, is a fixatif, for crayon work, containing amyl acetate. I cannot get same. Will acetone answer same purpose and be permanent? 2. Address of firm who sell dyes in leaflet form, and price of same. 3. Also firm who sell permanent liquid dyes, and price of same.—Acetone.

Both the mastic and celluloid are fairly soluble in acetone, though less so than in amyl acetate. So far as we can see the fixatif would be as permanent. 2. We do not know of dyes in leaflet form, but you can purchase them in small quantities suitable for photographic use from Messrs. Fuerst, Mawson and Swan, Merck, and other firms. 3. Jonathan Fallowfield, 146, Charing Cross Road, W.C.

**Kinemacolor.**—Can you explain to me how it is that "Kinemacolor" pictures of objects in motion can be represented so clearly and well-defined, whereas colour screen-plates can do nothing of the sort, and so desperately slow?—W. L. Samuells.

The negatives for the films are taken on an emulsion which, we understand, is freshly colour-sensitised by bathing, and so obtained of greater speed than is practicable in a plate which has to be kept for months before exposure. Also the process is a two-colour one, exposures being made alternately through the two filters, not through all three together as in screen-plate. You will thus see that with a lens of aperture $f/3$, and in bright light, exposures of 1-16 to 1-20 of a second are not beyond the powers of the process.

**Photographing Smoke Rings.**—I have an order to photograph some "smoke rings" or "smoke curls," which will issue from a box arrangement with hole at top for exit of smoke. I should be greatly obliged for following information:—1. What kind of background? 2. The best method, or what to use for producing smoke? 3. The exposure; lens works at $f/4$; what speed plate? The photograph will be taken outdoors. 4. I have a reflex. Would you advise its use?—P. Miller.

1. Dead black material, or better, the blackness of space, such as the entrance to a perfectly darkened room. 2. Vapour of ammonium chloride produced from two dishes, one of strong ammonia and another of strong hydrochloric acid. 3. We should say that if the moving smoke ring is taken on a fairly large scale exposure must be short, e.g., 1-20 to 1-50 of a second. Best to use a plate of medium speed on which full contrast can be got with, say, a hydroquinone developer. 4. Certainly, nothing better for the purpose.

**Green Spots on Autochromes.**—Enclosed you will find two specimens of green spots on two pieces of a spoilt Autochrome, which, of course, you need not return. I have had a good deal of trouble with these green spots recently, and a green stain dries around the edge of the plate. In some cases there is a slight puncture of the film in the centre of the spot, but I am inclined to think that the punctures come after. I use Lumière's Quinomet developer and a chrome alum bath. I have tied cloth over the water-taps, but still the spots make their appearance. If, through the medium of your columns, you could help me by giving the cause and cure, I should be extremely grateful to you.—S. Jepson.

The spots are due to punctures of the varnish film which covers the colour-mosaic coating; the green band is likewise caused by access of developing or other solution to the colour-screen film along the edge. But how the punctures and edge-abrasion are caused in your case it is difficult to say. We should look for the cause in particles of a gritty nature, if not from the water, from dark-slides, etc. Rubbing of the surface or edges of the plate when loading or unloading may be a cause. There is no remedy for the spots.

**Developers.**—1. Does the working strength of pyro in sublimed, crystallised, and compressed tablet form differ; if so, then what can be the proportional strength of each kind, volume to volume? 2. A developer, under the title of "Dafonel," in grey crystalline form, is put on the market by Mr. Otto Scholzig, and only soda sulphite is advised to be used with it. This developer does not keep in solution. Can you tell me to what series of developers does it belong, and what can be the factor for factorial development for it? 3. Can the "B.J." pyro-soda formula be used for tank development; if so, then please let me know the dilutions required for a 15-minutes development at 85 deg., 75 deg., and 60 deg. Fahr.?—M. M.

1. There is no difference between the sublimed and crystallised varieties of pyro. Compressed tablets, we believe, contain some other substance, but the action, taking the nominal weight of the pyro in the tablet, is the same. 2. We should conjecture that the developer is a form of diamidophenol, the factor of which varies with the strength of the solution, but is about 20 for a developer containing 2 grs. per oz. 3. We have not used the "B.J." pyro formula for tank work as it is rather slower than the average run of pyro-soda developers, but advise your trying a developer of A, 1 part, B, 1 part, water, 18 to 22 parts in all, for a time of development of about 20 minutes at 60 deg. F.

**Studio Arc-Lamp.** — 1. Kindly give your opinion of prints sent (printed without shading), photographed by Jandus lamp, Dallmeyer lens, *f*/6: exposure, 4 seconds, "Royal Standard" extra special rapid plates. Enclosed is view of studio showing lamp and reflecting surfaces (marked white on print). What I should like to know: Is lamp in proper position; also are reflecting surfaces sufficient? Also, is it possible to get a group of about twelve or fourteen sitters with this lamp and reflected light, or can you suggest the best way of getting this number of sitters in group? 2. I am told there is a new lamp in the market working on its side with two arcs. I think I was told it was a German maker. Can you give me the name and address of same?—Reflected Light.

1. The prints are good examples of lighting, and for such single full-length figures we cannot see that you want anything much better than the arrangement you have at present. You have got plenty of reflecting surfaces. The direction in which you might modify the lighting is in making it somewhat more concentrated. You can do with a somewhat nearer position to the background, and so get a little more "snap" in the eyes. For groups, with the lamp a foot or two further from the background, you should have no difficulty, we think, in securing even lighting and fairly short exposure with the one lamp. 2. We are not able to identify your description certainly, but you may mean the Jupiter lamp of Messrs. Griffin, Kingsway, London, W.C., or the "Photo-Lumen" of the Globe Electric Co., 11, Farringdon Avenue, E.C.

**Illuminating Paintings.**—I shall be glad of information on a subject which has greatly puzzled myself and others here, and on which no doubt you will be able to throw some light. An artist in this neighbourhood, who has a considerable local reputation as a painter of landscapes, recently invited a number of friends to inspect one of his latest paintings, one of large size. He showed it to them one evening, not by daylight, but by the light of a lantern fitted with arc lamp. I was not able to be there myself, but I am told that, viewed in this way, the effect was extraordinarily brilliant; the sunshine and effect was altogether of a different kind from that when the picture was seen the next day in the ordinary light of the studio. The method of obtaining this effect appears to be a mystery, as it is not easy to understand why an ordinary beam of electric light should have the effect described. Perhaps you may know of the existence of some optical method which would answer to the above description; if so, I and others would be extremely grateful to you for any information.—Killarney.

We should say that your artist friend is making use of a device which was published some year or two ago by Professor R. W. Wood. A negative is made of the painting on a panchromatic plate, a lantern transparency printed from the negative, and projected by a powerful lantern upon the painting itself, of course registering the two images. The result of this is to intensify the illumination in the high-lights in contrast with those of the shadows giving an effect of brilliance which is greatly beyond that of the painting itself.

**Gold Toning.**—1. I have been using sulphocyanide and gold for toning postcards in batches of 100, and solution has always been quite clear, and I have used about 5 grains of gold chloride to 100 cards, obtaining good purple colour. For variety I was induced to try a sodium formate formula for brown tones, using smaller quantity of gold. The formula was :—

| | |
|---|---|
| A.—Stock solution gold chloride | 15 grs. |
| Water | 4 ozs. |
| B.—Sodium formate | 120 grs. |
| Sodium bicarbonate | 24 grs. |
| Water to | 8 ozs. |

Working directions: A, 1dr., B, 2 dr., water to 10 ozs. A very few minutes after making up, solution commenced to get turbid, and by time I was ready to commence toning was quite dirty-looking. Will you please say if above formula is correct, and if it was right for solution to go so dirty-looking. Cards came a decent colour, but toned very slowly indeed. 2. Can you give a formula that will produce a pleasing brown shade on 100 postcards, with, say, 3 or 4 grains of gold chloride?—K. M. C.

1. The formula is quite correct. It is that for the Wellington P.O.P., the makers of which specially recommend the formate bath. It will not keep, but it should not spoil as quickly as you describe. We think the chemicals are at fault: formate, unless purchased from a reliable source, is liable to suspicion. 2. We recommend the following bath, used by Mr. G. T. Harris, as suitable for your requirements (see Mr. Harris's article on wholesale toning of P.O.P. cards, "B.J.," September 14, 1906, p. 725):

| | |
|---|---|
| Sodium acetate | 16 ozs. |
| Gold chloride | 240 grs. |
| Distilled water | 60 ozs. |

This is a stock solution; in making it up the gold chloride is first neutralised with chalk. It must ripen for at least 24 hours, and be diluted for use in the proportion of 1½ ozs. to 60 ozs. of water, for two gross of cards, adding further stock up to 16 grs. of gold.

◆

## FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.

September 28 to 30.—Wallasey Amateur Photographic Society. Sec., W. Hayes, 110, Brighton Street, Seacombe, Cheshire.

October 11 to 20.—Bournemouth and District Camera Club. Entries close October 2. Sec., Miss Penrice, 41, Wellington Road, Bournemouth.

October 18 to 21.—Rotherham Photographic Society. Entries close October 9. Sec., H. C. Hemmingway, Tooker Road, Rotherham.

November 6 to 11.—Southampton Camera Club. Sec., C. M. Cooper, 203, Shirley Road, Southampton.

November 7 to 11.—Norwich Photographic Society. Sec., J. T. Tanner, The Lodge, Bowthorpe Road, Norwich.

November 15 to 18.—Cambridge and District Photographic Club, Sec., T. J. Sowdon, Sunny Side, Guest Road, Cambridge.

November 27 to 30.—City of London and Cripplegate Photographic Society. Sec., F. W. Gardner, 135, Vaughan Road, Harrow.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2682. Vol. LVIII. FRIDAY, SEPTEMBER 29, 1911. Price Twopence.

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## SUMMARY.

Herr R. Dührkoop, in the concluding portion of his recent address before the Convention of the Photographers' Association of America, dealt with methods of posing, securing expression in the eye, the use of backgrounds, and methods of development. (P. 740.)

Some most interesting reminiscences of the late Valentine Blanchard are published by Mr. F. M. Sutcliffe in the "Yorkshire Post." (P. 752.)

The value of photographic relief-effect postcards in advertising, and a method of preparing the cards, is the subject of a note in the "Chemist and Druggist." (P. 745.)

Some further letters on the proposed Union for Photographic Assistants appear on page 752.

A correspondent endorses the merits which we have on several occasions claimed for neutral sulphite solution as a preservative of developers. A number of formulæ for plates and papers are given. (P. 754.)

The preparation of collodio-bromide dry plates, making colour prints on paper, stereoscopic lantern projection, etc., figure under "Patent News." (P. 746.)

The "Uto" paper for colour prints on paper, which has occupied Dr. J. H. Smith for some years past, is now being placed upon the market in an improved form by the Paris firm of Utocolor, Ltd. (P. 755.)

Mr. J. W. Dodgson, in a note to the Royal Photographic Society, describes further experiments with the persulphate reducer, and concludes that, in reducing a negative persulphate first dissolves some of the silver, and secondly, by oxidation of the gelatine, removes a further portion mechanically, thus exposing more silver to the chemical action of the persulphate. (P. 742.)

In the concluding article of the series on the preservation and decomposition of soda sulphite solution, we make some suggestions as to methods of analysis which could be used in investigating this question. (P. 739.)

A criticism of the claims made for tank development is the subject of a letter from a Chicago reader. (P. 754.)

The Scottish Salon is to be held at Perth next year, probably from January 20 to February 3. (P. 737.)

Notes on lectures delivered last week at the London Salon by Mr. W. Rothenstein and Mr. A. H. Blake will be found on page 751.

The discovery of platinum deposits is reported in Canada. (P. 751.)

## EX CATHEDRA.

**Novelties for 1912.** In accordance with our circular letter to the trade and our intimation in these columns last week, we are asking manufacturers of distinctly new models of photographic apparatus to give us the opportunity of reviewing these latter in the 1912 edition of the "Almanac," which is now in the press. As in previous years, such reviews must be based upon our personal trial or inspection of the apparatus, and as only a few weeks have now to elapse before the text pages of the "Almanac" are finally closed for press, we would ask that firms intending to send us their new introductions for notice should do so with the least possible delay. Electrotypes are employed where they assist in the description of an article, but, the type-space available in the "Almanac" being small, blocks greater in width than $3\frac{1}{4}$in. cannot be used.

* * *

**The Scottish Salons.** January 20 to February 3 has been provisionally fixed for the ninth Scottish Salon at Perth. The Salon will be housed in the Sandeman Art Gallery, a roomy and convenient locale, where the first Salon was held. Messrs. Dan Dunlop, James McKissack, and J. M. Whitehead form the Board of Selection; and the central situation of the ancient capital of Scotland should premise a big entry. A one-man exhibition by Mr. A. H. Blake, M.A., will represent English work on the walls. Among the workers that have been previously selected for this honour are Percy Lewis, Bristol; Alex. Keighley, Steeton; F. H. Evans, London; C. F. Inston, Liverpool; J. C. S. Mummery, London; the late A. Horsley Hinton; Chas. Job, Hove; and Arthur Marshall, Nottingham. The Art Union will, following precedent, be again a part of the programme. This year at Glasgow over £100 worth of tickets was sold, and while Perth can hardly hope to equal that, still the committee will do their best to assist the Secretary, Mr. G. F. Bates, M.A., B.Sc. (the County Organiser of Secondary Education), to approach that record as nearly as possible. The President of the Federation, the Earl of Moray, is taking a keen interest in the exhibition, and the Salon Secretary (Mr. H. Douglas, City Chambers, Perth) will spare no labour to secure a continuation of past successes. Various committees have been formed to attend to the various details of the exhibition. The Salon is confined to the work of Scots at home and abroad, and Scots away from the Homeland—and there is always a goodly representation of these—should write to the Secretary so that they may receive copies of the prospectus as soon as it is issued.

* * *

**A Revival in Carbon Printing.** There is evidence that many photographers are now turning their attention to carbon printing, the demand for materials for this process having increased to a remarkable extent during the past year. This can hardly be wondered at, as the prevailing taste is now for sepia tones, and these can be obtained with greater certainty and uniformity by carbon than by any other method of printing. Simple as the process is, it requires a little more study than P.O.P. or platinotype, and it can hardly be expected that one's first attempts will always prove successful. The greatest stumbling-block is the drying of the tissue after sensitising, and this trouble is naturally greater in autumn and winter than in the dryer months of summer. We therefore recommend the beginner to procure ready sensitised tissue, which, if kept in a calcium tin and treated with the same care which is accorded to platinum paper, will keep good for some weeks. It is advisable to practise with one colour only until fairly good prints can be regularly obtained. Different colours require varying depths of printing, the number of tints required being different for, say, warm black and sepia. Although beginners usually start with single transfer, it is hardly advisable for the professional to do so, as laterally inverted prints are not saleable and few photographers have the necessary appliances for producing reversed negatives. The "Autotype" flexible temporary support is satisfactory in use and inexpensive, as it can be used repeatedly. It also permits of the gelatine image being transferred to ivory, opal, canvas, or other rigid support, as well as to paper.

* * *

**Pictures on Opal.** The worker in carbon has the power of producing some of the most charming effects by using finely ground opal as the support for his pictures. With the modern taste for light, dainty, and sketch-like pictures, vignettes of small or moderate size in sepia or red chalk should command a ready sale. They afford an excellent basis for colouring, and are most amenable to modification by rubbing down with pumice powder or cuttle-fish powder, the hard basis showing no signs of the abrasive medium, such as scratches, which are sometimes seen upon paper pictures. The opal glass should be of good quality and hand-smoothed; the sand-blasted variety has a tendency to give a "gritty" appearance to the half-tones. Excellent pictures may be made upon bromide opals, but they lack the transparent shadows characteristic of the carbon image. They are, however, useful when enlargements or reductions have to be made and the cost of a special negative is a consideration.

* * *

**The Cardinal Points of Lenses.** In our issue of September 15 we printed a paper by W. Zschokke which gave full details of the cardinal points and measurements of the "Dagor" lens. We should like to see other manufacturers follow this example, for in too many cases the users of lenses have no idea as to the nodal positions, and have no means of finding them out. It is generally assumed that the nodes are situated at or very close to the diaphragm, but this assumption is often very far from the truth in the case of modern lenses of an unsymmetrical pattern. We would suggest that a uniform system of recording the necessary dimensions be adopted, and that the measurements should be made from the face of the lens flange as a datum. That is to say, the distances of the two nodes from this datum should be given, and also the distance of the entrance pupil, which is a very important item. The focal length would, of course, be a separate dimension, but the distance from flange-face to plate would also be a useful one to record, especially for camera designers.

* * *

**Suggested Experiments on Depth.** In a letter from M. Ellie which we publish in this issue a suggestion is made which is of considerable importance from both the theoretical and the practical point of view. This is to the effect that it would be very desirable to ascertain by systematic tests up to what point depth formulæ are admissible. It is too often forgotten that all results obtained by calculation are theoretical only, since, as M. Ellie points out, they ignore all the effects of diffraction, aberration, plate grain, etc. In some cases these effects must be considerable, and in no cases can they be absent; therefore, at the best, no formulæ can give exactly precise results. Experimental tests would not be easy either to arrange or to carry out, but it appears evident that they are necessary if the matter of depth is ever to be put on a perfectly satisfactory footing. As M. Ellie has already done so much work

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## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

Among other new features in the forthcoming 1912 Almanac, now in an advanced state of preparation, are articles as follows:—

### Lantern-slide Making. By the Editor.

A complete practical guide to the making of lantern-transparencies by reduction and contact, illustrated with special drawings of apparatus; processes of development for black and warm tones; warm tones by after-toning, and other methods of producing the best results.

### At Home Portraiture. By C. H. Hewitt, F.R.P.S.

Precise directions for indoor and outdoor portraiture without a studio. Illustrated with diagrams and art supplement plates, showing effects of good and bad lighting.

### Hints in Pictures.

A section entitled "How to Do It," helping the beginner to perform such operations as stripping negative films, mounting prints, etc. One hundred and twenty illustrations.

As in previous years, the edition will consist of 25,000 copies, and readers are asked to place an early order with their dealer or newsagent, as this issue, like its immediate predecessors, is certain to be sold out on publication. Advertisers who have not hitherto tested its business-bringing powers would do well to consider the fact that the volume is one which is at the elbow of every purchaser—for the purpose of ordering photographic goods—throughout the year.

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⁂ Our publishers ask us to announce that the "make-up" of the forthcoming Almanac is almost complete for the press. Nearly the whole of the anticipated advertisements are arranged, and those who have not yet decided as to their advertising in the 1912 issue are requested to note that only fourteen days more remain before the pages must be finally closed—on Friday, October 13th. The large size (over 1,000 pages) and edition (25,000 copies) of the Almanac, coupled with the making of the "Index to Goods Advertised," inserted in the volume as a guide to its contents, leave the publishers no option as to the date of going to press.

in connection with the subject, we trust he may be disposed to go yet further and thrash the matter out very thoroughly.

* * *

**Washing Bromide Prints.** We have many times wondered that the majority of cheaply produced bromide prints and enlargements endure as well as they do, considering the totally inadequate arrangements which are made in most establishments for fixing and washing them. One does not have to go far to find the weak point, which lies in the fact that it takes much longer to fix and wash a bromide print than it takes to expose and develop it, therefore a rapid worker soon finds his fixing and washing tanks choked with prints which he cannot attend to while he is developing; consequently, uneven fixation ensues, and marks such as those complained of by a correspondent last week make their appearance during the process of toning. Some years ago we visited the workrooms of a trade enlarger, who was turning out large quantities of 20 x 16 bromides for a canvassing firm, and were struck by the congested state of his fixing and washing tanks. On remarking upon this, the operator, a man of great experience, assured us that the fixing and washing were sufficient, but in less than a year the business collapsed, owing to claims made by customers who, after finishing the enlargements, had had them returned covered with large brown stains. We think that the least which should be done when large quantities of bromides are dealt with, should be to treat them to a second fixing bath, and if this be objected to on the ground of expense, then the obvious remedy is to charge a fraction more for the work. We are just now hearing a good deal about the "quantity" man, but he must be careful to remember that "quantity" can only be maintained if backed up by quality.

## EXPERIMENTS ON THE DECOMPOSITION AND PRESERVATION OF SODA SULPHITE SOLUTIONS.

### IV.

We have now dealt with the results so far obtained with the imperfect method of analysis adopted, and it may be as well to suggest the lines on which a repetition of the experiments could be conducted for the purpose of gaining further information. First, it is evident that the individual alkali contents require to be more accurately measured, and for this purpose separate qualitative and quantitative tests should be made in every case for hydrate or bicarbonate.

Second, it is evident that the Thompson method alone is inadequate unless followed with a final alkali titration to determine the sulphite. The difference, if any, between this and the iodine reading should then afford a measure of any material, such as thiosulphate, while the difference between the alkali reading and the acid reading for sulphite (after deducting for bicarbonate) should afford a measure of any material, such as sulphide. These results will, however, be of no value unless the acid and alkali solutions are adjusted to the iodine solution with extreme accuracy, and this is not exactly an easy task.

Third, when the differences are measured we still have to determine to what they are due; that is, whether two sulphides or thiosulphate, or what not, and this involves a great deal of difficult work.

In applying the Thompson method, several precautions are necessary. It will only give accurate results with very dilute solutions, any strength greater than N/30 being inadmissible. Also, it will not give accurate results if an excess of indicator is used, the common fault of inexperienced analysts. With methyl orange, especially, only the minimum amount of indicator may be used, or else the results are hopelessly wrong. Then, again, as is well known, the proper way of using iodine is to titrate the sulphite into the iodine, and not the iodine into the sulphite, for the latter method is apt to give too low a reading owing to a loss of sulphurous acid. The right way is, however, somewhat inconvenient with the Thompson method, though it can be carried out, and by experiment we found that the error produced by the wrong method could be reduced to a negligible minimum by proceeding carefully. By using a fine long jet to the burette and titrating slowly in a flask, instead of an open vessel, we found little or no error resulted when we titrated the iodine into the sulphite. Even if we admit this method to be faulty, that fact does not affect the character of the results we have already obtained, because with them the trouble has been an excess, not a diminution, in the iodine reading.

The following is a brief outline of the method of analysis proposed.

1. Take 10 cc. of N/10 solution, dilute to 30 cc., and titrate with N/200 sulphuric acid and phenolphthalein. The result in cc.s multiplied by .841 is the percentage of carbonate.
2. Add methyl orange to same solution and titrate with N/200 sulphuric acid to point of neutrality. The result in ccs. *minus* first reading should give percentage of sulphite, *plus* bicarbonate, *plus* sulphide, if either of the latter exist.
3. Titrate same solution with N/100 iodine, using starch as indicator. The result in ccs. should give percentage of sulphite *plus* thiosulphate, if any. Or, as an alternative, add the solution to 100 ccs. of N/100 iodine, and then titrate back with N/100 thiosulphate. The percentage of sulphite is then 100 minus the number of ccs. of thiosulphate used. In partially exhausted solutions less than 100 c. iodine can be taken.
4. Titrate same solution with N/100 alkali. The result divided by three should give percentage of sulphite alone. The tests for hydrate and for bicarbonate have already been described.

Sulphides may be allowed for by precipitating them with alkaline zinc solution, and then neutralising with acid and phenolphthalein. On titrating with iodine the difference between the readings obtained with a solution so treated and one not precipitated should give the sulphide. Moreover, this method may be taken to prove that such difference as may exist is really due to a sulphide. We have, however, not been able to find any sulphide.

Thiosulphate may be determined by the result of the final alkaline titration, as already mentioned, but as this gives no direct proof of the existence of thiosulphate it can hardly be considered quite satisfactory. Confirmatory tests are required, and up to the present we have not been able to prove definitely the existence of thiosulphate, and so cannot identify the cause of the apparent excess in the iodine reading.

Though our investigations have not carried us very far, we nevertheless think they are of suggestive value. The variable discrepancy between the amount of sulphite indicated by the acid titration and that found by the iodine titration has obviously a meaning of some sort, and the correct explanation might very likely be one of a very useful nature from both the theoretical and practical point of view. Again, the production of bicarbonate under one set of conditions, and of hydrate under another, must also have an explanation worth discovering, especially as it points to a quite different mode of decomposition of the sulphite. This should lead to a better knowledge of the manner in which sulphite decomposes, and of the nature of the decomposition products, and, finally, to a clearer understanding of the conditions which retard or favour such decomposition.

# HERR R. DÜHRKOOP ON PORTRAIT PHOTOGRAPHY.

[Our contemporary the "Bulletin of Photography" has now published the text of the lecture given by Herr R. Dührkoop before the recent Convention of the Photographers' Association of America. Herr Dührkoop dwelt not only on ideals, but on the practical details of the methods employed by his daughter and himself.]

## II.

Now we will go on to discuss single details, and will first take the head:

### Posing the Head.

The head in the first place claims our attention, and already here we meet with the greatest difficulties to suppress abnormal formations as much as possible, should these seem too pronounced in different places. Single parts of the head, eyes, nose, or mouth, if finely formed, can be accentuated so as to catch the eye of the spectator, or at least to challenge observation first, so that less beautifully formed parts remain less emphasised. We seldom find a face strictly symmetrical in form; in most cases we can observe two different halves of the face, the one half shorter or also broader than the other. By photography such anomalies can be corrected, or, on the other hand, exaggerated. The side nearer the apparatus appearing mostly larger, by the choice of the sides to be taken the irregularity can be either increased or diminished. In many faces the nose is bent sideways. If the head is turned to the same side, a favourable likeness is rarely obtained. That side towards which the nose is directed usually proves the most favourable side for taking. The custom of speaking of a "photographic side" is, therefore, not without grounds. Other circumstances, however, can render it necessary to take a head from a certain side.

### Expression in the Eye.

The eye, the mirror of the soul, has indeed the task of first displaying the inner man, but we cannot forgo its technical treatment. It is not a matter of indifference whether we take the head on the level of the eyes higher or lower, for the form of the lid enclosing the eye is altered according to the position of the head, at one time appearing broad, at another narrow. The eyelid must frame the eye, and a fine frame can here, too, beautify the contents. The idea of the beautiful is certainly here a very wide one, for if we wish to characterise racial beauty, the eye in the first place must undergo very different treatments. If it is a question of race, we must also take the peculiarities of the same into consideration, and the idea of beauty must submit to be altered according to the racial type.

If the character of a person is already expressed by the carriage of the head, the characteristic qualities can be influenced by the proportions of the height of the camera to the height of the head. But still more reasons will show that the height of the camera is of certain importance.

The higher the camera stands the deeper the head sinks on to the breast, the shorter the neck appears, in the opposite case longer, in the case of the photograph being taken at a short distance, as is generally the case with half-length pictures. A bald head, taken from above, will show the deficiency more marked than with a deeper-placed camera inclined from below to above, while with a small snub nose the contrary is to be observed.

### Ear and Hand.

To obtain a favourable reproduction of the mouth requires, too, a right carriage of the head. A sharp mouth is frequently softened by a suitable position of the head, as well as an irregular face, for which the height of the camera must particularly be used as an ameliorating influence.

The ear generally demands less consideration. It is generally often placed in the indistinct zone. But, however, in some cases it will require a particular treatment and consideration. Ears standing out from the head prohibit a point of view directly in front.

The hand, in which artists have always recognised the main vehicle of expression of personality, has mostly received but scant attention from portrait-photographers. The attempt to reproduce the hand as a living part of the organism in connection with the head was scarcely ever formerly made, whereas the lighting up of the skull and the face was studied with the utmost care in order to employ them as excellent means for the characteristic of graceful taking. The hand in this respect has never received any attention. Even nowadays we are still mostly satisfied if the hands in a picture, where they cannot be left out, do not disturb the external pose, but to use them as a means of expression, to recognise in them an integral part of the personality, is an art which in general still lies beyond the ken of portrait photography. It is no doubt very easy to again refer photographers to the study of the old masters, but in this case it is usually the right thing. The greatest portrait painters of all ages have always considered the hand with the deepest interest, and the greatest masters of the last century have in this respect gone farther than their predecessors of the best times of the Renaissance ever ventured. Here portrait-photographers will find a gratifying task, and the artistic perfection of the photographic portrait, by attention and fine feeling directed to these matters, can attain much which till now has been impossible.

### Full-Length and Three-Quarter-Length Portrait.

A half-length portrait is comparatively easily and effectively made. Real difficulties first begin when the hands and the rest of the figure are added. We have already talked about the hands. In full-length portraits it is well, and sometimes even necessary, to include something of the surroundings. Chairs and tables are used when some particular position is demanded. In this respect good taste will always know how to avoid the undue obtrusion of the furniture, for the portrait or the figure of the sitter must always remain the chief consideration, and for this purpose the head must be most distinctly lighted. For full-length portraits it is also good to use objectives of long focus to prevent optical distortion. As I have already mentioned, I employ very simple means and try to make the sitting or standing subject take his own position. I go around the person with the camera, if the pose he has adopted does not seem suitable for taking, until I find a position I consider worth fixing.

### Aim at a Sitter's Self-Pose

"The finest pathos lies in simplicity," says the painter, Anselm Feuerbach—it is of noble and intrinsic effect. Therefore, avoid also in photography everything affected and far-fetched. In my sittings, for instance, I cause the person to sit down quietly and comfortably in an arm-chair or something similar, the hands remaining in the position he just places them; no smoothing of the clothing, no touching of the head or hand is allowed, for all that influences the naturalness of the subject. I rather try to get the necessary alterations of position by showing him what I want and directing him by making suitable gestures. I should like to express the standard I go by in saying all positions unconsciously taken by the sitter are in accordance with his being or character. I try, therefore, in the course of the conversation, after one exposure has been made, to cause the sitter to alter the position without actually asking for it. Just when he is changing the attitude you get positions very fresh and vivid. Such good attitudes must be fixed with a skilful eye and quick hand, and the model at once requested not to alter any more. Thus you will frequently obtain a very picturesque view.

As before said, I try personally to get the independent position of my customers and practise daily the catching of positions unconsciously assumed. At all events, I owe the greatest part of my success to this manner of proceeding.

To give my sittings life-likeness, I never let the person sit quite straight. A human being (except the soldier at attention) scarcely ever stands quite straight—the head as well as the body is always inclined to one side or the other. Observe how this occurs a thousand times in life, on the promenade, in the café, at home, or wherever it be. Do this also in your sittings, and your pictures will have the charm of freshness and originality.

Concerning the takings of full and three-quarter-lengths, still much could be said, but it is best to let chance play some part and yet allow imagination some scope. Practice is always better than theory.

In this kind of taking the professional photographer will not be able to bind himself much to academic, or let us say technical rules, for daily and hourly must he infringe them; he must rather train himself to produce good photographs under all conditions. This seems rather a hard task, but yet it is possible. Certainly great presence of mind, enormous patience, delicate feelings for the manifold effects of light, excellent technique and artistic eyes are necessary to prove up to the mark under all conditions.

### Backgrounds.

The background is another important factor in the creation of the portrait, in the working up of which we must also study celebrated pictures. On the portraits of celebrated persons no accessory thing must obtrude, causing restlessness, irritating the portrait, and rendering it worthless. I cannot call your attention too much to that. Thank goodness those dreadful backgrounds that used to make photographs so ridiculous have now disappeared for ever, at least out of the studios of photographers of note and fame. But even plain backgrounds cannot always be used for portraits, as these also cause dullness in photography. Wherever we find ourselves we are always surrounded by touches of life; never do we find ourselves in a surrounding as smooth as satin-paper or polished marble; therefore, the background of a human portrait must always show signs of reality, which, however, must be so delicately displayed that the person represented always exercises the chief attraction on the eye of the beholder. Look how the painters treat backgrounds, nicely calculated strokes of colour, contrasting with the chief direction of the portrait, alternating weak and strong, varying in tone altogether, manifold shades of colour and rendering the environment without undue accentuation; thus they animate the portrait and render it harmonious without tedium. That it is possible to employ this manner in photography has been sufficiently proved by newer masters of our profession. America has in this shown herself a pioneer, and your way of producing backgrounds as found on the beautiful works of the English painters, Gainsborough, Reynolds, etc., has much charm, and pleased me exceedingly when I came to America in 1904. But now you see it too often. It is, however, dangerous and logically not correct to take such a pronounced manner as a pattern. Every photographer ought to try to cultivate his own taste, and for this purpose to study good works of art untiringly and on every occasion throughout his whole life, also the exhibitions of camera pictures, thus to obtain a mental extract thereof, which prevents his eye and feeling becoming one-sided and leading again to the conventionality which reigned so long. The simplest way is to pour dull varnish over the back of the photographic plate and then to draw delicate sketch-like designs on this with stump and chalk, which, when copied through the glass, come out undefined and are really only lighter spots, but produce an effect which considerably increases the artistic effect. If these designs be so carefully considered that they will satisfy all artistic demands, well enough, but pains will always have to be taken to satisfy criticism.

### Practical Development Matters.

If my pictures are taken in all kinds of places, in very different lights, the developing also requires a somewhat different method. I very often have to fight against both under- and over-exposure. To overcome this I often make use of stand development, but in somewhat altered form. In a glass-grooved tank, water of about 65 degrees Fahr. is poured. If with normal developing the lights come out too quickly on the plate, I at once put the plate in the above-mentioned dish with the absorbed developer, which, of course, must not be rinsed off before. The first under-exposed plate in the first groove, the second in the second groove, and so on, so that only small spaces intervene, as otherwise the absorbed developer would too soon become ineffective. Simply placing the plates in water causes the lights to develop much more slowly and gives the shades time to mark themselves. Otherwise the lights would have become far too quickly dark without the shades getting covered enough. The developing power of the greatly diluted developer is, of course, soon exhausted. Then I go on developing in normal developer, but if the shades are not covered enough the plate is dipped again in the normal developer for a moment and then again placed in the glass tank, and so on. All this goes quicker than I can tell, and I have thus attained the best results in many thousand cases, and many of the pictures exhibited here have been developed in this manner.

My task has been to describe to you how I and many celebrated photographers in Germany work, but I scarcely believe that this difficult manner of photographing will please you enough to use it as a general rule. Of course, there are also in Germany a number of small second-rate men who try to make such things at a cheap price. But it is quite a different thing when a highly-trained photographer, with fine understanding, takes such pictures, and I also believe that the rich people here in America would pay very high prices for such sittings if you made high charges and in return produced something exquisite. I can well imagine a great and celebrated photographer daily visiting his customers in his motor-car, and making a great success. In every case this way of working offers enormous diversity and causes one to feel much pleasure in one's work. Progress is what we want, and here lies a very great progress compared with the monotonous work of the studio.

When the productions of the photographers possess the spirit of art, then their work will be high, that of some most highly estimated, and the time will come when their works will be collected and valued like those of the old copper-plate engravers and etchers. Let us, therefore, devote ourselves to the study of the great masters of the painted portrait who have created such splendid models for the treatment and arrangement of the portrait—then in the future the camera-portrait will attain a rank which will place it on the same level as the works of the related art. When we see it developing mightily under the guidance of artists of exquisite taste, then photography, too, will be on the high road to new successes, if the motto of all these aspiring photographers remain.

R. DÜHRKOOP.

# NOTES ON THE USE OF AMMONIUM PERSULPHATE.

A Communication to the Royal Photographic Society.

## PART II.

The suggestion that the oxidation of the gelatine during the use of a solution of ammonium persulphate in dissolving the silver image in a photographic negative was due to the formation of silver sulphate according to the reaction expressed by the equation—

$$(NH_4)_2 S_2O_8 + 2Ag \rightarrow Ag_2SO_4 + (NH_4)_2 SO_4$$

and the subsequent formation of silver peroxide, $Ag_2O_2$, is confirmed by the results of additional experiments.

The oxidation may be made to take place in the absence of metallic silver simply by adding a small quantity of silver sulphate solution to the persulphate when in contact with gelatine.

Fifty c.c. of the persulphate solution were placed in a flask with 1 gram of gelatine, and 2 c.c. of a concentrated solution of silver sulphate in water added. The reaction was somewhat slow in starting, but was proceeding with considerable vigour after one hour and a half had elapsed. Allowing the action to proceed, it became more energetic, and rapid evolution of carbon dioxide tcok place until the persulphate was exhausted.

The experiment described in Part I. was repeated with doubled quantities, i.e., 2 grams gelatine, 4 gr. silver, 100 c.c. water, 20 grams persulphate. An analysis of the solution obtained yielded the following results:—

| | |
|---|---|
| Sulphate ($SO_4$) ... ... | 16·3274 grams. |
| Ammonia ($NH_3$)... ... ... | 2·9665 „ |
| Persulphate ... ... ... | nil. |
| Acidity of Solution ... ... | ·306 normal. |
| Nitric Acid ... ... ... | a minute trace. |
| Silver ... ... ... ... | ·87 grams. |

Silver remaining undissolved 3.14 grams. Three points in this result require special notice.

(1) The amount of persulphate actually used in dissolving the silver is very small; the .87 grams shown to have entered into solution would, according to the equation already given, require .92 of persulphate; the remainder, 18.47 [see (2)] grams, was therefore used entirely in oxidising the gelatine.

(2) The amount of ammonia evolved is apparently greater than could be obtained from the amount of persulphate employed. The amount of persulphate is given by the precipitation of barium sulphate equivalent to 16.3274 grams of $SO_4$, and this would be derived from 19.39 grams of ammonium persulphate. That this was the weight of actual persulphate in 20 grams of the salt used was confirmed by separate analysis. (It was an older specimen than that used in the experiments described in Part I., and had slightly decomposed.) The ammonia, 2.2665 grams, would require 19.89 grams of persulphate. The discrepancy is doubtless due to the oxidation of part of the gelatine, probably to amino compounds, giving off, on distillation with caustic soda, substances capable of neutralising hydrochloric acid.

(3) The amount of nitric acid found is very small. When no gelatine is used nitric acid is produced in considerable quantity. Evidently the oxidising action of the silver peroxide upon complex organic substances is much more rapid than the action upon ammonia.

The action of ammonium persulphate in reducing a negative is therefore due to two causes: First, the solution of a small amount of silver forming silver sulphate and ammonium sulphate; and, secondly, the oxidation of the gelatine of the film and the consequent removal of more silver, partly mechanically and partly by bringing a lower layer of the metal into contact with fresh persulphate and thus causing further solution.

This gelatine oxidation takes place most rapidly where silver peroxide is produced in largest quantities, and this is where most silver is present—the densest parts of the negative.

The above might be taken as suggesting that ammonium persulphate is likely to seriously damage a negative, and certainly it would if allowed to act for a long time; but it must be pointed out that during the short time that a persulphate solution is in use for reduction the amount of gelatine affected will not be great, as this action must be preceded by the solution of some of the silver to form the necessary silver sulphate. It is, however, my opinion that the more rapid removal of the denser parts of a negative is due to the commencement of the oxidation and removal of the gelatine.

Since writing the first part of this paper I find that the oxidising action of silver sulphate in the presence of persulphates was investigated by R. Kempf, and published under the title "Oxydationen mit Silberperoxyd," in various numbers of the "Berichte," in 1906, but I am unable to trace any previous investigation of the action upon gelatine.

J. W. Dodgson, B.Sc.

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# THE EFFECT OF THE ALKALI IN PHOTOGRAPHIC DEVELOPMENT.

[The following is a translation made with some abridgment of a thesis describing an investigation carried out by M. Louis Bourgeois for the doctorate of science of the Lausanne University. The full text of the paper forms a volume of 116 pages, published by E. Lavanchy, Morges, Switzerland.—Eds. "B.J."]

## V.

The first developer to be examined was pyrogallic acid, using the Lumière formula, which we are in the habit of employing, viz.:

| | |
|---|---|
| Pyro ............................................ | 30 gms. |
| Soda sulphite anhydrous .................. | 100 gms. |
| Citric acid ...................................... | 5 gms. |
| Water .......................................... | 1,000 ccs. |

For development, 20 ccs. of this solution is mixed with 40 ccs. of water. Plate No. 12, developed without any alkali, required an extremely long time (5 hours), to reach sufficient density. The result, nevertheless, is excellent as regards gradation. Most of the plates show a yellowish colour from the back, due to the oxidation of the pyro. This diminishes as the alkali is increased, doubtless in consequence of the increased rate of development. Increase of the alkali equally affects the colour of the silver deposit.

In the case of the plates developed by time, using a development factor of 6, it does not seem that there is any alteration in the factor on increasing the proportion of alkali.

With pyro the silver deposit is of brownish-black, the gradation good, and the detail excellent. Increase of the quantity of carbonate up to .7 gm. anhydrous carbonate per 60 ccs. of bath, somewhat increases the density, but beyond this quantity the density decreases. Moreover, increase in the alkali tends to eat out the fine lines.

In the case of hydroquinone, two series of tests were made, one by ordinary and the other by factorial development. As pointed out by Reeb,[16] hydroquinone is almost destitute, or entirely so, of developing power when used with neutral sulphite. Reeb used a solution made as follows:—

| | |
|---|---|
| Hydroquinone | 1 gm. |
| Soda sulphite, pure neutral | 18 gms. |
| Water, distilled | 150 ccs. |

Of this he writes:—"The image requires an enormous time (about 18 hours) to appear, and does not gain much during the succeeding six hours. During this time the plate is seen to be fixing around the edges, and at the end of three days it is found to be completely fixed, leaving an image of a kind which would not yield a good print by contact. The experiment showed that hydroquinone becomes a developer if given sufficient time, in consequence of the silver salt obtained in solution by means of the sulphite.

According to our experiments, hydroquinone in neutral sulphite solution pure,[17] has given us one of the best negatives as regards gradation of the half-tones and fineness of detail, that is to say, by allowing the full time required for the process. The plate was stained yellowish-pink, with a pink deposit over the high-lights, but as regards gradation, especially in the half-tones, the negatives developed without alkali were invariably the best. In this same experiment the silver deposit was an opaque black; the gelatine was covered by a pink fog. In the case of the two other plates, Nos. 47 and 62, developed in hydroquinone without alkali, No. 47 came up in thirty minutes, and was developed for two hours and a-half at a temperature of 65 deg. F. Opacity, as tested by the line chart, 2. The gradation in the scale of half-tone strips was excellent. In the

### TABLE I.—PYRO AT TEMP. 17° C.

Formula:—Pyro, ·6 gm.; soda sulphite anhydrous, 2 gms.; citric acid, 1 gm.; water, 60 ccs.
Alkali solution, 10 per cent. soda carbonate anhydrous.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 12 | nil | 5 hrs. | rather heavy | 6 | deep brownish yellow | excellent | considerable | — |
| 13 | ·1 | 2 h. 18 m. | „ | 5 | yellowish grey | bad | „ | defective, due to error of exposure |
| 14 | ·2 | 64 min. | „ | 3 | „ | good | slight | — |
| 15 | ·3 | 52 min. | „ | 6 | grey | bad | somewhat great | — |
| 16 | ·4 | 46 min. | very heavy | 3 | black | fairly good | considerable | over-developed |
| 17 | ·5 | 42 min. | „ | 9 | „ | bad | none | „ |
| 18 | ·6 | 36 min. | „ | 4 | „ | fairly good | slight | „ |
| 19 | ·7 | 29 min. | poor | 12 | grey | quite defective | considerable | deposits in gelatine, details eaten out |
| 20 | ·8 | 4 min. | good | 10 | „ | very good | nil | thin negative, detail good |
| 21 | ·9 | 3 m. 30 s. | „ | 10 | black | „ | „ | good detail |
| 22 | 1·0 | 3 min. | „ | 11 | yellowish black | not so good | slight | „ |
| 23 | 1·1 | 3 min. | rather weaker | 12 | „ | poor | none | „ |
| 24 | 1·4 | 3 min. | good | 6 | greenish black | good | „ | good negative, very transparent |
| 25 | 2·0 | 2 m. 30 s. | fairly heavy | 6 | yellowish black | excellent | „ | excellent negative, very good detail |
| 26 | 3·0 | 2 min. | good | 8 | „ | fairly good | less intense | negative dense in high-lights |
| 27 | 4·0 | 1 m. 50 s. | „ | 10 | greenish black | „ | none | fairly good detail |
| 28 | 5·0 | 1 m. 35 s. | „ | 6 | „ | „ | „ | details somewhat eaten out |
| 29 | 7·0 | 1 m. 40 s. | „ | 8 | „ | not so good | „ | „ „ |
| 30 | 10·0 | 2 min. | rather weak | 12 | „ | „ | slight | dense high-lights |
| 31 | 20·0 | 1 m. 50 s. | good | 8 | greenish brown | „ | very slight | „ „ |

### TABLE II.—PYRO, FACTOR 6.

Formula:—As in Table I. Alkali solution, 10 per cent. soda carbonate anhydrous.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 32 | ·74 | 240 sec. | fairly good | 11 | black | fairly good | none | for determination of development factor |
| 33 | ·74 | 225 sec. | normal | 8 | brownish black | good | slight | „ „ „ |
| 34 | ·74 | 240 sec. | „ | 7 | black | fairly good | none | „ „ „ |
| 35 | nil | 6 hrs. | very heavy | 0 | slightly pinkish black | good | slight | rather over-developed, good details |
| 37 | ·1 | 3 h. 30 m. | fairly heavy | 6 | dense black | poor | none | good detail |
| 38 | ·2 | 54 min. | heavy | 4 | „ | very good | „ | „ |
| 39 | ·3 | 21 min. | good | 8 | „ | good | „ | somewhat lacking in detail |
| 40 | ·4 | 9 m. 30 s. | „ | 11 | greyish black | not so good | „ | good detail |
| 41 | ·5 | 7 min. | „ | 8 | „ | „ | slight | „ |
| 42 | ·6 | 6 min. | „ | 11 | „ | insufficient | „ | „ |
| 43 | ·7 | 4 m. 30 s. | „ | 8 | black | good | none | somewhat lacking in detail |
| 44 | ·8 | 4 min. | „ | 7 | „ | „ | „ | good detail |
| 45 | ·9 | 3 min. | „ | 9 | greyish black | „ | slight | „ |
| 46 | 1·0 | 3 min. | „ | 7 | yellowish black | „ | none | „ |

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[16] "Bull. Soc. Fr. Phot.," 1904.

[17] We have not controlled the purity of the sulphite employed. Taking the material as representing what is used in actual photographic practice: the sulphite used was that supplied as pure by Lumière. It is therefore not claimed that the figures given by M. Reeb are incorrect. M. Reeb worked with sulphite neutralised with bisulphite and tested with phenolphthalein.

case of No. 62, developed by the factorial method, using a multiplier of 5, the image appeared in twenty-seven minutes, and development lasted two hours fifteen minutes, at a temperature of 68 deg. F. Opacity, 2; good gradation of the half-tone series of tints. The composition of the developer was:—

| | |
|---|---|
| Hydroquinone .............................. | 10 gms. |
| Soda sulphite anhydrous .............. | 40 gms. |
| Water ........................................ | 1,000 ccs. |

No trace of solution of the silver bromide by the sulphite was noticeable at the end of the operation. It would seem that either the sulphite contained a small quantity of alkali sufficient for developing the latent image,[18] or that, as suggested by Reeb, the silver salt dissolved by the sulphite allowed of development taking place. It appears possible that a silver salt of a metal possessing such basic properties as does silver, if present in a developer in colloid solution should enhance the reducing properties.

In the case of the plates developed by hydroquinone, using a factor of 5, the formula employed was:—

| | |
|---|---|
| Hydroquinone .............................. | .5 gm. |
| Soda sulphite anhydrous .................. | 2 gms. |
| Soda carbonate anhydrous ............... | 2.75 gms. |
| Water ........................................ | 60 ccs. |

In this second series we obtained an almost constant opacity. In the case of hydroquinone the addition of alkali has given us a silver deposit on the negative of pure black. By exceeding a certain quantity of the carbonate the addition has reduced the general density, and especially the opacity of the blacks. The half-tones (light greys) are completely eaten out as soon as the relatively small proportion of carbonate (.5 gm. in 60 ccs.) is exceeded.

Hydroquinone thus tends to give hard negatives as soon as the proportion of alkali is increased. The preceding experiments have shown us that in order to secure correct gradation of the half-tones the quantity of anhydrous carbonate per 60 ccs. of the normal developer should not be greater than .4 gm. Hydroquinone, when

## TABLE III.—HYDROQUINONE AT TEMP. 17° C.

Formula:—Hydroquinone, 10 gms.; soda sulphite, 40 gms.; water, 1,000 ccs.
Alkali solution, 20 per cent. soda carbonate anhydrous.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 47 | nil | 2h. 30m. | heavy, good | 2 | pinkish black | excellent | none | excellent negative |
| 48 | ·2 | 40 min. | „ | 1 | black | good | „ | a little lacking in detail and half-tone |
| 49 | ·4 | 13 min. | weaker | 8 | „ | bad | considerable | „ „ „ |
| 50 | ·6 | 8 min. | fairly heavy | 4 | greyish black | fairly good except in the half-tones | not so much | „ „ „ |
| 51 | ·8 | 7 min. | good | 6 | „ | „ „ | „ | „ „ „ |
| 52 | 1·0 | 6 min. | rather weak | 6 | „ | „ „ | considerable | „ „ „ |
| 53 | 1·2 | 4 min. | „ | 9 | „ | „ „ | „ | „ „ „ |
| 54 | 1·4 | 4 min. | „ | 8 | „ | „ „ | „ | „ „ „ |
| 55 | 1·6 | 4 min. | „ | 6 | „ | „ „ | „ | „ „ „ |
| 56 | 1·8 | 3 min. | weak | 12 | grey | „ „ | „ | „ „ „ |
| 57 | 2·0 | 3 min. | „ | 11 | „ | bad | „ | „ „ „ |
| 58 | 4·0 | 3 min. | „ | 10 | „ | „ | „ | „ „ „ |
| 59 | 6·0 | 3 min. | „ | 11 | „ | „ | „ | „ „ „ |

## TABLE IV.—HYDROQUINONE, FACTOR 5.

Formula as in Table III. Alkali solution, 20 per cent. soda carbonate anhydrous.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 36 | 2·75 | 200 sec. | normal | 6 | black | good | very slight | for finding development factor:<br>water ... ... 60 ccs.<br>sulphite anhydrous 2 gms.<br>carbonate „ 2·75 „<br>hydroquinone ... ·5 gm. |
| 60 | 2·75 | 2 m. 35 s. | „ | 6 | „ | „ | considerable | |
| 61 | 2·75 | 180 sec. | „ | 6 | „ | very good | inconsiderable | see plate No. 48; detail very good |
| 62 | nil | 2 h. 15 m. | good | 3 | brownish black | „ | pink | „ „ „ |
| 63 | ·2 | 30 min. | intense | 3 | black | poor | yellow | „ „ „ |
| 64 | ·4 | 13 m. 45 s. | fairly heavy | 2 | „ | good except in middle tones | light pink | „ „ „ |
| 65 | ·6 | 9 m. 10 s. | „ | 4 | „ | „ | slight | „ „ „ |
| 66 | ·8 | 8 m. 20 s. | „ | 4 | „ | „ | „ | detail not so good |
| 67 | 1·0 | 7 m. 30 s. | „ | 4 | „ | „ | „ | „ „ |
| 68 | 1·2 | 7 min. | „ | 4 | „ | „ | none | „ „ |
| 69 | 1·4 | 6 m. 15 s. | „ | 3 | „ | „ | slight | „ „ |
| 70 | 1·6 | 5 m. 50 s. | rather weaker | 6 | greyish black | not so good | very slight | „ „ |
| 71 | 1·8 | 5 m. 25 s. | normal | 4 | black | „ | „ | „ „ |
| 72 | 2·0 | 5 min. | heavy | 4 | „ | „ | „ | „ „ |
| 73 | 4·0 | 4 m. 10 s. | „ | 4 | „ | „ | „ | „ „ |

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[18] The sulphite on being tested gave no effervescence of gas on addition of acetic or hydrochloric acid.

made up in these proportions, forms a rapid developer, in fact, too rapid for practical use, since it is difficult to modify it during the course of development.

In the case of adurol, very satisfactory results were obtained. The density of the negatives is frequently very good, even when working without alkali, but the gelatine loses its transparency and becomes of slightly milky appearance if the quantity of alkali is increased beyond the normal. The purity of the whites, which at first is somewhat defective, is improved by the addition of alkali, but beyond the quantity of 1.4 gm. anhydrous sodium carbonate they commence to veil over again. In the case of developers later in the series the details are eaten out. The formula employed was:

| | |
|---|---|
| Sulphite anhydrous | 40 gms. |
| Adurol | 10 gms. |
| Water | 1,000 ccs. |

In the case of adurol Hauff, the chlor compound, the average opacity is somewhat greater than that given by hydroquinone. In the first six plates treated with this developer the opacity is much less, and greater in the second set of six. The figures obtained are as follows:—

| | Hydroquinone. | Adurol. |
|---|---|---|
| Mean opacity | 6·5 | 6·2 |
| ,, ,, 1st half (alkali 0 to 1 gm.) | 4·5 | 7 |
| ,, ,, 2nd ,, ( ,, 1 to 4 gms ) | 9 | 5·2 |

It may thus be said that in the case of adurol, increase of the alkali does not reduce the opacity of the high-lights of a negative as it does with hydroquinone. In developing with adurol a smaller quantity of carbonate should be used. The image appears much more quickly than that developed by hydroquinone used with potass carbonate. In a general way, low temperature has much less effect on the adurol developer than on hydroquinone, and to sum up it may be said that adurol is superior to hydroquinone in its rapidity of action, much less fog, better detail, greater indifference to temperature, greater opacity of the highest densities, and lastly, better clearness of the shadows (of the negative). L. Bourgeois.

(*To be continued.*)

## RELIEF-EFFECT POSTCARDS FOR ADVERTISING PURPOSES.

In the current issue of the "Chemist and Druggist," a contributor, Mr. C. E. Dodsley, records his satisfaction with photographic postcards as advertising literature. He prepares a "plasticine" relief of the subject to be reproduced as a postcard. This is photographed under oblique lighting, and from the photograph a half-tone block is made for the issue of the cards at a cheap rate. In view of what is said below by Mr. Dodsley as to the value of his specialty in advertisement literature, photographers should be encouraged to offer this class of work to tradesmen in their districts. Mr. Dodsley writes:—

"It will be conceded in the first place that, at the present stage of business-life, advertising in some form or another is as essential to the success of a business as the holding of stock. What will be the most efficient form of advertisement to adopt is the paramount difficulty to settle. Three things of importance have to be considered. First, the class of customer it is desired to reach; second, the radius to be covered; and, third, the amount available for expenditure.

"The form of advertisement I suggest in this article has many advantages: they are picture postcards photographed from home-made bas-relief plaques. It may be varied so as to appeal to all classes of clients. By halfpenny post it can be made effective over any radius. The attractive and unique style ensures its being studied and passed round. A series of follow-ups in different coloured inks impresses the recipient with your individual style of advertisement, so that wherever seen it is at once intuitively connected with your own establishment. For introducing specialties it is unapproachable, as your advertising of the specialty is a specialty in itself. And perhaps the greatest recommendation is that not everyone can imitate, for each block turned out bears the impress of the individual.

### How to Produce a Cast.

"The materials required are a box of grey plasticine and a piece of thick plate-glass, about 14 in. by 9 in. (this I have found the most convenient size to work upon), with a wooden skewer sharpened to a point at one end and about 1-16 in. in thickness (this is used for ornamentation), an ointment-slab, and a pill-knife.

"First cover the glass with an even thin layer of plasticine. Having made a fair copy on paper of the design and wording, roll out a length of plasticine on the pill-slab to the required thinness, according to the size of the letters, cut off the portions required for forming each letter, pick the parts up with a large needle, and place in position; a slight pressure will make them adhere and close up the joints. Having finished off all the lettering and design or ornamentation, put the photographs or cartons to be copied into position last of all. Plasticine, being somewhat of a greasy nature, is apt to soak through and mark the paper or cardboard.

"The bas-relief is now ready for being photographed. Fix in an upright position, at a right angle to the source of light, the angle at which the light falls upon the cast determining the depth of shadows. The correct angle at which to obtain the most effective lighting will depend upon the subject and whether there is a carton, bottle, or other outstanding object; this, of course, will cast a much deeper shadow, in some cases quite obliterating all detail. Unless extreme contrast is desired, use a backed plate of ordinary speed, making your negative exact postcard size.

"From a clear contrast-print a half-tone block can be made at varying prices, a thousand postcards, including the cost of block, being from 15s. to 25s. For high-class advertising, circulated through the post, I have found this bas-relief the most effective of any form of advertising I have adopted."

# Photo-Mechanical Notes.

### Employment in Photo-Engraving.

We are frequently asked for advice as to obtaining engagements in process houses. Many querists seem to assume that a mere knowledge of ordinary photography will qualify them for such a position. Of course, this is not the case, for "process" has become a very highly specialised branch of photographic work requiring skill of a degree that can only be acquired by long practice. It is also sometimes asked if the occupation cannot be learned at some of the schools teaching process, our answer to which is decidedly in the negative. Correct methods can be acquired at a school, but it is difficult, if not impossible, to acquire at a school the experience that is essential to the attainment of the speed so necessary to-day. Further, the schools only admit persons actually engaged in some branch of the craft, their function being held to be, not to teach the trade, but to supplement the training obtained in the workshop. Moreover, it is a mistake to assume that conditions are so very much better for employees in photo-engraving than in other occupations: while it is true that the quite first-class man obtains good wages (as he does in every industry), the subdivision of labour now introduced enables labour to be engaged at constantly reduced remuneration. There is also another unpleasant feature that is becoming common in process houses, and that is the "standing-off" of the workman when the business is slack. This deplorable practice is not a regular feature of other branches of photography, and it is to be hoped it never will be, for it is indisputable that such casualisation of labour is a most demoralising thing for the worker, and one of the chief causes of that reckless discontent which we have lately witnessed.

London and Provincial Photographic Association.—The meeting on Thursday evening, October 5, is a "Ladies' Night," when Mr. W. A. Furse will deliver a lecture entitled "Way Down Along."

Colonial Enterprise.—Marion's have just made for an East Rand studio a very handsome showcase, built of teak and faced all over the front with beaten copper, the name of the studio standing out in embossed copper letters. The only ornaments of a different kind are three beads of turquoise, each the size of a two-shilling piece. These add a pleasant note of contrast to the upper part of the case. The whole result is certainly very striking, and the case is admirably adapted for its purpose. Marion's can make similar cases at a cost of about five guineas each, the size of this particular specimen being 4ft. 1in. high x 2ft. 2in. wide.

## FORTHCOMING EXHIBITIONS.

September 9 to October 21.—London Salon of Photography. Sec., Robert M. Cocks, London Salon of Photography, 5a, Pall Mall East, London, S.W.

September 28 to 30.—Wallasey Amateur Photographic Society. Sec., W. Hayes, 110, Brighton Street, Seacombe, Cheshire.

October 11 to 20.—Bournemouth and District Camera Club. Entries close October 2. Sec., Miss Penrice, 41, Wellington Road, Bournemouth.

October 18 to 21.—Rotherham Photographic Society. Entries close October 9. Sec., H. C. Hemmingway, Tooker Road, Rotherham.

November 1 to 4.—Hackney Photographic Society. Sec., W. Selfe, 24, Pembury Road, Clapton, London, N.E.

November 6 to 11.—Southampton Camera Club. Sec., C. M. Cooper, 203, Shirley Road, Southampton.

November 7 to 11.—Norwich Photographic Society. Sec., J. T. Tanner, The Lodge, Bowthorpe Road, Norwich.

November 15 to 18.—Cambridge and District Photographic Club. Sec., T. J. Sowdon, Sunny Side, Guest Road, Cambridge.

November 27 to 30.—City of London and Cripplegate Photographic Society. Sec., F. W. Gardner, 135, Vaughan Road, Harrow.

◆

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between September 11 to 16:—

Colour Photography.—No. 20,251. Colour photography and printing. Georges Baugé, Alexandre Dumez, and Alexandre de Seauve.

Printing Apparatus.—No. 20,301. Photographic printing apparatus. Oscar John Rausn.

Films.—No. 20,119. Manufacture of cellulose films. Jacques Edwin Brandenberger.

Cinematographs.—No. 20,360. Cinematograph projectors. Thomas Ellis Griffiths and George William Lester.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Collodio-Bromide Dry Plates.—No. 7,201, 1911 (March 24, 1910).—The invention refers to an instantaneous collodio-bromide plate which can compete with the extra rapid gelatino-dry plates. These rapid collodion plates are prepared by the following process:—

### 1.—Preparation of the Gun-Cotton.

Pour little by little 1,000 ccs. of nitric acid of a density of 1.4 into 1,500 ccs. of sulphuric acid at 66°, and at a temperature of 60° C.

Bring the mixture to a temperature of 72° C. and immerse respectively 50 gms. of cotton for about 10 minutes.

### 2.—Preparation of the Collodion.

| | |
|---|---|
| Alcohol at 94° measured at a temperature of 15° C. | 750 gms. |
| Dry finely powdered silver nitrate | 25 gms. |
| Heat in a water bath to 70° C. until completely dissolved. Add :— | |
| Ordinary ether | 250 gms. |
| Stir and let it rest for a few hours, filter and add :— | |
| Gun cotton prepared as under 1 | 10 gms. |
| Stir, let it rest and filter. | |

### 3. Preparation of the Glass.

The glass perfectly clean and polished is covered with solution of albumen and dried vertically in the stove at a temperature of 80° C.

*Solution of Albumen:—*

| | |
|---|---|
| Dried powdered egg albumen | 10 gms. |
| Distilled water | 990 ccs. |
| Ammonia at 22° | 10 ccs. |

Stir and filter until perfectly clear.

Spread the prepared collodion by pouring it on to the glass at the rate of 500 ccs. for every square metre to be coated.

The coagulation is sufficient at the end of thirty-five minutes at a temperature of 15° C. in a dry atmosphere.

From this moment until the end of the operations all the manipulations are effected in red light.

### 4. Bromiding.

Plunge the plate into the following bath :—

| | |
|---|---|
| Distilled water | 1000 ccs. |
| Potassium bromide | 120 gms. |
| Gelatine | 5 gms. |
| Potassium iodide | 0.1 gm. |

When the plate is placed in the bath the latter should be at a temperature of 15° C. and the plate should be left in the bath for about twenty minutes.

### 5. Maturation.

The plate, withdrawn from the preceding bath, is plunged into the following bath at a temperature of 55° C.

| | |
|---|---|
| Potassium bromide | 40 gms. |
| Gelatine | 2 gms. |
| Water | 1000 gms. |

Regulate the temperature according to the following tables :—

| | |
|---|---|
| Starting at | 55° C. |
| 40 minutes after | 80° C. |
| 2 hours after | 88° C. |
| Allow to cool so as to obtain after 7 hours | 50° C. |

Then take out the plate and plunge it into the following bath :—

| | |
|---|---|
| Potassium bromide | 40 gms. |
| Gelatine | 2 gms. |
| Ammonia at 22° | 6 ccs. |
| Distilled water | 1000 ccs. |

The plate remains in this bath for one hour at 50° C.

### 6. Washing.

Wash for fifteen minutes in distilled water at 30° C., then for fifteen minutes in ordinary water at 15° C.

### 7. Drying.

Dry in the stove at 40° C. and in a current of air.

The plates thus prepared are ready for use. They can be rendered sensitive to the various rays by plunging them into the chrome-sensitising bath usually employed.

These plates have the following advantages :—

1. Perfect resistance to heat, whether dry or wet, and consequently the possibility of developing, fixing, washing, and so on in boiling liquids and of drying very rapidly at high temperature, for example above a flame, in a stove or in full sunlight and so on. All the disadvantages of the gelatino-bromide plates in tropical countries are thus avoided.

2. No stripping or partial separation of the film during the various operations even when carried out under heat. The edges never curl, no blisters are formed, nor is there any tendency to stripping.

3. The washing is very brief and rapid, and only requires a very small quantity of water.

4. Retain their sensitiveness for several years. The negatives obtained are not liable to any subsequent deterioration and have nothing to fear from dry or damp heat, damp cold, the attacks of bacteria, rats, or other animals.

5. Considerable resistance of the film to the action of chemical reagents which permits of exposing the plates consecutively to the action of a great number of substances. It is thus possible to vary the developers and to effect all the transformations of the picture necessary in certain processes, more particularly successive and repeated intensifying and reducing.

6. Freedom from halation, either from reflection or diffusion, thus obtaining finer pictures and more accentuated relief,

resembling very closely the negatives obtained with the wet-collodion process.

7. Any retouching can be effected with the pencil directly on the film. The possibility of stripping the negatives to form films, toughness of the coating of emulsion once the negative is finished, and the non-necessity to varnish as the negative does not become easily scratched.

The patentee adds that he is aware it has been proposed to employ ammonia in the preparation of collodio-bromide plates, and further to subject a non-matured emulsion containing gelatine and other colloids after washing to a maturing process by treatment with ammonia or a substance having a similar action and the subsequent neutralising of the alkali with a suitable acid, and he does not claim the use of ammonia broadly in the manufacture of collodio-bromide dry plates.—Louis Enjolras, 5, Rue Richepanse, Paris.

**Three-Colour Prints on Paper.**—No. 19,601, 1910 (August 23, 1909).—The invention relates to improvements in the invention described in the Specification of Patent No. 15,050, 1908 ("B.J.," August 13, 1909), hereinafter referred to as the main patent.

Instead of covering the three-colour positive support with gelatino-bromide of silver emulsion we may cover them with a layer of gelatine tinted like the pigment preparations known as carbon with a white colour sufficiently opaque.

In this case following the ordinary processes we bichromate the gelatine and expose to light under the positive obtained from the screen negative as described in the main patent and we remove the portions of gelatine not rendered insoluble by washing in hot water. There then only rests on the support the insoluble portions of gelatine, more or less thick according as the action of the light has penetrated more or less deeply, and totally masking the colours which should not be perceived by the eye: or "brightening or rendering lighter," by the addition of white, those colours of which the primitive tone, as has been fixed on the support, has to be modified.

We may also cover the support above the coloured network with a layer of gelatine sufficiently hard (10 per cent., for example), uncoloured and transparent, then bichromate, and expose beneath the positive and wash out with hot water the gelatine not rendered insoluble, and subsequently colour in opaque white the parts adhering to the support by forming on these parts a chemical white deposit. For this purpose the support may first be dipped into a solution of oxalic acid or of ammonium oxalate (5 per cent. for example), and allowed to soak for the time necessary to impregnate the layer of gelatine; then, after draining and drying, this support is dipped into a dilute solution of a salt capable of forming a white opaque precipitate with the oxalate or oxalic acid. Calcium nitrate at about 10 per cent. is very suitable for obtaining this result.

We can also obtain the same results by dipping the support into a solution of barium chloride at about 5 per cent., and then after drying dipping into a solution of sodium sulphate at 5—10 per cent. The deposit in this case is formed by barium sulphate. It is advisable to wash after the second soaking so as to eliminate the sodium chloride.

We can also, with the support prepared as just described, that is to say, covered over with a simple layer of transparent gelatine, bichromate, and expose the gelatine beneath a second negative, obtained from the positive of the screen negative. The screen negative might be used, but in practice it is best to employ a second negative, as the positive can be retouched so as to produce a better negative than the original negative. We now omit the washing out of the unexposed gelatine with hot water, but at once pass the print successively in baths of oxalic acid or of ammonium oxalate and then of calcium nitrate, or baths of barium chloride and then of sodium sulphate, as above described. Now the parts of the gelatine not exposed, and relatively soft, absorb the solutions and become covered with the opaque white precipitate, whilst the exposed parts, which are exposed for this purpose to such an extent as to render them relatively hard and insoluble, do not absorb the solutions and consequently remain transparent.—Edmond Charles Guislain Caille, 49, rue Dubief, Villeneuve-sur-Yonne, France.

**Cinematograph Mechanism.**—No. 25,252, 1910 (October 31, 1910). The claim is for mechanism for imparting intermittent movement to the film, comprising a driven member fixed on the spindle of a sprocket or its equivalent for engaging the film. This driven member has on its face a number of evenly spaced pins or studs. A rotary driving member has an approximately diamond-shaped cam arranged to pass between the pins or studs to thereby intermittently rotate the driven member, also there is a locking ring adapted to pass between the pins or studs aforesaid to thereby hold the driven member stationary except when being actuated by the cam.—Albert Edgar Alexander, 306, High Holborn, London, W.C., for the Nicholas Power Company, 117, Nassau Street, New York City, U.S.A.

**Cinematograph Mechanism.**—No. 23,032, 1910 (October 5, 1910). This invention consists of a cinematograph which can be taken to pieces, in order to enable it to be used for the various purposes to which cinematographs can be applied, and thus saves the amateur from having to obtain the special apparatus heretofore necessary.

This cinematograph more especially serves

(1) For the projection of films of any desired length;

(2) For films of limited length;

(3) For short series of pictures arranged in endless bands;

(4) For viewing the film without projection, by means of an eye-piece lens;

(5) For the printing of transparencies on a film; and

(6) For taking cinematograph pictures.—Max Hansen, 217, rue St. Honoré, Paris.

**Cinematograph Mechanism.**—No. 20,516, 1910 (September 2, 1910). The claim is for film-feeding mechanism, in which the roll of film is arranged on a horizontal revoluble support or feed-magazine, and is unwound from its inner convolution in such a manner that the film strip passes over a number of vertical guide rollers arranged within the centre of the film roll. The film support is mounted on ball or roller bearings, in order to diminish the pulling force, which has to be transmitted by the film to rotate the feed-magazine. Henry Hirsch, 45, Via Baretti, Turin, Italy.

**Continuous Photo-Printing Machine.**—No. 10,701, 1911 (May 3, 1911). The invention relates to electric photo-printing machines, in which the tracing to be copied and the sensitised material are fed into the machine and automatically drawn across the view-plate, the copying being effected by, say, two or more electric arc lamps. In such machines, if of large size, it is necessary to employ two or more arc lamps, which are suspended and held stationary behind the view-plate.

The invention consists in dispensing with a number of such stationary arc lamps, and instead substituting therefor a travelling arc-lamp, which is caused to move to and fro across the machine in a horizontal plane at the back of the view-plate throughout the travel of the tracing and sensitised paper through the machine, a single travelling lamp thus accomplishing the work usually done by two or more electric lamps. J. Halden and Co., Ltd., and Herbert Richard Watts, 8, Albert Square, Manchester.

**Stereoscopic Lantern Projection.**—No. 3,552, 1911 (March 3, 1911). A bi-unial optical lantern is used, and a pair of stereoscopic pictures projected in the same position upon a screen. In front of the lantern a semi-circular shutter is mounted with its centre of rotation between the two lenses, so that when rotated it opens and closes each lens alternately, allowing the right eye and left eye pictures to be alternately momentarily displayed upon the screen. The blurred picture thus obtained is analysed by being viewed through an instrument having a revolving semi-circular shutter or a vibrating shutter, which allows each eye to alternately see the screen. This shutter or vibrator is usually driven electrically from a commutator upon the shaft, upon which the main shutter in front of projecting lens is fixed, so that both run in synchronisation, and thus the right eye sees only the right-eye stereoscopic picture, and the left eye sees only the left-eye stereoscopic picture, which gives a perfect stereoscopic relief. It will be evident that the viewing mechanism can be multiplied to any extent required, each running in synchronisation, and controlled by the commutator upon the shaft of the main shutter in front of lantern or cinematograph machine. Herbert Dickinson and Mabel Alice Dickinson, 144, West Green Road, South Tottenham, London, N.

## New Trade Names.

Toxol.—No. 335,345. Photographic developers. Kino-Film Co. mit beschrankter Haftung, Birkesdorf, near Duren, 74, Juelichstrasse, Rheinland, Germany, manufacturers. July 28, 1911.

C.C. Co. Pictures (Design).—No. 334,698. Cinematograph transparencies, etc. William Maurice Burke, John Burrell Thomson, Joseph Patrick Hickey, Leo Dominic Hickey, and John Hogan, trading as the Commercial Cinematograph Co., The Wellington Palace, Broadmead, Bristol. July 1, 1911.

Comica (Design).—No. 334,715. Cinematograph apparatus, transparencies, and accessories included in Class 8. Henry Danzer, 5, Rue Richepanse, Paris, France, engineer. July 1, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Developing Bromide Prints.

Writing on the "Bromide Process and Some of its Possibilities" in "Photography and Focus" for September 26, Dr. A. T. Lakin says:—Weak developers will be found to give a greyish black image, rodinal gives a grey to a pure black, "M.Q." a grey to a bluish black, amidol a grey to a bluish black. Then, again, there is the method of over-exposure followed by restrained development, in order to get warm tones, as to which my advice is "Don't!" The best plan is to get a good black print, and then one can do anything with it. For straightforward devolpment I use rodinal 1 : 40. In all cases of controlled development, whatever the size of the print, it should first be soaked in water until it is quite limp, taking care that no airbells adhere to it. Then for the first stage it may be developed with—

| | |
|---|---|
| Rodinal | 5 drops. |
| Potassium bromide (10 per cent.) | 1 drop. |
| Water to | 3 ozs. |

This is applied until the shadow detail appears, and is then poured off. The print is flooded with water and examined. If any particular part is to be built up, it can now be done with cotton wool and a stronger developer. It must not be hurried, slow and sure should be the motto, and plenty of water should be used in between each working. Details in dresses, white aprons, etc., are easily manipulated in this way.

The second stage developer depends upon the tone or colour which the print is to have finally. The water in which it is lying is poured off and development is continued by adding to the developer first used five drops of rodinal. This will develop up the print to a nice soft grey colour in four or five minutes. Or we may add to the first developer—

| | |
|---|---|
| Rodinal | 30 drops. |
| Potassium bromide (10 per cent.) | 5 ,, |

This gives a more vigorous colour in two or three minutes. If there is much deep shadow a further quantity of rodinal may have to be added to complete development.

The Ealing Photographic Society commences its winter session with a print competition on Wednesday, October 4, in the Town Hall, Ealing. Ladies and gentlemen desirous of joining the society should communicate with the hon. secretary, Mr. T. W. Bartlett, 20, Craven Avenue, Ealing.

Flashlight Photographs Wanted.—Messrs. Chas. Zimmermann and Co., 13, Bartlett's Buildings, Holborn Circus, London, E.C., are anxious to obtain pictures for advertisement purposes, and are open to buy a few prints with reproduction rights. The size is, of course, no object, but the prints must have been taken with the "Agfa" flashlight, and preferably in conjunction with the Agfa Flash-lamp. Glazed prints should be sent with full particulars on the back, and stamps should be enclosed for the return of the prints if desired.

## New Books.

Cassell's Encyclopædia of Photography.—This publication, which has been appearing in fortnightly parts, has now been issued by Messrs. Cassell as a large handsome volume of 572 pages. The wide scope of its treatment of both past and present processes in photography fully justifies its title. In referring to individual issues, we have felt it necessary to differ from the editor, Mr. Bernard E. Jones, as regards the placing of a number of entries under the authors' names instead of under the more descriptive subject entry. But it must be said that the painstaking manner in which cross-entries are introduced shows that the editor has been alive to the drawback of this method and has efficiently guarded against it. Thus, in the paragraph on "Reducers," cross references are introduced to the Namias, Farmer and Bennett reducers. The clear arrangement of the volume, its bold headlines, and the concise manner in which every paragraph is written will commend it to those who have occasion to look up items of photographic information. The price of the bound volume in a stout linen cover is 10s. 6d.

## New Materials, &c.

**Christmas Mounts and Calendars. Made by Marion and Co., Ltd., Soho Square, London, W.**

The approach of the Christmas season is announced by the arrival on our table of a large assortment of the motto mounts and calendars of which for years past Messrs. Marion have issued many varieties. Two well illustrated lists which accompany them deal respectively with the mounts and calendars, and from the half-tone illustrations therein, coupled with the technical descriptions, some idea may be gathered of the range and style available. As in previous years, Messrs. Marion appeal to all classes of photographers, e.g., to those who are compelled to offer their customers something quite reasonable in price, and fairly attractive in itself, irrespective of the photograph which it is to carry. Others, however, are fortunate in having a circle of customers able to appreciate a more artistic style, and

Fig. 1.

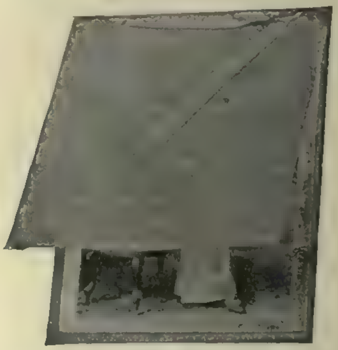

Fig. 2.

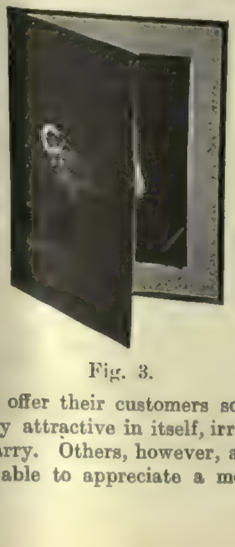

Fig. 3.

prepared to pay for it, and it is to such mounts as, in our judgment, fall in the latter category that we propose chiefly to refer.

Fashion this year is evidently in mounts of cool brown, dark grey, or buff-colour, mostly of linen-surface board, and with the least amount of "trimmings" in the way of decoration or motto. The series T 6 to T 9, illustrated in Fig. 1, is a two-fold card, with brown "crash" surface, with a neat ribbon design printed on the front and a dark printed border to go round the print. These are supplied to take prints from 3 x 1⅝ to 5¾ x 4 3-16 inches, at prices from 1s. 2d. to 2s. per dozen; 69s. to 114s. per thousand. In the series T 27 to T 29 (Fig. 2), the mount is composed of a light grey paper supporting a stout white board within. The whole is secured with pink ribbon, and bears a neat gold lettering and motto. For prints from 3¼ x 2⅛ to 6 x 4¼ the prices are from 3s. 2d. to 4s. 8d. per dozen.

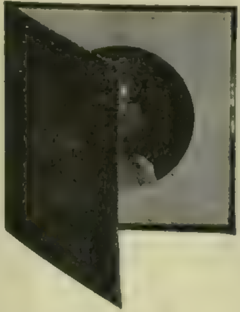

Fig. 4.

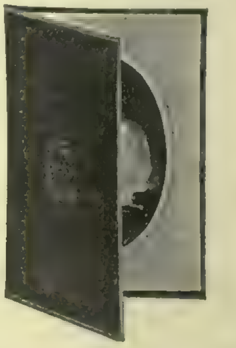

Fig. 5.

The series from T 53 to T 61 (Fig. 3) are of slip-in pattern, and are of design very closely resembling the T 40 and 41 just mentioned. These motto mounts are issued in a wide range of sizes, and for both upright and landscape prints. The prices range from 2s. 4d. to 4s. 4d. per dozen.

A rather neat design is that of T 34 and 35, which is a panel shape mount of very pleasing greenish-brown linen surface covers, attached with brown ribbon, and bearing a neat white plate-mark mount within. The gold lettering on the inner white mount is seen through the opening in the outer cover. For prints 4 x 2 and 4 x 3 inches the prices are 3s. 8d. and 4s. per dozen, respectively. A very dainty mount for circle prints is that shown in Fig. 4, and numbered T 40 and 41 of Messrs. Marion's series. The outer covers are in dark brown linen surface, card edged with a very narrow gold border, and bearing the inscription in gold, "With Best Wishes." The inner mount is of stout white card, with embossed circular plate-mark. For prints 2⅛ inch diameter the price is 1s. 10d. per dozen, for those 3⅛ inch, 2s. A somewhat similar style is that of Nos. T 51 and 52, shown in Fig. 5. These are for oval prints. The outer covers are dark grey, again linen surface, and with a broader gold edging. The prices are 1s. 10d. for prints 2⅝ x 1 11-16; 2s. 6d. for 3⅞ x 2 9-16.

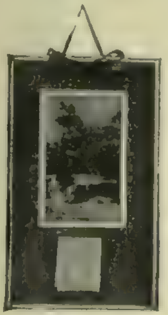

Fig. 6.

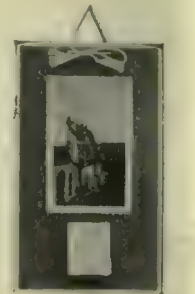

Fig. 7.

Fig. 8.

Other tasteful series, which are specially deserving of notice, are T 21 to 26, T 36 and 37, and T 44 and 45, any of which the professional photographer may order with the certainty that the unobtrusive character of the mounts will allow of either black or sepia prints being placed upon them.

Of the calendars, in which are provided spaces for the insertion of a photograph, Messrs. Marion have again adopted a neat and unobtrusive style in their series T 100 to T 103, which differ only in the colour of the mount, and in taking the photograph upright or horizontal. T 100, shown in Fig. 6, is of dark brown board, and takes a print postcard size. T 101 (Fig. 7) is Scotch grey, and takes the postcard vertically, whilst T 103, Fig. 8, is Scotch grey. In the series T 104 to 106 a very decorative series of calendar mounts are produced of larger outside size—they measure 11 x 8 inches—but taking cabinet or postcard prints. No. 106, Fig. 9, is a very pleasing design in cream linen surface paper, with brown border and ribbon to match. The series T 107 is the same size, but is of cambric surface board in brown or cream, with space for a postcard print.

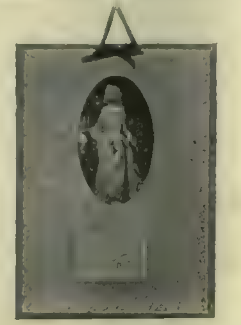

Fig. 9.

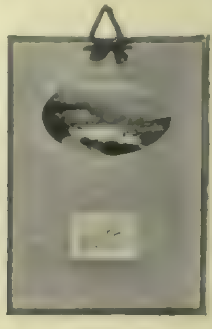

Fig. 10.

This pattern is shown in Fig. 10, and is also made with horizontal and vertical oblong opening. A further series of calendars, while not so unobtrusive as the foregoing, will doubtless appeal to a wide circle. They are made of wood veneer, with space for a postcard print to be slipped in. These series of mounts, which run from T 110 to T 117, enable a photographer to offer his customer, at a very low price, a mounted print which should be attractive as a proposed Christmas gift, since it is of a substance for hanging on a wall. Perhaps the best advice we can give to the photographer in a difficulty as to which mounts to select is to obtain a special sample parcel, which Messrs. Marion offer at 2s. and 5s. each. Each embraces a wide variety of mounts, and is remarkably good value for the money.

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### "Paragon" Non-Screen-Ortho Plates. Sold by W. Ziegler, 14, Oliver Grove, South Norwood, London, S.E.

In these plates, manufactured by the well-known Frankfort firm of Dr. Schleussner and Co., photographers are provided with an emulsion which is at the same time of high general speed and colour-sensitive. Such a plate as this has been in increasing demand within the last year or two, largely among amateur workers, who are thus enabled to obtain a large measure of colour-correction in their negatives without the need of employing a light-filter. In this respect the "Paragon" Non-Screens in our experience have shown themselves to possess great sensitiveness to the yellow and orange, and to afford excellent rendering of these colours even when no correcting yellow filter is used. This quality is combined with an extreme degree of general rapidity, so that the plates are fully equal in speed to the most rapid which can be required for ordinary hand camera work. They are supplied also in non-halation form, the "backing" consisting of non-actinic film between the emulsion and the glass. This film is completely removed in the fixing bath, and the negatives which the "backed" plates produce are remarkably crisp in definition and free from halation. The worker requiring a rapid plate affording a certain degree of colour-correction—and more, if desired, by the use of a pale light-filter—should make a note of this variety of the excellent "Paragon" materials.

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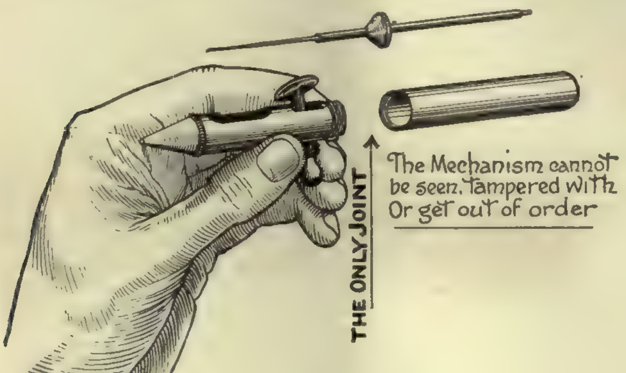
"TAKIRIS" GASLIGHT PAPER.—A supply of this gaslight development paper, manufactured by the Takiris Co., and supplied in this country by Mr. Ferdinand Levy, 14, Red Lion Square, London, W.C., which we have had the opportunity of trying, has proved, in our hands, to be capable of yielding prints which are altogether excellent as regards colour and brilliancy. The "Takiris" emulsion, like others of more recent introduction, does not develop instantaneously, but takes its time, the print attaining full vigour within one or two minutes. We employed "Azol" developer with a small addition of bromide, and obtained prints of rich depth in the shadows without any sign of veiling in the high-lights. The paper has not the tendency to give the pronounced contrast afforded by some gaslight papers—of particular service when poor negatives are being printed from—and is, therefore, especially suitable for professional photographers' work. From negatives of average vigour, such as print well on bromide paper or P.O.P., the results are all that can be desired.

Reproductions in Colour.—Specimens of excellent work in "Collochrome" reproduction reach us from Messrs. Ben Johnson and Co., Ltd., 100, Micklegate, York. The work, which apparently is entirely collotype, is done in a number of instances from Autochrome originals; in others, from the original object. The landscape reproductions are excellent, and photographers who desire postcards or view-albums in colours are advised to write Messrs. Johnson and Co. for specimens and prices.

## New Apparatus, &c.

**The "Invincible" Air Brush. Made by A. Aufholz, 4, Chadwell Street, St. John Street, London, E.C.**

In this new instrument for air-brush workers there are a number of excellent points which evidence the long experience of the maker in this description of apparatus. As shown in the drawing, the needle can be entirely and instantly removed from the brush by unscrewing the tube of the latter at the only point where it takes to pieces, as indicated by the arrow. The essential mechanism of the brush is contained in the hinder part of the instrument (on the right in the illustration), and cannot become dirty or deranged during use. The lever controlling the air-supply to the nipple of the brush is most excellently designed, giving a beautifully even and smooth movement, and one which naturally adapts itself to the touch of the forefinger. With the mechanical work in the "Invincible" brush of such a high degree of excellence, its practical performance in the working-up of photographic prints and enlargements follows as a natural corollary, and from the simplicity of the working parts there is every guarantee that the brush will retain its working quality for an indefinite time. The "Invincible" is made in two patterns, A, price £3 10s., and B, fitted with a colour cup, at £4. In conjunction with his manufacture of the above new air brush, Mr. Aufholz, we learn, is making spray brushes of all descriptions for lacquering, japanning, etc., and is prepared to draw up specifications and estimates for complete air-brush outfits on both the large and small scales.


The Mechanism cannot be seen, tampered with Or get out of order
THE ONLY JOINT

**The "Professional" Developing Tank. Sold by the Professional Tank Co., 4, Westgate Street, Ipswich.**

As all those employing tank development well know, a most essential condition to success is some efficient means of occasionally moving the negatives in the developing bath. Hence, tanks with a water-tight cover allowing of the apparatus being inverted once or twice during use. In the tank before us this means of movement is provided by slinging the rack carrying the plates on a pair of hangers attached to opposite sides of the tank. The end of one of the hangers is continued to the outside of the tank and bent downwards so as to form a handle. Thus, with the lid on, the plates can be put in movement simply by a touch on the handle. The outside dimensions of the tank allow of the plate-rack within moving to and fro with a play of just over an inch. The tank is provided with a specially deep lid, is strongly made, and fitted with a rack, taking half-plates. Quarter-plates are accommodated by means of an adapter. The tank measures 11 inches in length, 5½ inches in width and 7¾ inches in depth. The price is 10s. 6d. It is a piece of apparatus designed by one who has worked it out for his own practical requirements, and is supplied with a circular of instructions giving development formula and time of development. A very reliable accessory for the professional photographer employing tank development.

## Meetings of Societies.

### MEETINGS OF SOCIETIES FOR NEXT WEEK.

Friday, September 29.

Cowlairs Co-operative Camera Club. General Meeting.

Monday, October 2.

Leeds Camera Club. Supper in the Savoy Café: The Members.
Bowes Park and District Photographic Society. Annual Conversazione. "A Loon in London." W. L. F. Wastell.

Tuesday, October 3.

Royal Photographic Society. Discussion: "Fitting up the Dark-Room." To be opened by John H. Gear.
Sheffield Photographic Society. "A Tour Round an Old Garden." Alex. Keighley.

Wednesday, October 4.

Ealing Photographic Society. Opening Night. 1st Print Competition.

Thursday, October 5.

Liverpool Amateur Photographic Association. "Dust as Seen Through the Microscope." Fred W. Saxby.
London and Provincial Photographic Association. "Way Down Along." W. A. Furse.

### ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, September 26, Mr. W. B. Ferguson, K.C., in the chair.

Mr. H. Essenhigh Corke delivered a lecture entitled "More English Wild Flowers," which was illustrated with a large number of Autochrome and Dioptichrome lantern-slides. These slides, which embraced a wide range of floral subjects, received much commendation from the audience. The meeting terminated with a hearty vote of thanks to the lecturer.

## News and Notes.

Hackney Photographic Society.—At the annual exhibition of the above society, which will be held at the King's Hall, Hackney, from November 1 to 4, there will be two open classes, one for direct colour photography and the other for local exhibitors. Entry forms are now ready, and may be obtained from the hon. sec., Mr. Walter Selfe, 24, Pembury Road, Clapton, London, N.E.

Ensign Film Competition.—Mme. G. R. Baunach, Bearsden, Sidcup, Kent, is the winner of the "Ensign" Roll Film Competition for September. Houghtons Ltd. offer a three-guinea camera every month for the best negative on "Ensign" film. The entries close on the 3rd of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

Photographic Classes in Manchester.—A separate syllabus of the classes in photography and the printing crafts held at the Manchester Municipal School of Technology reaches our table, and we hasten to congratulate the principal, Mr. Charles W. Gamble, on the extremely beautiful typographic setting of the particulars. Classes are held both in the day and the evenings, and include lecture courses and practical instruction in technical photography and the various photo-mechanical methods. Those within reach of Manchester should not neglect the educational opportunities which are offered in these courses of instruction.

Incandescent Lamps.—Great improvements have been effected in the construction of incandescent lamps since 1905, when tantalum filaments were a novelty, and were then in use only up to 100 volts for ordinary candle powers. The osmium lamp then was more or less of a curiosity, says the "Times," while there was no clear indication of the immense development which has since taken place in tungsten lamps. The carbon lamp was supreme, except for the tantalum lamp. Now the wire-drawn tungsten filament has made its appearance, and it is just possible that the squirted filament may be as much out of date as the high-efficiency carbon lamps of 1905 are now.

Canadian Platinum.—An important discovery of the high-priced metals, platinum, iridium, palladium, rhodium, and osmium (states the "Pharmaceutical Journal"), is reported to have been made recently upon and near the Granite-Poorman Mining Company property, a few miles from Nelson, B.C. A well-defined dyke bearing these metals in large quantities has, according to newspaper reports, been traced for several miles in the general direction of Forty-Nine Mile Creek, and across the Kootenay River, and many claims have been staked. Samples of these ores have been sent to Ottawa, Butte, Mont., and New York, and reports from all these sources are said to confirm the presence in large quantities of the abovementioned metals.

Exhibitors at Turin.—In the article by Mr. W. E. Dunmore, which we published last week, on the photographic exhibits in the Turin exposition, we are sorry to find that no mention was made of the two British firms, Messrs. Campbell Grey, Ltd., and Messrs. Raines and Co. Messrs. Campbell Grey showed a series of very large portraits of H.M. King George V., portraits of Cabinet Ministers, and a number of fine photographs of technical subjects.

In the exhibit of Messrs. Raines prominence is given to this firm's high-class work in enlarging and photographic printing. A number of photographs are from negatives lent by Dr. Atkin Swan, Mr. W. Bickerton, Mr. W. Shackleton (astronomical subjects), as well as by several engineering firms, such as the Daimler Motor Co., Messrs. Beyer Peacock, and the Canadian Pacific Railway. These are uniformly up to the high standard maintained by the well-known Ealing firm.

Messrs. Gevaert were also represented in another section by their platinum and other printing papers.

The Coventry Photographic Club, whose premises are in Little Park Street, Coventry, in arranging their Winter Session programme, have devoted one evening early in the season for an "At Home," and invitations will be issued to known local amateurs who are not members, thus affording them an opportunity of looking over the club premises, examining some of the members' specimens, and making enquiries regarding the working of the club.

A feature of the coming session will be periodical lectures and demonstrations by members showing the art of photography from the very beginning, embracing the various forms of development, such as time, tank and observation, besides the actions of different developers upon the same class of plate similarly exposed. Working by easy stages, the many leading types of printing will be interestingly explained by those members who have made a particular process their special study.

Any reader resident in or near Coventry desiring fuller particulars will have his or her requests attended to by dropping a postcard to the Hon. Sec., Mr. G. E. Band, 27, Allesley Old Road, Coventry.

Pictorial Work in Large Cities.—The third of the London Salon "Evenings" was given last Friday by A. H. Blake, Esq., M.A., whose subject, "Pictorial Work in Great Cities," was illustrated by a number of slides made for the most part by the lecturer. These comprised many views that Mr. Blake has exhibited in the form of prints, and of these we consider that "The Temple Fountain" and "Road Up" are still his highest achievements. Of the night effects we think the view of the Haymarket Theatre the most artistic in its perfectly dazzling light effects. A churchyard off the Commercial Road likewise lingers in our memory as a highly successful London picture. "Sunlight and Arc-light" would perhaps have been a more fitting title to the lecture, since the "great city" aspect was not the chief one. We should like to see Mr. Blake devote himself to the real greatness of London: its majestic vistas and noble piles, its great effects near the skyline rather than the glittering of its mud, though that he makes charming. Mr. Blake accompanied the slides with a soothing and coversational comment in the way of description, which ended by a few words of guidance and warning as to permits for the prohibited places, and in speaking of cameras he intimated that the reflex entailed too much display to allow of surreptitious snapshotting of the human quarry.

The Liverpool Amateur Photographic Association.—Art, science, travel and technique of photography are adroitly combined in the programme of the Liverpool Association. Mr. C. F. Inston sends us the fixture list from September 28 to the end of March next, and we hasten to congratulate him upon the production of a programme which must surely be the envy of every photographic society in the country. Mr. F. C. Tilney opens the session with a lecture, "Thoughts preliminary to picture making." The travel lectures include "Wanderings in the Black Forest," by W. Lawrence Rea, "Life and Scenery in the Alps," by Percy Lund, "The Scottish Highlands," by George E. Thompson, "The English Lakes," by Dr. J. W. Ellis, "Ceylon," by W. King, and "Highways and Bye-ways of Northern Italy," by J. Dudley Johnston. Among the technical lectures are "Retouching," by F. A. Cooper, "Town Photography," by A. H. Blake, "Colour Photography," by F. W. Parrott, "Flower Photography," by E. Seymour and by H. Essenhigh Corke, "Salted Paper," by W. A. Maclean, "Bromoil," by S. H. Williams, and "Enlarged Negative Making," by F. Heatherley. When we add to this list lectures on popular science by F. Martin Duncan, Professor L. R. Wilberforce and F. W. Saxby, we have, we hope, said enough to show that in the stronghold of photographic society life the successes of past years continue to be maintained. Our amateur readers within reach of Liverpool should count themselves foolish if they neglect to become members of the L.A.P.A. They should apply to Mr. Inston at the rooms of the society, 9, Eberle Street, or at 25, South John Street.

Photography the Miracle.—Speaking at the second of "The Salon Evenings," Mr. William Rothenstein administered to the audience in particular, and to pictorial photographers in general, one of the severest trouncings they have ever received at the hands of a painter. He confessed to coming to the exhibition in the hope of finding evidences of the life and virility around us as portrayed by the miracle of photography, and to being disappointed at the sight of the weakness, sentiment and imported poetry which the works presented. He said that photographers were upon the wrong track in seeking to give to their productions those qualities which are popularly supposed to be characteristic of good painting, and pointed out the fact that all the very best works of art, old or modern, were sound, strong and simple statements of bald fact; the poetry being supplied by the spectator in contemplating the works. He deplored the practices of modern artists who sought to beautify their statements, shrinking from the brutality of bald fact. Mr. Rothenstein alluded to Homer as being both brutal and irreligious, and to Shakespeare and others as being similarly opposed to any ideas of smoothing over or sweetening. With commendable consistency he gave out his own brutal facts in a way that will surely prove salutary to pictorial photographers, letting them see how great a mistake they made in emulating painters who were themselves so sadly in the wrong. In his admirable flow of extempore language, which was in itself an artistic treat, he dwelt upon the miraculous powers of the camera to present the wonders of life and strength and actuality around us, and denied that photography had anything to do with art in the way that painting had. A discussion followed, from which it was easy to gather that the audience had mentally collapsed under the lecturer's treatment. A little misunderstanding was also in evidence, since some speakers confused Mr. Rothenstein's plea for frank and simple methods with a desire for mere hard photographic record, apart from selection and other artistic requirements that should have been taken for granted. It is difficult in dealing with such elusive subject-matter to avoid such confusions. Many were thinking only of subjects to be photographed, but the lecturer was meaning only the method of presenting the photograph, which should be, we gather, frank and unsophisticated.

Reminiscences of Valentine Blanchard.—In last week's "Yorkshire Post," Mr. F. M. Sutcliffe devotes a large part of his weekly "Photography Notes" to some delightful stories of the late Valentine Blanchard. "I came across him for the first time," writes Mr. Sutcliffe, "in an hotel in an out-of-the-way place in the North. Dinner had been served, and I apologised for being late to the host, and dropped into an empty chair. 'Allow me to pass you the implements of warfare,' said the handsome man at my elbow. Major, or perhaps Colonel, said I to myself. Then, on a second look into his face, only Major, for there is too much of the milk of human kindness in his composition for him ever to have attained the higher rank. 'Thank you, Major,' I replied. Then he laughed so loudly that his wife, who was sitting beside him, laid her hand on his arm, and said, 'My dear.' His next words knocked all the life out of me. They were, 'Why didn't you send anything to Edinburgh? I have just been judging there, and I had made up my mind to give you the gold medal, and you never sent anything.' Then I knew that I was addressing Valentine Blanchard.

"How many photographers to-day, I wonder, remember the sensation which 'Rebecca' made when she appeared? Everyone thought at the time that the picture had been taken in Palestine, and that if it did not portray the Rebecca of the Bible, it was one of her very great-grandchildren. Be that as it may, nothing finer has been done in the way of figure photography than Blanchard's 'Rebecca.' That Rebecca was a Londoner speaks volumes for the healthiness of dull London.

"Blanchard at one time was living in the extreme South-west of London. In my countryman's ignorance of distances in the great city, I thought it would be an easy walk from King's Cross to Blanchard's house. It was much further than I expected, for it was nearly two o'clock in the morning when I got there. He was sitting up for me. 'I knew you would come,' was all he said, when I apologised for being so late. I might have got there in half an hour by train or 'bus, but the Yorkshireman prefers his legs all the world over to any train, 'bus, or aeroplane.

"After he gave up photography, Mr. Blanchard made one of the most perfect printing papers ever invented—a matt silver paper to be toned with platinum. It was too soon: photographers preferred something more glossy. I do not think it paid. Then that kind fairy, Good Fortune, smiled on Blanchard, or his wife, and he was able to throw his sensitising dishes and their contents into the dust-bin and take a country house near Cambridge. Soon after this good fortune's arrival, I was asked to go and see him there. Between this and the old London house, I learned much of his early history. Every old church in London we went to see, and his knowledge of their history was amazing. The greatest pity of all is that he never wrote a guide to London. Americans who come to see it would have valued it highly.

"At his place near Cambridge he said he had lived for nearly a year, but none of the nobility and gentry had called on him, till one day he bought a pony and trap. Then every one in the neighbourhood came and left their cards. 'Send them in to Clappers'—the pony's name—were his instructions to the maid, 'and tell the coachman to nail the cards up on the back of the stable door.' None of these calls were ever returned.

"'How did you, a Londoner,' I asked him once, 'ever get to know the names of all these trees and flowers?' for he knew them as intimately as he did the architecture of London and Cambridge, where he was ever discovering new delights which he would tell me of. 'Well, you see,' he said, 'whenever I hear the name of a plant which I do not know, I give it a name of my own something like the real name, and so never forget it. Aubrietia there I called "O'Breeches" till I got it off, and the same with everything.'

"One day, when I was staying with him, I got up very early and went downstairs. I found him sitting beside the fire, which he had lit, reading 'David Copperfield.' 'I have just been reading about Ham,' said he, and the tears rolled down his cheeks. Of the great sorrow of his life—the loss of his only daughter—I never heard from him, but from others.

"At Canterbury, where his last days were spent, he must have found very much to please him. Unhappily, I was never able to 'make a pilgrimage to Canterbury.' He used often to say there was something wrong with the management of the affairs of this world, which would be 'unriddled by and by.' He used to say, too, that when he was a young man he was invited, as an honoured guest, to take photographs for the salt of the earth—he had photographed every duke and duchess and ducal pile in the kingdom—but when he grew old he was asked to dine with the butler, and at times he was not even asked to dine at all, so greatly had photography fallen, even in his day."

# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

## THE PROPOSED UNION OF PHOTOGRAPHIC ASSISTANTS.

To the Editors.

Gentlemen,—Now that we have within our midst the National Society of Photographic Assistants and Allied Workers I shall esteem it a favour if you will allow me to supplement my original letter by another, this time founded upon fact. "Cavendo Tutus" seems to object to me taking Mr. Jarrett seriously, but surely a man that undertakes such a huge task, as Mr. Jarrett is attempting, is one to be so treated. I should now like to place before "Cavendo Tutus" a few facts in connection with the meeting held on the 19th inst., as I am certain he will find my letter was not the huge joke that he thought it to be, merely an impression of mine, more correct in detail than I had ever thought of. Now, in the first place, out of the hundreds of assistants employed in London only eleven of them took the trouble to attend, and in the second place, no rules were submitted to them for discussion. The chairman was asked by one of those present if he would give them some idea of what they were forming. The brilliant reply was soon forthcoming "that nothing like that could be done before they formed the union," and so the union was voted for, with one exception.

That, I think, plainly shows the absurdity of the whole thing, and also that such a union was not required, a fact Mr. Jarrett evidently was well aware of when he arranged the meeting, the smallness of the room, with seating accommodation for twenty-five people, proving that.

I can see no help for photographic assistants in such a scheme, but I feel sure if people would consider their prospects and chances of success in the profession, or trade, as termed by the union, a little more deeply, and in cases where they found they were not making much headway, to discontinue in it, much good would be done eventually. Mr. Jarrett at the meeting gave a splendid instance of my meaning. He spoke of an operator who, after fifteen years' work, was no better off as regards remuneration now than he was fifteen years ago.

Now, my contention is, that man has not the taste or ability for a photographer, who, I am convinced, to be successful, must have a natural taste for the work, which that man cannot have, otherwise he would not be where he was fifteen years ago. Now I am afraid my idea is rather of the Utopian order, but it is the only way I can see for the betterment of the assistants, and masters also.

I am afraid I am approaching almost to the length of my critic last week, so I had better bring the subject to a close, but in doing so I should like to relate a little experience of my own of years ago, when an assistant, now happy with my own business. I applied for a post as assistant operator in one of the finest studios in the West-End of London. When I stated the salary I required I was told that, on the very desk in front of me, were dozens of letters from people who would come for much less, and some for nothing at all to gain experience. I said, "Yes, I quite believe that; but will they answer your purpose?" I was sure of myself, with good testimonials behind me to back me up, with the result that the berth was mine, at my price, and one in which I learnt more than I ever knew before I secured it. Now I am reaping the benefit of that training.

I hope "Cavendo Tutus" and others will not say this is conceit. It is not, but only given to illustrate my meaning. He certainly judged me correctly when he described me as "evidently not the type of man who is content to hang on to any one's coat tail, to be pulled along." I have always loved my work, which I am sure I have to thank for the amount of success I have had in photography and made it a pleasure to me.

I now ask you to accept my apologies for this lengthy letter, but I am upon a subject which I feel very strongly: to improve the state of the profession and those connected with it. However, I will not trouble you again on this matter.—Yours truly,

33, High Street, Bognor. L. R. Goodyer.
September 23, 1911.

To the Editors.

Gentlemen,—There has been a deal of pessimism written of late re the photo trade, and a good amount of gratuitous advice given to photographers how to increase their business, and now we are being treated with an agitation for a trade union amongst assistants, as though the trade *per se* were responsible for the lowness of pay in some cases. I will not venture here to discuss what I consider some of the principal causes, though I have some strong opinions on it, but perhaps you will allow me to say that not the least of these is the very imperfect training the majority of assistants have had. I consider one of the weakest points in trade unionism is the insistence of all men working in a given line being paid at a fixed rate. In an early letter by Mr. Jarrett he spoke of an assistant being paid the princely sum of 25s. per week. It may be quite as much as he was worth, but one view even of this seems generally overlooked. What does 25s. a week regularly represent financially? How much capital would you have to invest to obtain it? We have been passing through a strike mania, and it has transpired that, notwithstanding the enormous profits made by the railways, it does not represent 5 per cent. interest all round to the shareholders on capital invested, and from this I argue that before you fix a given rate of wage in the photo trade you ought to insist on those getting it being obliged to serve a proper apprenticeship, and thus obtain proper credentials for their situations. Perhaps you will allow me later on to touch on another weak point which has affected the trade. —Yours, Reflex.

To the Editors.

Gentlemen,—Pardon my troubling you again this week, but "Non-Unionist" appears to have lost the thread of my yarn. (No! This isn't a joke.) My smock-frocker justified his aversion to the "bike," as he saw no necessity for them at that particular time, because "there warn't any a little way back" in his career.

And probably Maister Mellish would have found many supporters who would consider him an authority, on account of his forty years' residence in the village, and, having toiled in all weathers and conditions without complaining, for some of the biggest land owners in the district, etc., etc. I have not got "Non-Unionist's" letter before me now, so I quote from memory, but I understand, or was under the impression, that I read therein something like this:—

"Several years ago an attempt was made to start a union. Only seventy out of the thousands displayed any interest." Deduction: Didn't want it. On that account, "Non-Unionist" claims, one is not necessary to-day.

This manner of conducting a case is beyond me. I hope Mr. Goodyer has his box ready, for there will be many who, like Mr. Cohen, are, in his opinion, "out" of it, who will have to be put "in" it, or through it, myself included.

I am quite prepared to allow that "Non-Unionist" has forgotten more about the profession than I and many others will ever have the opportunity of acquiring, and his twenty years' varied experience is a priceless asset for any man to possess who is anxious for "improved conditions," and, in my opinion, he is the type of man required to help in the matter. I perceive that he is methodical, and believes in doing things the right way. This is plainly shown by his manner of referring to my letter. (See brackets.)

We cannot all of us know everything, but we can all of us know something each of his or her line or department, and the conditions obtaining therein. It is the littles that make the muckle. Let each contribute their quota and join hands on the things that do matter, and leave the little details on which we may not now see eye to eye, to square themselves as we go along. No one agrees to anything that is palpably and evidently unfair. While some will say twice two are twenty-two, it does not make it so, especially when it is an accepted fact that twice two are four.

I am content to get on with the simple addition for a while, and await the long division.

I am inclined to think "Non-Unionist" had felonious intents in the direction of my hero of the smock frock. Did he want to get him "out of the way?" Fancy ever breathing ever so gently of a motor bike to a gentleman of that type who was actually a kickin' up 'is 'eels at an ordinary bike; and, worse still, to even dream that he would suggest such a thing himself! Apart from my old man, I also heard of an old lady who, when a tram service was opened, attended the ceremony, after being dragged there almost.

Kept declaring that it couldn't go. 'Ow could it? There wasn't anything to pull it. She understood that pole was where "the currants" come down. All the same, it didn't go. She said so, and didn't mind folks laughing either.

Eventually "the currants" were switched on, the car gained pace, folks shouted, so did Mrs. Moggeridge, at the top of her voice: "It'll never stop! It'll never stop!" But—it just did.

I am inclined to believe that the movement this time has come to stay. All those have to do who are really and genuinely interested in going ahead is to "switch the currants on." Folks sure to shout. Let 'em. If they get in the way, well, let 'em.

In things doubtful—Liberty.
In things essential—Unity.
In all things—Charity.

—I am, yours faithfully, Cavendo Tutus.

## DEPTH OF FOCUS.

To the Editors.

Gentlemen,—I have read with much interest the friendly comments on my work. As you say, there is, perhaps, no essential difference between the two methods of treating depth problems, but the system set forth by Mr. Debenham has, however, the advantage of leading to simple formulæ, whence the rule is derived allowing of rapid calculation of all the customary values of absolute focal distances.

I think it would be interesting to ascertain by systematic tests up to what point these formulæ are admissible. It must not be forgotten that their simplicity arises from the fact that in working them out we neglect diffraction, the influence of the grain, irradiation, as well as aberrations, which it is difficult completely to correct.

I have just been making some new experiments on the limiting diameter corresponding to $D = 11$ m. and $D_1 = 3.5$ m., not only by observing together enlargements produced with the same working diameter, but also the same enlargements for different values of these diameters, corresponding to one of the three distances. With the hook-pattern chart, the series of diameters observed was 4, 3.5, 3, 2.5, and 2 mm. For the extreme distances the image with 4 and 2 mm. appeared always the most out of focus, whilst one hesitates to say what is the difference in sharpness with the other images. But for the distance 5.31 m., the degrees of sharpness decrease in the same direction as the diameters decrease. It thus appears rational to adopt as diameter giving the best definition the value 3.5 mm. The value of H corresponding to $D = 3.5$ m., and $D_1 = 11$ m., or about 10 m., the working diameter 3.5 mm. would probably be suitable for any other pair of distances for which $H = 10$ m. It is easy to find these pairs by the rule. For example, $D = 5$ and $D_1$ = infinity, or $D = 2.5$ and $D_1 = 5$, etc.

R. Ellie.

Cavignac,
September 20, 1911.

To the Editors.

Gentlemen,—Allow me to point out that the note you append to my letter does not in any way show the rule for depth of focus which you associate with my name to be unsound. It is not unsound to ignore that with which one does not profess to deal, and the rule in question only deals with the amount of detail actually existing in the photograph, and does not go into the question as to how much or how little detail the individual photographer may desire to show in a print of any particular size. If, as you say, on p. 699, large plates and long focus lenses are generally used to secure more detail than would be visible in a small print—a proposition which is not borne out by inspection of large photographs commonly sent to exhibitions—it is certainly true on the other hand that small negatives are often taken with a view to subsequent enlargement, and the photographer requires to know the amount of detail actually rendered on the plate, so that he may judge of the ultimate effect. The rule applies to this so frequently occurring case, whereas the 1/100th of an inch system is hopelessly at fault.

Of the opinion of those who have the ability and inclination to go into the matter I am not at all afraid, whilst those who depend upon the statements of others can choose between the dicta of such authorities as Von Rohr, Dr. Scheffer, and Dr. Wandersleb on the one side, and your implied censure of them for having adopted a rule which you assert to be "crude and theoretically and practically unsound" on the other. W. E. Debenham.

## TANK DEVELOPMENT.

To the Editors.

Gentlemen,—As a mere amateur of an inquiring frame of mind, I have been much interested in the exploitation of the beauties of tank development for plates in recent numbers of your appreciated magazine. In America we are not wholly unfamiliar with such exploitations, and sometimes, viewing the whole matter together, we make due allowances for manufacturers' interests. But I do not notice in English photographic journals any great preponderance of advertisement by parties that happen to manufacture tanks, and the inference seems to be permissible that in England tanks may be considered wholly on their merits regardless of cashiers' balances.

The tank, if I have heard the gospel aright, is the most marvellous invention of modern days, etc.—[Passim.]

"Tank development for plates and films seems to have come to stay. It can no longer be considered in a questionable or experimental stage, since its efficiency, reliability, and time-saving qualities have been proved beyond a doubt."—[Riley, "B.J.," September 1, 1911.]

"That the tank method of development has proved its superiority over older methods in every respect is now an unquestioned fact."—[Chase, "B.J.," August 18, 1911.]

"Put your day's run of negatives into it, see that your solution is of proper temperature, after it is in the tank, that your chemicals are all dissolved, and that you reverse the tank regularly, and at the end of the normal time you will find that good under-exposures and over-exposures have been developed better—more truthfully—than you could possibly do it by hand."—[Claudy, "B.J.," July 21, 1911.]

Here we have the gist of the whole argument, and it stands forth in all its bald simplicity; the tank is the best, and, indeed, the only modern, up-to-date, etc., etc., system that any progressive and wide-awake, etc., etc., photographer can use with decent self-respect.

There is no need of any thought or reason. The experience is all in the tank. Just clap your negatives in the tank at 65 degrees F., using our chemicals, and you have the most perfect results under all circumstances, and vastly superior to results otherwise attained. You have no trouble; the bother is all left out; results in every case absolutely perfect.

Let us see how these claims are borne out. Let us quote the very words of these tank boomers:—

Says Claudy, "B.J.," p. 556:—

". . . . For under-exposed plates you should increase the tank time over that of normal development."

". . . . For over-exposed plates . . . you should give less than the normal time in tank—decrease normal development."

Says Chase, "B.J.," p. 625:—

"Exposures of white dresses on white grounds will require longer development. . . A portrait lit in the Rembrandt style requires about one minute less than the time to be given in good gradation."

Now, taking English in its usual signification, in a non-Pickwickian sense, it ought to be evident to the humblest intellect that the above claims of Messrs. Claudy and Chase are inconsistent with the subsequent qualifications by them above set forth.

And, applying the ordinary rules of logic, as taught in the schools, the whole case for the tank falls to the ground. We have their word for it that you must suit your development to varying cases by varying times of development. And the minute you do that the tank drops from its miraculous position to that of a covered tray, in which the photographer develops a plate according to circumstances. And any man who has sufficient intelligence to grasp the idea—set forth by Messrs. Claudy and Chase—that the time of development must vary according to circumstances, would naturally next ask: How much shall I know when to lengthen or shorten the time of development for each negative, and how shall I know when a negative actually is properly developed?

Says Mr. Chase, p. 625, one should develop seventeen minutes for Standard Royal plate, eighteen minutes for Gem, and twenty minutes for Marion's. White dresses on white grounds should be developed for ten or fifteen minutes longer.

In view of these instructions, what becomes of the boasted simplicity of the tank? Suppose I happen to have a Royal Standard plate and a Marion's plate, both to be developed. What shall I do? Split the difference of times when I have them in the tank? And suppose my white dress is not so very white, or that my ground is not so very light. Shall it be ten or fifteen minutes longer? Or doesn't it make any difference so long as you have them in the tank together? The tank settles all that, doesn't it? Isn't this begging the whole question?

It would seem as if our tank boomers, disinterested parties, of course, had made a serious mistake. What they should have done was to have stoutly maintained the miraculous character of that sheet-iron box, and let it rest at that. It is assumed to be a contrivance for the elimination of intelligence in developing negatives; temperature, 65; time, twenty minutes in all cases. Our friends were wise in dodging the temperature question, especially in summer weather, but it is safe to say that the assumption of intelligence, experience, and judgment, on the part of a tank operator, stultifies the theory of the tank, robs it of its miraculous character, and reduces it to the old covered tray system. E. L. C. Morse.

Chicago Camera Club, Chicago.
September 14, 1911.

[Our correspondent surely rushes to the opposite extreme in his denunciation of the tank method of development, and his condemnation in our judgment is as baseless as has been some advocacy of tank development. A true statement of the question is, roughly, as follows:—Professional portrait photographers whose exposure of their plates is practically correct find the tank method of advantage, because it saves them both time and working space, and enables them, in the case of most subjects, to instruct an assistant to develop for a certain time with a certain solution at a certain temperature. Among amateurs, whose exposures will often be greatly in error, the tank system may be legitimately attacked on the ground of prescribing one time for a mixed lot of plates, correctly, under- and over-exposed. But those who see a great deal of the amateur-beginner's work know his tendency to develop under-exposures for too long and over-exposures for a too short a time. Granted, that the tank method cannot ensure the best times of development of such wrong exposures, but in a large proportion of cases its mean time of development is more than a beginner could give to his over-exposures and less than he would give to his under-exposures. That, in a nutshell, may be said to be the secret of the success of the tank method in the hands of the ignorant. We cannot follow our correspondent or others who have written in a similar strain in their objections to a practised worker using his own experience to better the results of the tank method, pure and simple.—Eds. "B.J."]

## NEUTRAL SULPHITE.

To the Editors.

Gentlemen,—"Given away. Free sample doses of the one and only cure for"—*stained fingers*. The foregoing caught my eye on a druggist's advertisement, only the *italics* are my own, and it set me wondering how many really good things had been "given away" in the "British Journal of Photography." During the last year or so I have come in contact with a good many photographers, and in not a single case have I come across one who was using neutral sulphite. Why? It is now, I think, if my memory serves me right, just about five years since the "B.J." introduced to our notice this really wonderful compound. It was, I remember, a somewhat mysterious combination, for the formula could not at that time be stated with accuracy, but it was, for all that, a good thing, and I have used it ever since. Used in combination with pyrogallic acid and soda carbonate and sulphite, its great characteristic is its non-staining properties and brilliancy of result. Almost all the pyro developers in general use will give you stained negatives, and stained fingers too, except under very careful treatment; but the "neutral sulphite" does not seem to do so, at least not in my own case, perhaps because I am careful always to wash my fingers every time after touching the developer. It is a very simple thing to put your fingers under the tap, and in time it becomes such a habit that one never forgets to do so. Now for the formula:—

| | |
|---|---|
| Sulphite of soda | 6 oz. |
| Metabisulphite of potash | 1 oz. |
| Dissolve with hot water and make up to ... | 20 oz. |

This is a stock solution and will keep, so if you are using large quantities of developer, it would be just as easy to make up a Winchester at a time. Now, to make up your stock pyro, take:—

| | |
|---|---|
| Pyro | 1 oz. |
| Hydroquinone | 60 grs. |
| Bromide of potassium | 20 grs. |
| Neutral sulphite | 2 oz. |
| Water to make | 10 oz. |

To make up this solution, take the 2 oz., "neutral sulphite" and about 6 oz. boiling water, and add to other ingredients. Label this "Stock Pyro."

A.

| | |
|---|---|
| Stock pyro | 2 oz. |
| Water to make | 20 oz. |

This, in combination with the following soda solution, makes an excellent developer.

B.

| | |
|---|---|
| Soda carbonate | 10 oz. |
| Soda sulphite | 12 oz. |
| Water to | 100 oz. |

Use equal parts A and B.

I may here state that during the dark days and colder part of the year the bromide might be left out, and only used as required, and in summer even more "neutral sulphite" and bromide may be used than given above.

As to the soda solution "B," I have always found that an excess of sulphite gives better negatives than when using equal quantities. In combination with the use of this developer I would advise using the "Wellington" acid fixing bath.

I might add that for general work the small amount of bromide (20 gr. to 1 oz. of pyro) is quite sufficient, being just enough to keep your negative clear without undue retardation. And also for those who do not use a great amount of pyro this is a developer that will keep good for a long time, even when diluted as in "A."

Neutral sulphite is also excellent in developers for bromide prints. Here is one that has given me some lovely results:—

A.

| | |
|---|---|
| Metol | 60 grs. |
| Hydroquinone | 120 grs. |
| Bromide | 30 grs. |
| Neutral sulphite | 2 oz. |
| Water to make | 40 oz. |

Dissolve in hot water, same as in making up stock pyro.

B.

| | |
|---|---|
| Soda carbonate | 10 ozs. |
| Soda sulphite | 12 ozs. |
| Water to | 100 ozs. |

Same as for plates. Use equal parts A and B.

If the foregoing remarks will be the means of popularising the use of "neutral sulphite" I shall be very pleased, for it is, as I said before, "a good thing." Looking at the formula as it stands, it seems a lot of bother to make up, but it is not really so, and then what can be easier than measuring out your quantities from stock solutions? It is here that you actually save time. And, above all, one very important matter in developing is that your solutions are always the same strength.

HERBERT W. BIBBS.

# Answers to Correspondents.

⁂ *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPHS REGISTERED:

F. R. Jewry, St. George's Studio, 119, High Street, Deal, Kent. *Three photographs of Mr. T. W. Burgess, the Channel Swimmer.*

J. MacMahon, The Studio, 27, Academy Street, Inverness, Scotland. *Photograph, Group of Bishop Hay Centenary at Fort Augustus.*

A. H. Hendrey, 138, Lewisham High Road, New Cross, London, S.E. *Photograph of Electrical Toy "Dreamland."*

G. Littlewood, 432, Staniforth Road, Attercliffe, Sheffield. *Photograph of George Littlewood, Champion Runner and Walker of the World, with World's Belt and English Belt.*

W. A. Singleton, 55, Knowsley Street, Bolton. *Photograph group, Bolton Wanderers Football Club,* 1911 *and* 1912

STUDIO AND OTHERS.—In our next.

HALATION.—Do films produce halation?—P. M.

Certainly films are not proof against halation. They are less liable to the defect as the celluloid support is thinner than glass; but halation is also caused by spreading of light-action in the emulsion itself (irradiation), and films are no better than plates in this respect.

GELATINE RELIEF.—By what method can I get the highest possible relief in swelled gelatine, enabling me to make a plaster cast from same?—"ALTO RELIEVO."

The first condition is an extremely strong negative—perfectly clear glass in the shadows, and the highest lights almost opaque. Use Nelson No. 2 gelatine sensitising and printing as in the swelled gelatine process. Even so you will find that for a considerable relief it is necessary to help matters by scraping out the plaster cast by a hand method.

UTO BLEACH-OUT PAPER.—Could you inform me where I can obtain a printing paper on which Autochromes can be printed in colours? I believe there is such a paper made by Dr. Smith, F.I.C., and which is called "Utocolor" paper. If so, what is the price of it, and where can it be obtained?—H. OSWELL.

Since replying to several correspondents on this subject, it has come to our knowledge that Dr. J. H. Smith has quite recently established a firm, "Utocolor, Ltd.," at Garenne-Colombes, Paris, to manufacture an improved bleach-out paper. Our querist and the many others who have written us should apply to the address given above. The paper is sold in packets of 10, at the price in quarter-plate size of 2s. 6d. No free samples are available.

LENSES.—(1) Will you please let me know how I can best get a knowledge of lenses—suitable for portrait work, R.R. and anastigmat, etc.—the simplest publication? (2) I have got an old lens (for about 11 years), "No. 3567, Lerebours et Segretan à Paris." It once gave good results, but now give them quite flat. Is the maker any good?—INQUISITIVE.

(1) About the simplest manual is "Photographic Lenses," published by Messrs. R. and J. Beck, 68, Cornhill, E.C., price 1s. (2) The firm formerly issued lenses of good quality. The inferior results are probably due to parts of the metal mount wearing bright, or to scatter of light in the camera from some cause or

other. You are more likely to find the cause here than in the glasses of the lens.

Photographs of Stock.—Will you please give me an idea of what would be a fair price to charge for doing the undermentioned work? Taking 12 half-plate photographs of prize horses, cattle, etc., and supplying one half-plate print of each subject. The photographs were taken in the country, and the surroundings had all to be *blocked* out, leaving a plain white ground. They are required for making blocks.—Block.

If the prints were no better than that sent you cannot expect to charge a full rate. The horse is posed badly, and the blocking out very clumsily done. Presuming that the twelve subjects were photographed at one visit, and that the sample sent indicates the quality of the blocking out, we should say that £2 2s. for the twelve prints would be a fair price.

Retouching Autochromes.—(1) In the making of Autochrome portraits can anything be done in the way of retouching? (2) Can you tell me of whom I can get the plates on this side of the water? (3) Is the Autotype bibulous board sufficiently pure for use on P.O.P. or platinum prints?—H. W. Gauld (Manitoba).

(1) We have heard of one firm in London here regularly retouching its Autochrome portraits, but we do not know what method is used, presumably some fine knife treatment of the overlying silver image, followed by retouching with colours. (2) The plates are supplied in the United States by the Lumière Co., of Burlington. (3) The boards are issued strictly for carbon prints. We should advise you not to use them for silver or platinum work.

Australia.—Could you give me any information re the state of the photographic labour markets in Australia (as I thought of going out, preferably to Queensland), and the average rate of salaries? I am a first-class operator and retoucher, and have a really good all-round knowledge, i.e., enlarging and finishing in B. and W. and water-colour, also C.C. printing, bromide, etc., etc., am a good copyist, and can do sketch work, beside having a good business experience, and am competent to organise and manage. (2) Are there any Australian photographic publications for advertising?—Hopeful.

(1) Conditions are very much as here in regard to price-cutting, but we should say wages are somewhat better. (2) "Australian Photo. Journal," 386, George Street, Sydney, and "Australian Photo. Review," 379, George Street, Sydney.

Varnish.—Will you kindly let me know where I can obtain a "black" for coating clear glass, so that an announcement can be written clear on it for lantern projection, so that I will have white letters that will stand the heat of an arc lamp, as I have several of these to do shortly, and would much prefer to make my own.—Pict.

We believe you can obtain such a varnish from large dealers or from firms such as E. B. Fry, Victoria Avenue, Shipley, Yorks, which specialise in lantern supplies. But we have not been able to discover the preparation in a catalogue. A formula for a varnish of this kind was recently given: Asphalt, powdered, 50 parts; Venice turpentine, yellow, 10 to 12 parts; oil of turpentine, 15 parts; linseed varnish or oil, 15 parts. The first three are gently boiled together in an enamelled saucepan until asphalt dissolves; the linseed oil added in a thin stream, and then enough lamp-black to make the coating opaque when applied to glass.

Paper for Three-colour Collotypes.—I shall be much obliged if you will tell me a suitable paper to use with three-colour collotype printing, a paper that will dry to the original proportions and look good.—J. W. D.

The paper used for the three-colour collotypes sold by the Medici Society is a hand-made one of Italian manufacture. Probably Messrs. Whatman, Dickinson, Joynson, Spalding and Hodge, or other English paper-maker would supply you with either hand-made or machine-made paper suitable. Collotypes are printed dry so that there should not be any question of drying to the original proportions. All papers will alter in size under different conditions of moisture, so that it is essential in printing colour work, particularly collotype, in order to ensure register, that the conditions should be maintained the same throughout the entire time of printing, particularly as regards temperature and moisture in the printing-room.

Drying Negatives.—Can you kindly advise re the following? We use —— plates, and like them very much for getting good quality negatives, but oh! the time they take in drying is simply awful—from one evening until mid-day next day, and this beautiful weather, too. Can you advise anything that will make them quick in drying other than methylated spirit?—Weary of Waiting.

We advise you to transfer negatives from the washing tank to a bath 1 : 50 formaline for 10 minutes, then to wash for a further 5 or 10 minutes, and rack them in warm dry place, say, in a large box, provided with holes top and bottom, and with a small ring gas-burner placed below. We think your trouble is probably due to your placing plates too close together in racks. If you were to drive nails into a few large boards so that negatives would have the films freely exposed to the air, drying would be complete within an hour or two in a warm, well-ventilated room.

Enlarging.—1. Will you kindly inform me if you know of any way of softening the light in an incandescent gas enlarger (with condenser). I have a piece of ground glass in front of (and near) the light, but this does not stop even the lines of the retouching medium from printing. 2. Is there any reason why an enlargement made by artificial light, with a condenser, should be worse than one made by daylight?—H. E. Pearse.

1. Bad and scratchy retouching will show, whatever the enlarging arrangements. If you are using a good fine ground glass, such as is obtained by grinding with finest "Carborundum" powder, the only other suggestion we can make is to put the enlargement very slightly out of focus; or, better, use one of the "soft-focus" lenses as the objective of the enlarger. The Dallmeyer B lens set for diffused definition will give you this softness without obliterating detail. 3. No; none at all if the adjustments are properly made.

Sulphide Toning of Gaslight Prints.—I have toned a batch of prints on "Verotype" paper in the Edmunds' "Cubrome" thiomolybdate sepia tones. These prints, in the bleaching solution, almost disappeared (that is, the image, of course), and in order to get prints back to ordinary depth the toning was prolonged to about three times the usual length, as the action was very slow. After toning and rinsing in a 3 per cent. ammonia bath and washing, the prints still had a pinkish tinge, *vide* print enclosed, when dry. To get over this, I re-bleached one print and dried same, which improved the tone. I gave it fifteen minutes' wash after the re-bleaching. The query is: Will such a print be permanent, and would you advise me to re-bleach the remaining prints?—H. Tims.

Prints should be just as permanent when the process is repeated—which we judge is what you have done. But you should obtain quite satisfactory tones by the one series of operations. It may be prints were not completely freed from hypo. Have you applied to the makers of the "Thio" toner, Messrs. Edmund and Co., for assistance.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2683. Vol. LVIII. FRIDAY, OCTOBER 6, 1911. Price Twopence.

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## SUMMARY.

At the Royal Photographic Society on Tuesday evening last a number of useful points in connection with the equipment of the dark-room came up in the course of a discussion introduced by Mr. John H. Gear. The convenience of a faint general illumination in addition to a brighter lighting of the working bench, the merits and demerits of lead-lined and earthenware sinks, the importance of keeping the hypo bath in the sink and providing white light above the sink, were among the practical points dealt with by the speakers. (P. 767.)

In an article to be concluded next week, Mr. Harold Jeffreys discusses the methods for the sulphide toning of P.O.P. in regard to the satisfactory colour of the tone and the permanence of the result. (P. 759.)

Mr. H. E. Smith, the inventor of the thiomolybdate toner, points out as the probable cause of pinkish stain experienced on gaslight prints when sulphide- or thio-toned, the use of an unsafe light in the development of the prints. The thin deposit of silver is converted into a pinkish tinge in the toning process. (P. 770.)

A further modification of the Dixio stereoscope, invented by Professor L. Pigeon, figures under "Patent News." Professor Pigeon uses a special form of prism in place of a mirror. (P. 764.)

A report of the meeting held in Manchester on Friday last in connection with the proposed formation of a Union for Photographic Assistants will be found on page 763.

A number of further letters deal with the question of a Union. (P. 768.)

A note on formulæ for silvering mirrors will be found on page 758.

Further restrictions have been imposed in connection with the sale of chemicals. They relate to strong acids, ammonia, and salts of oxalic acid. (P. 757.)

The Arts and Crafts Photographic Exhibition, organised by Mr. Arthur C. Brookes, is to be held from May 3 to 11 next year at the Horticultural Hall, Westminster. (P. 757.)

"Colour Photography" Supplement.

The method of tentative development, using a quick-acting developer, such as metol, in conjunction with a second bath heavily restrained with bromide, is recommended for Autochrome work by a German contributor, Herr Ferdinand Leiber. (P. 57.)

Practical methods to be followed in taking photo-micrographs of screen-plates are given by a recent contributor to "Photographische Rundschau." (P. 60.)

Measurements of compensating light-filters, prepared according to the formulæ of von Hübl and others, have been published by M. A. Prilejaeff. (P. 58.)

## EX CATHEDRA.

**The 1912 Exhibition and Congress.** As a result of the duplication of trade exhibits at the exhibition of the Royal Photographic Society and at the Arts and Crafts exhibition last year, efforts have been made to discover a common basis on which these two enterprises might join forces, but we learn that the suggestion to the Royal Photographic Society to join in the Arts and Crafts exhibition to be held next year at the Horticultural Hall has been rejected by the Society on the ground that the period of the exhibition (eight days) is too short to obtain support from exhibitors accustomed to take part in an international exhibition. Thus the Arts and Crafts exhibition will be held at the Royal Horticultural Hall from May 3 to 11 next year, and we are informed that the Royal Photographic Society "will do nothing to counteract the attraction of this undertaking." While no official announcement is forthcoming, we believe that a third congress of the Professional Photographers Association will be held during the period of the exhibition, and that the Council of the P.P.A., with an adequate recognition of the success which has attended the two previous Congresses, will make arrangements for a programme of meetings and other fixtures in the interests of its members.

* * *

**Restrictions in the Sale of Chemicals.** The Pharmaceutical Society, in whom is vested, under the authority of the Government, the regulations of the sale of poisonous or dangerous substances, gives publicity to the new conditions which must be observed by retailers in the sale of mineral acids, oxalates, and ammonia. Since all these substances are in frequent use for photographic purposes, it behoves dealers and other retailers, whether registered as chemists and druggists or not, to see that they comply with the new regulations. In future sulphuric, nitric, and hydrochloric acids, as well as all soluble salts of oxalic acid, must be retailed in a box or other receptacle on which is marked the name of substance, the words "Poisonous—not to be taken," and the name and address of the seller. In default of these conditions being observed a penalty of £5 will be incurred, as will also be the case if any liquid substance required to be so labelled is delivered or sent out to a customer except in a bottle or other container rendered distinguishable by touch from ordinary bottles or containers. In the case of ammonia the regulations come into force after January 31, 1912, and will apply to all liquids containing more than five per cent. of ammonia.

* * *

**Shutter Speeds.** The paper by Mr. T. Smith, which appeared in our issues of September 15 and 22, describing the results of some shutter tests carried out at the National Physical Laboratory, is of special importance in view of the fact that the speeds of shutters forms a subject of frequent controversy. It is interesting to note that the highest duration of exposure reached with the focal-plane shutter was only .0017 second, which is considerably under the conventional 1-1000 that we are led to expect. Also the very low efficiency of the focal-plane shutter at high speeds is a matter to be noted. From the details it appears, generally speaking, that 1-500 is about the shortest duration of exposure we can expect with any shutter, and that such figures as 1-1000 or 1-2000 sec. can only be taken to apply to equivalent or efficient exposure, which is a different matter altogether. The between-lens shutter compares very favourably with the best focal-plane shutter, the difference between them being much less than might have been expected, and it is evident from the figures that a good between-lens shutter may be markedly superior to the average focal-plane shutter.

* * *

**Silvering Mirrors.** The paper by Heber D. Curtis on silvering mirrors, which we reprinted in our issues of August 25 and September 1 and 8, contained much valuable information on a subject that is of interest to many, though few people venture on silvering operations themselves. On paper all the methods may appear to be tricky and liable to mishaps, excepting in the hands of experts, but those who care to make practical tests will soon find that the process of silvering is not such a difficult operation as it seems to be. Absolute cleanliness of the glass surface is the chief secret of success, and if the first attempt is a failure, as it often is, a second attempt after renewed cleaning will probably succeed. Perhaps the simplest of the methods described by Mr. Curtis is the one known as Lundin's Method, which we have used with great success. The formula as given does not, however, seem to be quite correct, as it appears to contain far too much formaldehyde. We use only one-tenth the quantity given of this ingredient, and then find the process works excellently. Photographers should find this method of great value for renewing reflex mirrors, and if they follow the silvering with the varnishing process, also described by Mr. Curtis, the result should last a long time. Of course, the old mirror must be thoroughly cleaned before starting operations, and if it was originally varnished, spirit must be used to remove the varnish. A little strong nitric acid will speedily remove the old silver, and then the new silvering process can be begun. The used silvering solution is best thrown away immediately it is done with, as if allowed to stand for a long time a fulminating compound is thrown down which is highly explosive.

## SOME NOTES ON SULPHIDE TONING.

Some little time ago the sulphide toning of P.O.P. prints was the subject of sundry comments in the photographic press, but while its advantages were obvious, very few seemed to meet with any great success in carrying out the operation. This week we publish the first part of a paper on this subject by Mr. Harold Jeffries, B.Sc., in which some interesting experiments tending to elucidate the theory of sulphide toning with the hypo-alum bath are detailed. This appears to be the first time that the theory of this very empiric process has been carefully investigated, and by a process of elimination it has been made evident that the presence of trithionate or tetrathionate is the chief factor in the toning process in the case of P.O.P. prints. If this is so, it should be possible to work with a cleaner and far less objectionable mixture than the dirty compound of hypo and alum that generally does duty as a toning bath, and this very useful toning method should then become far more popular than it is at present. It appears, however, that the conditions which apply to the toning of P.O.P. will not have a similar effect with bromide prints, for Mr. Jeffries points out that the soluble compounds which tone a P.O.P. print containing silver chloride have no effect on a print containing silver alone; further investigation is therefore desirable to determine the conditions necessary for bromide toning, and it would be very advantageous if Mr. Jeffries or some other capable investigator would take up this matter. The hypo-alum method is undoubtedly the most valuable toning process for bromides that we possess, but it is a purely empiric one at present, and doubtless is capable of being put on a firmer scientific basis.

A letter by Mr. H. E. Smith, which also appears in our pages this week, deals incidentally with another point in connection with sulphide toning. He suggests that the pink veil sometimes seen on toned gaslight prints is after

---

## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

Among other new features in the forthcoming 1912 Almanac, now in an advanced state of preparation, are articles as follows:—

### Lantern-slide Making. By the Editor.

A complete practical guide to the making of lantern transparencies by reduction and contact, illustrated with special drawings of apparatus; processes of development for black and warm tones; warm tones by after-toning, and other methods of producing the best results.

### At Home Portraiture. By C. H. Hewitt, F.R.P.S.

Precise directions for indoor and outdoor portraiture without a studio. Illustrated with diagrams and art supplement plates, showing effects of good and bad lighting.

### Hints in Pictures.

A section entitled "How to Do It," helping the beginner to perform such operations as stripping negative films, mounting prints, etc. One hundred and twenty illustrations.

As in previous years, the edition will consist of 25,000 copies, and readers are asked to place an early order with their dealer or newsagent, as this issue, like its immediate predecessors, is certain to be sold out on publication. Advertisers who have not hitherto tested its business-bringing powers would do well to consider the fact that the volume is one which is at the elbow of every purchaser—for the purpose of ordering photographic goods—throughout the year.

### Final Notice to Advertisers.

Only seven days now remain before the advertisement pages must be finally closed for the press. All orders for announcements in the 1912 edition of the Almanac must be in our publishers' hands on Friday next, Oct. 13. The large size (over 1,000 pages) and edition (25,000 copies) of the Almanac, coupled with the making of the "Index to Goods Advertised," inserted in the volume as a guide to its contents, leave the publishers no option as to the date of going to press.

all due only to a form of fog arising from the use of modern metallic filament lamps, or of incandescent gas lamps of high actinic power. In other words, the user of gaslight papers is apt to forget that modern artificial lights are much more powerful than the older form of illuminants that we used a year or two ago, and so he unconsciously fogs his paper through omitting to take the extra precautions that are really necessary. This strikes us as an extremely likely suggestion, and it would be as well for all workers to bear it in mind. For our own part, we always deal with gaslight papers as we do with slow bromide paper, and handle it only in a bright yellow safe-light, which obviates all danger of fog, and is yet no inconvenience.

We note that Mr. Jeffries, in his article, states that the hypo-alum method has "the grave defect of giving only one good tone," and that he proceeds to investigate other methods capable of giving different tones. With bromide prints, as is well known, the hypo-alum bath gives what is practically only one tone, and this we are disposed to look upon, not as a grave defect, but rather as a material advantage. The fact that a reliable good tone can always be obtained is, we believe, the chief reason why this method is so generally adopted by trade printers. If an equally good tone could always be produced with P.O.P. prints, we should expect the process to speedily take the place of gold toning with all workers dealing with large numbers of prints.

# THE SULPHIDE TONING OF P.O.P.

In this article "sulphide toning" is taken to imply "any process that converts the silver or silver compounds in a P.O.P. image into silver sulphide." Thus gold toning is partially, but not entirely, sulphide toning.

The simplest of the sulphide toning methods is, of course, the use of sodium sulphide. If a plainly fixed print, whose image consists of silver and silver chloride, with a mere trace of sulphide, is immersed in a weak solution (about 1 in 400) of sodium sulphide, the silver chloride is gradually converted into sulphide, while the free silver is unaltered.

$$2AgCl + Na_2S = Ag_2S + 2NaCl$$

The colour changes from the orange-brown of the plainly fixed print to brown, purple-brown, and purple, and then slowly fades to a muddy yellow, which marks the final stage, when the image consists entirely of silver and silver sulphide.

The tones produced by the sulphide solution are quite good, but nevertheless the use of a plain sulphide has very great defects. It is highly malodorous, especially in such a weak solution as must be employed here, and of the whole group, ammonium sulphide is by far the worst. Also, all are too strongly alkaline, softening the film very much, and often producing blisters. Doubtless the hydrosulphide, $NaHS$, is less objectionable on this last account, but its smell is worse than ever, and also its toning action actually produces free sulphuretted hydrogen within the gelatine. This does no immediate harm, but certain unstable compounds are formed which, when kept for some time, break down, and the free sulphur thus produced sulphurets the remainder of the image, with disastrous results, since the yellow final tone (hereafter called the sulphide lake) is the product. The formation of these unstable compounds, or possibly colloidal solutions of sulphur with gelatine, is one of the most frequent causes of the fading of sulphide-toned prints.

Thus no simple sulphide is of much use. Other compounds, however, may be used instead for similar ends.

### Hypo Alum.

Some years ago there was a discussion in "Photography and Focus" on the use of a hypo-alum solution as a toning agent for P.O.P. It was this that suggested its use to me, and since then I have employed the method very widely with distinctly remarkable results.

My original solution was made up according to the formula:—

| | |
|---|---|
| Hypo | 3 ozs. |
| Alum | ½ oz. |
| Water to | 20 ozs. |

As this contained a large excess of hypo, I used it as a combined toning and fixing bath. Printing was carried to a slightly greater depth than usual, and the print was placed in the bath either with or without previous fixing. If the print is not previously washed, this treatment first turns the print to the orange-brown colour of plain fixation. The tone next becomes an excellent brown. The colour then begins to cool, and becomes purple-brown, purple, and fades to the yellow of the sulphide lake. Such a bath also has a hardening effect, so that prints toned in it can be glazed without further treatment. Thus the obvious advantages over gold toning are:—

1. There is no change in tone after removal from the toning bath.
2. Working is very simple, and expense is reduced almost to zero.

The disadvantages are:—

1. Only one tone is really good, this being the brown. A good purple is sometimes obtained, but cannot be relied on.
2. After the print is past the brown stage double toning commences, and the high lights almost immediately become yellow and muddy.

Further experiment showed that the quantity of alum in the bath is much too great. It should not exceed 1-200 of the weight of the solution. The double toning is delayed or prevented by raising the temperature of the bath to about thirty-five degrees C. The make of the paper does not seem to affect the results.

The first step in investigating the action of the solution was naturally to determine its composition. It was made up as follows:—

| | |
|---|---|
| Hypo | 60 gms. |
| Water | 400 ccs. |

This was warmed and shaken till the hypo was dissolved, and then two gms. of ammonium alum added. A white precipitate formed slowly, quarter of the whole was separated from the rest and filtered. The precipitate and filtrate were then examined separately.

With silver nitrate the filtrate gave a pale yellow precipitate, rapidly blackening. Now the thiosulphate, sulphite, and sulphate of silver are all white, consequently this yellow precipitate of great instability suggested the presence of one of the polythionates, probably $Na_2S_3O_6$ or $Na_2S_4O_6$. As the precipitate was not black from the start, sulphide must have been absent. Analysis showed that the aluminium had not all been precipitated, and that sulphite was absent. The precipitate contained aluminium, a sulphate, and sulphur. Consequently, some basic aluminium sulphate such as $Al_2SO_4(OH)_4\ (NH_4)_2SO_4$ might be precipitated.

Warming the filtrate gave a considerable white precipitate before reaching forty degrees. Boiling still left the solution acid to litmus and phenolphthalein, and neutral to methyl orange. Alum is neutral to methyl orange. This gives the explanation.

In the cold, alum acts only slowly on sodium thiosulphate, and unless one waits for a considerable time the action is incomplete. Boiling, however, causes the action to be rapidly completed. Thus we have the following facts:—

1. A basic sulphate of aluminium and milk of sulphur are precipitated.

2. The solution does not contain either sulphite or sulphurous acid, which is generally formed in the decomposition of a thiosulphate.

3. One of the polythionates, either trithionate or tetrathionate, is formed in solution.

These facts, with others obtained by more detailed analysis, are explained by the equations—

$$\begin{aligned}&(NH_4)_2Al_2(SO_4)_4 + 5Na_2S_2O_3 + 3H_2O\\ &\quad = 2Na_2S_3O_6 + (NH_4)_2SO_4 + 3Na_2SO_4 + 2Al(OH)_3 + 4S\\ &\quad \text{or } = 2Na_2S_4O_6 + \text{———————————} + 2S\\ &\text{and } 4Al(OH)_3 + (NH_4)_2Al_2(SO_4)_4 = 3Al_2SO_4(OH)_4\cdot(NH_4)_2SO_4\\ &\quad + 2(NH_4)_2SO_4\end{aligned}$$

The next step was to determine which of these substances produced the toning action. A hypo-alum solution was boiled till no further precipitate was produced and filtered. All the aluminium was thus removed. The solution thus obtained was raised to forty degrees, and was found to give exactly the same toning action as the usual hypo-alum bath. Owing to the absence of any hardening agent, the gelatine melted at about the purple stage.

Milk of sulphur suspended in hypo solution gave scarcely any action, although prolonged for half-an-hour.

Consequently the main action of the toner is due to the soluble compounds, that is, to the polythionates.

Some analysis showed that the orange-brown image consisted entirely, as far as could be detected, of silver and silver chloride. A very little sulphide was present at the brown stage, this amount gradually increasing till no chloride was left at the yellow state. The amount of silver remained practically unaltered.

Fixing in ammonia solution gave an ordinary silver and chloride lake of the usual density, but of a brilliant orange colour, suggesting that the hypo has a very slight toning action of its own.

A gaslight print bleached to silver chloride and placed in hypo-alum gave a very faint sulphide yellow, due to the fact that the hypo fixed out most of the chloride before the toning compounds were able to sulphuret it. A P.O.P. print bleached to silver chloride gave a similar result.

The soluble compounds had no action on a gaslight print or on a P.O.P. whose image had been entirely converted to silver.

Thus we see that:—

1. The main action of the toner is the conversion of silver chloride to silver sulphide by the soluble compounds in the solution.

2. The soluble portion does not affect the free silver in the least, while the suspended sulphur produces a negligible effect.

The next step was to identify the active salt in solution, which is already known to be either trithionate or tetrathionate.

A solution of the composition—

| | |
|---|---|
| Hypo | 15 gms. |
| Sodium trithionate | .8 gms. |
| Water to | 100 ccs. |

was found to have a toning action very similar to that of hypo-alum. The final yellow was produced in about one and a-half hours. No double toning was perceptible. A possible equation for the action is

$$2AgCl + 2Na_2S_2O_3 = Ag_2S + 2NaCl + Na_2S_3O_6.$$

The trithionate acts as a sort of catalyst, actually increasing in quantity during the reaction. It thus increased in quantity in proportion to the amount of the action, and consequently the amount of sulphuration was proportional to the amount of the deposit. Consequently double toning is impossible with trithionate unless it commences with the action.

A similar tetrathionate bath gave an action exactly identical with that of hypo-alum. The changes of colour took place at about the same speed, and double toning was given in the cold in the same way. The first action would be the formation of silver tetrathionate, which instantly decomposed, producing sulphide. The tetrathionate being regenerated in the process, the net result was that the whole of the toning was at the expense of the hypo, with the tetrathionate as a catalyst.

$$\left\{\begin{aligned}&Na_2S_4O_6 + 2AgCl = 2NaCl + Ag_2S_4O_6.\\ &Ag_2S_4O_6 + 2Na_2S_2O_3 = Na_2S_3O_6 + Na_2S_4O_6 + Ag_2S.\end{aligned}\right.$$
$$2AgCl + 2Na_2S_2O_3 = Na_2S_3O_6 + Ag_2S + 2NaCl.$$

Thus the general phenomena may be summarised as follows:—

The active agents are sodium thiosulphate and tetrathionate, the latter acting as a catalyst, and producing trithionate. The chloride present in the plainly fixed print is gradually converted into sulphide, and at first this produces a brown colour by optical interference, a layer of yellow sulphide being deposited on each particle of silver. As the action proceeds, this layer becomes deeper and deeper, and the results are next purple and then the colour gradually fades as the action becomes more and more complete, till the whole of the dark chloride lake is destroyed and the final product is a mixture of silver and silver sulphide. The silver is scarcely acted upon.

HAROLD JEFFREYS, B.Sc.

*(To be continued.)*

# THE EFFECT OF THE ALKALI IN PHOTOGRAPHIC DEVELOPMENT.

[The following is a translation made with some abridgment of a thesis describing an investigation carried out by M. Louis Bourgeois for the doctorate of science of the Lausanne University. The full text of the paper forms a volume of 116 pages, published by E. Lavanchy, Morges, Switzerland.—EDS. "B.J."]

## VI.

GOOD results were likewise obtained with pyrocatechin, though the densest deposits are not quite so dense or pure in colour as with adurol; they tend to brown. The formula employed was:—

| | |
|---|---|
| Sulphite anhydrous | 45 gms. |
| Pyrocatechin | 15 gms. |
| Water | 750 ccs. |

The details are perfectly preserved, even with the maximum quantity of alkali. The density is good, though decreasing somewhat as the alkali is increased. Fog is very slight, and lastly the alkali attacks the half-tones less than in the case of the hydroquinone developer.

The formula employed for eikonogen was:—

| | |
|---|---|
| Eikonogen | 15 gms. |
| Sulphite anhydrous | 30 gms. |
| Water | 1,000 ccs. |

This was found to give a multiplying factor of 9. Alkali, beyond a certain relatively small quantity, has little effect on the developer. The transparent portions are rendered slightly purer by increasing the carbonate, but the denser deposits scarcely change. Gradation of the half-tones is reduced to a certain degree, but less so than with hydroquinone. Fog, very slight : fine lines, attacked by the alkali.

The formula employed for metol was a modification of that of Lumière, namely :—

| | |
|---|---|
| Metol | 5 gms. |
| Sulphite anhydrous | 25 gms. |
| Water | 1000 ccs. |

The density of negatives developed with metol without or with carbonate is fairly close to the average. It is reduced as is also the opacity, but very slightly on increasing the alkali. A certain amount of halation was noticed towards the end of the series, but it is never very appreciable. The light half-tones are attacked on increasing the alkali beyond a certain quantity, but less so than with hydroquinone. Fog is almost always entirely absent, and altogether metol is seen to be an excellent developer for detail.[19] Its energy, which is considerable, is further increased by the addition of alkali. The Hauff formula was used for ortol, namely :—

| | |
|---|---|
| Ortol | 7.5 gms. |
| Sulphite anhydrous | 50 gms. |
| Potass. bisulphite | 3.5 gms. |
| Water | 1000 ccs. |

The plate developed in the solution containing only sulphite acquires a considerable deposit of silver, light brown in colour; the plate is pink by transmitted light and somewhat opalescent by reflected.[20] The addition of .2 gm. anhydrous carbonate gives a negative of great purity in the transparent portions and with the half-tones somewhat eaten away. With 2 gms. of carbonate the negative is excellent, and gradation good for the intermediate quantities from .8 to 1 gm. Increase of the alkali attacks the faint half-tones and also, to a small degree, the finest lines. Density falls off a little in inverse ratio to the proportion of carbonate. In short, with ortol, a very small quantity of alkali tends to lessen the value of the half-tones without leading to appreciable fog.

Diamidophenol (amidol) works, it is scarcely necessary to say, excellently without alkali, giving good gradation, clean transparent portions, and vigorous blacks. The plate developed without alkali (No. 90) is one of the best in the whole set of series. It is to be noted that the gradation of the half-tones is not so good as that obtained with pyro (No. 12). But there is no fog, and the finest lines do not show a trace of halation. The opacity, much greater than in the following plates (Nos. 75 to 86, which were developed with increasing proportions of alkali) is normal.

It is convenient to make a reduction in the quantity of sulphite, which latter appears to exert a somewhat marked action on diamidophenol. Increase of sulphite beyond a certain quantity reduces the density, tends to give a whitish deposit of silver, and to diminish the gradation in the lighter tones. The proportion used was increased

### TABLE V.—ADUROL AT TEMP. 17° C.

Formula :—Adurol, 10 gms. ; sulphite anhydrous, 40 gms. ; water, 800 ccs.
Alkali solution, 20 per cent. soda carbonate anhydrous.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 162 | nil | 45 min. | very good | 3 | dense yellowish black | good | none | good negative, but yellow stained, excellent detail |
| 163 | ·2 | 13 min. | much weaker | 10 | grey | very good | „ | detail not quite so good |
| 164 | ·4 | 7 min. | normal | 8 | black | good | slight | — |
| 165 | ·6 | 5 min. | „ | 7 | greyish black | very good | very slight | — |
| 166 | ·8 | 5 min. | „ | 7 | black, more opaque | „ | none | very good detail |
| 167 | 1·0 | 4 min. | „ | 7 | black | „ | „ | „ „ |
| 168 | 1·2 | 3 m. 50 s. | „ | 7 | „ | „ | „ | „ „ |
| 169 | 1·4 | 3 m. 40 s. | „ | 6 | „ | „ | „ | „ „ |
| 170 | 1·6 | 3 m. 30 s. | „ | 6 | „ | „ | less pronounced | high-lights much clearer, but detail somewhat lacking |
| 171 | 1·8 | 3 m. 10 s. | good, a little heavy | 3 | dense black | „ | „ | |
| 172 | 2·0 | 3 min. | normal | 4 | black | „ | „ | „ „ „ |

### TABLE VI.—PYROCATECHIN AT TEMP. 17° C.

Formula :—Pyrocatechin, 15 gms. ; sulphite, 45 gms. ; water, 750 ccs.
Alkali solution, 20 per cent. soda carbonate anhydrous.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 173 | nil | 4 hrs. | excellent | 2 | dense brownish black | good | brown, very slight | good detail |
| 174 | ·2 | 65 min. | „ | — | brownish black | — | — | plate destroyed by accident |
| 175 | ·4 | 20 min. | rather weak | 6 | „ | excellent | none | excellent negative, especially in gradation |
| 176 | ·6 | 11 min. | normal | 8 | greyish black | good | „ | detail not so good |
| 177 | ·8 | 10 min. | „ | 7 | „ | very good | „ | detail good |
| 178 | 1·0 | 8 m. 20 s. | „ | 6 | brownish black | „ | very slight | „ |
| 179 | 1·2 | 8 min. | „ | 6 | black | „ | none | „ |
| 180 | 1·4 | 7 m. 20 s. | „ | 6 | „ | „ | „ | detail very good |
| 181 | 1·6 | 6 m. 40 s. | „ | 6 | „ | „ | „ | „ „ |
| 182 | 1·8 | 5 m. 50 s. | „ | 6 | „ | „ | „ | „ „ |
| 183 | 2·0 | 4 m. 40 s. | „ | 7 | brownish black | „ | „ | „ „ |

---

[19] The most valuable property of metol appears to us to be the absolute purity of the high-lights. The quality of these are retained with a maximum quantity of alkali in presence of sulphite.

[20] Ortol gave pure whites and blacks which were almost always good and free from tendency to greyness.

up to 20 : 1, i.e., 100 gms. of anhydrous sulphite for 5 gms. of diamidophenol.

As regards the influence of the alkali, the use of carbonate immediately results in a very considerable reduction of density. Fog rapidly increases and the transparent portions are veiled over. Details are less well rendered and show halation towards the end of the series. Diamidophenol used in conjunction with an alkali acts extremely rapidly, evidently as the result of the neutralisation of the acid of the amidol by the alkali.

In reference to the use of amidol with an alkali Reeb has so used it, but in conjunction with sodium bisulphite, which converts the carbonate into practically neutral sulphite. According to Löbel

### TABLE VII.—EIKONOGEN, FACTOR 9.

Formula :—Eikonogen, 15 gms. ; sulphite, 30 gms. ; water, 1,000 ccs.
Alkali solution, 20 per cent. soda carbonate anhydrous.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks |
|---|---|---|---|---|---|---|---|---|
| 138 | nil | 13 min. | very heavy | 4 | perfectly opaque black | mean | rather intense | good detail |
| 139 | ·2 | 4 m. 30 s. | less intense | 6 | opaque black | better | considerable | ,, |
| 140 | ·4 | 4 min. | ,, | 6 | greyish black | middle tone weak | none | detail not so good |
| 141 | ·6 | 3 m. 40 s. | nearly normal | 6 | black | ,, | ,, | ,, ,, |
| 142 | ·8 | 3 m. 30 s. | normal | 5 | opaque black | ,, | considerable | ,, ,, |
| 143 | 1·0 | 3 m. 30 s. | ,, | 5 | ,, | ,, | none | half-tones gradually disappear |
| 144 | 1·2 | 3 m. 30 s. | ,, | 5 | black | ,, | slight | detail rather deficient |
| 145 | 1·4 | 3 m. 30 s. | ,, | 6 | ,, | middle tone gone | ,, | ,, ,, |
| 146 | 1·6 | 3 min. | good, but rather weak in the middle tones | 6 | greyish black | ,, | ,, | ,, ,, |
| 147 | 1·8 | 3 min. | normal | 6 | ,, | ,, | considerable | ,, ,, |
| 148 | 2·0 | 3 min. | ,, | 5 | ,, | ,, | slight | ,, ,, |
| 149 | 4·0 | 3 min. | ,, | 7 | ,, | ,, | ,, | ,, ,, |

### TABLE VIII.—METOL AT TEMP. 17° C.

Formula :—Metol, 5 gms.; sulphite, 25 gms.; water, 1,000 ccs. Alkali solution, 20 per cent. soda carbonate anhydrous.

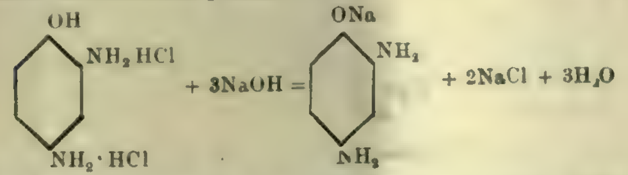
| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 74 | nil | 26 min. | normal | 6 | pure black | excellent | none | excellent detail, clean high-lights |
| 86 | ·2 | 10 min. | ,, | 7 | greyish black | ,, | ,, | ,, ,, ,, |
| 91 | ·4 | 4 m. 30 s. | ,, | 8 | black | ,, | ,, | ,, ,, ,, |
| 92 | ·6 | 2 m. 25 s. | ,, | 6 | ,, | good | ,, | — |
| 93 | ·8 | 2 m. 20 s. | ,, | 6 | ,, | ,, | ,, | — |
| 94 | 1·0 | 1 m. 50 s. | ,, | 6 | ,, | ,, | ,, | — |
| 95 | 1·2 | 1 m. 20 s. | ,, | 6 | ,, | ,, | ,, | — |
| 96 | 1·4 | 1 m. 10 s. | rather weak | 9 | greyish black | ,, | ,, | — |
| 97 | 1·6 | 1 min. | ,, | 9 | ,, | ,, | ,, | — |
| 98 | 1·8 | 55 sec. | ,, | 8 | ,, | ,, | very slight | detail slightly deficient |
| 99 | 2·0 | 55 sec. | ,, | 8 | ,, | not quite so good | none | ,, ,, |

### TABLE IX.—ORTOL AT 17° C.

Formula:—Ortol, 7·5 gms.; potass. metabisulphite, 3.5 gms.; sulphite, 50 gms.; water, 1,000 ccs.
Alkali solution, 20 per cent. soda carbonate anhydrous.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 100 | nil | 1 h. 46 m. | very good | 5 | brownish black | good | pink | thin negative, pinkish in colour and with good detail |
| 101 | ·2 | 40 min. | weaker | 10 | black | poor in the middle tones | none | the clearest high-lights |
| 102 | ·4 | 21 min. | weaker still | 6 | ,, | less in the middle tones | ,, | very good detail |
| 103 | ·6 | 9 min. | nearly normal | 7 | ,, | ,, | ,, | ,, ,, |
| 104 | ·8 | 8 min. | normal | 5 | ,, | ,, | slight | ,, ,, |
| 105 | 1·0 | 5 min. | ,, | 5 | ,, | ,, | none | ,, ,, |
| 106 | 1·2 | 4 min. | ,, | 6 | ,, | ,, | very slight | ,, ,, |
| 107 | 1·4 | 4 min. | rather weak | 8 | greyish black | ,, | none | ,, ,, |
| 108 | 1·6 | 4 min. | normal | 6 | ,, | ,, | ,, | detail slightly deficient |
| 109 | 1·8 | 4 min. | ,, | 6 | black | ,, | ,, | ,, ,, |
| 110 | 2·0 | 4 min. | ,, | 6 | ,, | ,, | ,, | ,, ,, |
| 111 | 4·0 | 4 min. | ,, | 5 | ,, | ,, | slight | ,, ,, |

amidol will develop in alkaline solution if the caustic alkali is not used in proportion greater than that necessary to transform the substance into an alkaline phenolate.



that is to say, 3 molecules of caustic soda may be used to 1 of diamidophenol hydrochloride. The use of caustic soda being outside the scope of the present inquiry, we have not confirmed this observation, but using soda carbonate most unsatisfactory results were obtained, an almost general fog being produced. The developing multiplying factor was found to vary greatly with even a small increase in the quantity of the alkali. Our experiments were made with the following Lumière formula :—

| | |
|---|---|
| Amidol | 5 gms. |
| Soda sulphite anhydrous | 30 gms. |
| Water | 1000 ccs. |

This is diluted with an equal volume of water at the time of use.

L. Bourgeois.

(*To be continued.*)

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## THE PROPOSED UNION FOR PHOTOGRAPHIC ASSISTANTS.

### Meeting in Manchester.

The movement for the formation of a national union for photographers' assistants was continued in Manchester last Friday night. A request made by Mr. Phil Jarrett, of Watford, to a local assistant was circulated as a result of which twenty-two assistants turned up, unanimously decided to form a branch for the Manchester district, and handed in for membership, in addition to their own names, those of a number of others who, for various reasons, could not attend the meeting that evening.

At the outset it was intimated that, unfortunately, Mr. Jarrett would be unable to be present, and accordingly the local organiser had requisitioned the services of Councillor Titt, of the General Workers' Union, to address them on the need for organisation; but Mr. Jarrett unexpectedly appeared as the meeting was in progress, and as the members were resolved to have a union of their own, Mr. Titt was not called upon.

Reference having been made to what has already appeared in the "British Journal of Photography" on the need for a union, a formal resolution was passed constituting those present as the nucleus of a Manchester branch, and a provisional committee of seven members was then selected to carry on the work of organisation in adjoining towns and districts, as well as in Manchester and Salford. A discussion was then raised as to what the policy of the union should be. Mr. Jarrett pointed out that the scheme outlined in the "British Journal of Photography" was more in the nature of a suggestion than anything else, and that only after the work of forming branches in the chief cities and towns of the country had been largely completed, could anything definite be done towards bettering the conditions under which assistants lived and worked. He was aware that the outlined scheme did not meet with the approval of some, but said that it embodied the ideas of many of his supporters; and when everybody could not be satisfied they must make it their aim to meet the wishes of the majority.

Asked whether the London committee had come to any decision on the question of policy, Mr. Jarrett said that two courses had been suggested—an idealistic one in which there would be examinations for all who wished to enter the union, and a bread-and-butter policy. Personally, he was in favour of the latter, because, before seeking ideals, they should seek to be well fed. (Hear, hear.) Their first object should be to get as many as possible of the trade to combine and work together in the interests of all. What they could not secure by organisation they must seek to obtain by legislation; but for that substantial funds were needed, and one of the suggestions he should press was the fixing of a much larger subscription than had been proposed elsewhere. It was not much use being numerically strong if they were financially weak. (Hear, hear.)

Several speakers advocated the institution of examinations, but the point was finally allowed to drop without a decision being arrived at. The question of limiting the union to photographers' assistants or of extending membership to workers in allied trades elicited varying views, but resulted in the unanimous adoption of a resolution in favour of the name, "National Society of Photographic Assistants."

Lastly, the meeting proceeded to consider, one by one, the objects and rules suggested in the "British Journal of Photography." In explanation of the need for a "definite grading of assistants in the photographic trade," Mr. Jarrett caused amusement by instancing an advertisement which read: "Operator-retoucher wanted. Improver would do." Each grade, he said, should know where their duties began and ended. (Hear, hear.) This definite grading, and the establishment of a minimum wage for each grade, were, without further comment, adopted as objects.

"The adjustment of working hours and obtaining a half-day holiday weekly" raised the longest debate. It was pointed out that the conditions varied so considerably between different districts in Manchester that, in the first place, it would be impracticable to seek to establish a holiday on any particular day for all; and, secondly, that it would be equally impracticable to establish the same working hours for all. Most of the trade in Manchester, one speaker asserted, was done between the hours of five and nine at night, but there was so much variation that photographers had to regulate their businesses according to the street or district they were in, with the result that operators passing from London to Manchester and expecting regular hours of nine a.m. to seven p.m., found themselves in unexpected positions.

Under such circumstances the meeting decided that it would be unwise to attempt to fix any hours or half-day holiday at present, and substituted "the establishment of a maximum number of hours per week." This also was adopted unanimously.

"The proper sanitation and ventilation of all work rooms provided by employers for employees" led to some discussion on the position of photographers' assistants in relation to the Factory Acts, but the lateness of the hour necessitated an adjournment of the meeting until 8.15 this (Friday) evening. The committee agreed to meet in the meantime.

As at the London meeting, a fund was raised to meet preliminary expenses, and, in response to a vote of thanks, Mr. Jarrett said that if other towns only responded in the same spirit as Manchester had done the union would make rapid progress. It had put more heart in him than anything which had previously happened.

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## Photo-Mechanical Notes.

### Employment in Photo-Engraving.

Anent your note in last issue on assistants in process, I may mention that we inserted an advertisement in your paper of September 22 for a good process man. We asked for age, reference, and salary. Out of the four replies received, two quoted salary, all omitted age, and only one gave a reference. The two who omitted salary were ruled out, although one seemed very suitable. The one who gave a reference and stated salary, £3, obtained the engagement. I may mention that we only acted on behalf of a customer, and he was prepared to go to £3 10s. to obtain the man he required. We don't think he has got him.

Let my advice be to those who answer advertisements to note carefully the requirements of the advertiser, and see that the letter sent fully answers those requirements. Very often the fact of a man having been with a first-class firm will turn the scale in his favour. This man, engaged at £3, is to receive an advance at the end of each two years of service of 8s., until he receives £4 4s.

S.

◆

Rotherham Exhibition.—The appointed judge, Mr. Godfrey Bingley, being indisposed, the selection and awards will be made by Mr. Alex. Keighley.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes.'*

The following applications for patents have been received between September 18 and September 23 :—

Colour-Photography.—No. 20,880. Colour photography. Aron Hamburger.

Printing Frames.—No. 21,065. Photographic printing frames. Arthur Eustace Marriott.

Cinematograph-Phonograph.—No. 20,825. Apparatus for establishing synchronism between cinematograph projection apparatus and talking machines. Jose Salvador Ropero.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Stereoscopes.—No. 27,379, 1910 (December, 1909).—The invention is an improvement in the stereoscope patent described in No. 23,591, 1905 ("B.J.," September 7, 1906, p. 712). The stereoscope is provided with a prism placed on an opaque panel adapted to be placed on a flat sheet, at a right angle thereto, the prism being provided with a sheath to stop outside rays.

The apparent superposition of the two proofs is produced by reflection, by a prism *a* of triangular cross-section. The prism is supported by a flat panel *b*, the plane of which is at right angle to that containing the two proofs.

The panel is not only used for supporting the prism, but also prevents the right eye from seeing the left hand proof, and *vice-versa;* it also determines the correct position of the proofs.

If the proofs are separate, they are pressed against the bottom portion of this panel. If they are fixed or printed on a single sheet it is sufficient to arrange the straight line forming the bottom edge of the panel, against the lateral margin of one of the proofs in order to get the proper position.

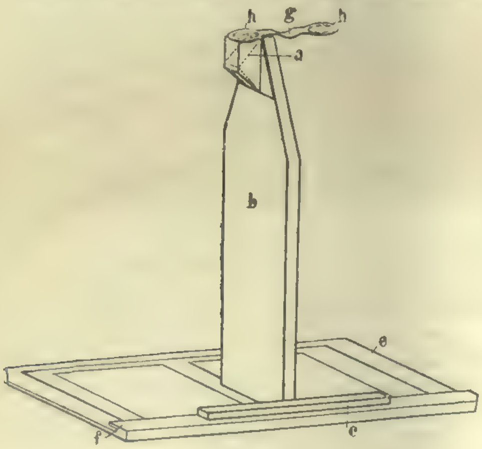


Fig. 1.

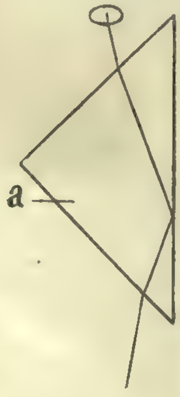


Fig. 2.

As a simple panel could not remain in stable equilibrium if it alone were placed on the plane of the proofs, the panel is combined with a cross-piece for completing its equilibrium.

Fig. 1 shows a rectilinear bar *c* arranged at a right angle to the bisecting panel *b* and secured to the bottom portion of the panel to keep it in equilibrium. It is advisable that the eye situated above the prism should see only the proof and nothing more. If special precautions are not taken, the eye in question will get, as a result of various reflections or refractions, rays coming from different directions in space, which rays will affect clear vision of the proof.

Fig. 2 shows the path of the useful rays. Figs. 3 to 5 show the path followed by various undesirable rays from the regions whence they start, to the pupil of the eye. These figures also show in dotted lines the regions of space where screens are to be placed in order to intercept the undesirable rays. The opaque panel *b*, carrying the prism, eliminates certain of these undesirable rays, as shown in Fig. 3. For eliminating the others (Figs. 4 and 5) a sheath or casing *d*, forming a screen (Fig. 6), is arranged round the prism. When the eye is looking into the interior of the sheath it can see the image intended to be seen, and the image in question is given the proper position in its ordinary direction owing to the reflection. The same image is not, however, directly visible to the eye. In the same way, brilliant objects situated round the stereoscope remain invisible even by reflection on the faces of the prism, owing to existence of the sheath *d*.

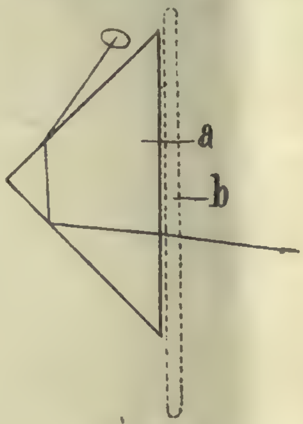


Fig. 3.

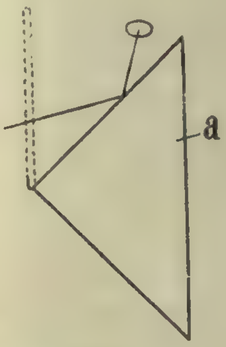


Fig. 4.

The parts hereinbefore described, namely, the reflecting prism *a*, the sheath *d* surrounding the prism, finally the opaque panel *b* and the transverse part keeping it in equilibrium, constitute the essential parts of the stereoscope.

With the parts in question a board *e* (Fig. 1) can be also usefully combined, intended to support both the proofs and the stereoscope placed on them. This board is provided on least one of its sides with a flange or ledge *f* to register the proofs, and the stereoscope be pressed against it in order to obtain the best possible arrangement. This board can also carry projecting points penetrating into holes made in the stereograph. The proper position of the points is then obtained owing to registration on their perforations, and as regards the stereoscope by bringing its base line against the blunt points.

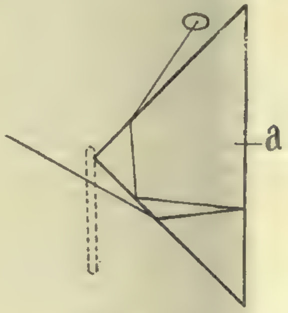


Fig. 5.

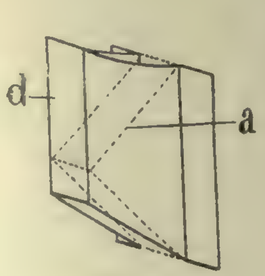


Fig 6.

When the above mentioned board is used it is not necessary to have a table. Moreover, the edges of the board form, beyond the proofs and their margins, a background which conceals to a certain extent the surrounding articles, which is a favourable condition for examining the proofs. This board can be either opaque or transparent, and, in the latter case, it can be used for examining monochrome or polychrome transparencies. To that end, an opaque rigid or folding cover or casing is used to produce darkness in the region between the eyes and the two proofs.

If it is desired to indicate to the observer the proper position of one or both eyes there is placed above the stereoscope a part *g* provided with opening *h*. This part, which is similar to the frame of a pair of spectacles, can be provided with glasses or can be without them. It can be either rigidly secured to the stereoscope or pivoted to it.—Leon Pigeon, 3, Rue Millotet, Dijon, France.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

COLOUR PHOTOGRAPHY.—No. 20,251. Colour photography and printing.—Baugé, Dumez, and De Seauve.

## New Trade Names.

COUNTESS (DESIGN).—No. 335,693. Cameras for photographic purposes. Charles William Casswell, Hampden House, Kingsway, London, W.C., importer of cameras. August 15, 1911.

FERROBIT.—No. 335,839. Chemical substances used in manufactures, photography, or philosophical research and anti-corrosives. Colthurst and Harding, Mansion House Chambers, 11, Queen Victoria Street, paint, colour, and varnish manufacturers. August 24, 1911.

## New Books.

"The Photographic Annual," 1911-12. Edited by Arthur D. Godbold. London: George Routledge and Sons, Ltd. 2s. net.

A number of new features are introduced into the latest edition of this annual. The opening pages are devoted to a series of short articles on practical topics. Among these are "Aerial Photography," by A. G. Field; "Flower Photography," by J. H. Crabtree; "Night Photography," by W. L. F. Wastell; "Oil and Bromoil," by H. C. Pepper; and "Home Portraiture," by the Editor. Particulars are given of classes in photography, of newly published photographic books, and of sets of lantern slides and lectures to be obtained from railway companies and through the various photographic federations. Some forty pages are devoted to a directory of photographic exhibitors, stating, in many instances, the exhibitions at which pictures have been hung, and also the subject or process in which the exhibitor specialises. Such a list as this will doubtless be of value to organisers of photographic exhibitions. The remainder of the volume includes the working instructions for the various commercial plates and papers and a series of formulæ in the several negative-making and printing methods, such as have appeared since the inception of the publication as "The Figures, Facts, and Formulæ of Photography." Probably the most valuable of these are the prescriptions and tables connected with the various photo-mechanical reproduction processes, for assistance in the compilation of which acknowledgment is made to Mr. A. J. Newton.

## New Materials, &c.

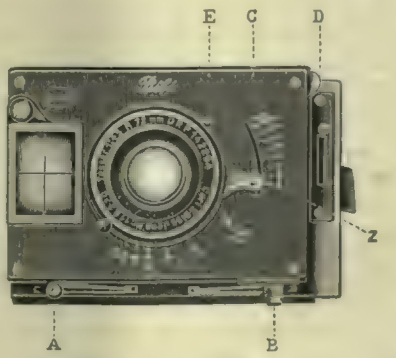
"SUBSTRALENE."—Under this name a preparation has just been placed upon the market by the Vanguard Manufacturing Co., Maidenhead, by which plain glass can be rapidly given a coating which allows of announcements, drawings, etc., being readily made upon it with ordinary pencil or pen and ink. The preparation is a bluish liquid, which is flowed over the glass as in varnishing a plate, and the excess drained off, leaving a colourless film which dries within a few seconds. We find that glass plates so prepared readily take ordinary blue-black or red writing fluid without any tendency to "running." The preparation is so readily applied that it should be of considerable service to lanternists, cinematograph showmen, and similar workers, for the ready production of announcement and title slides, whilst teachers and lecturers employing the lantern for class work should likewise be able to turn it to good advantage in the making of diagrams or tables of facts for lantern projection. Like the many other products of the Vanguard Co., prepared under the superintendence of Mr. Ethelbert Henry, "Substralene" may be obtained from photographic dealers or direct from the company. The price is 1s. per bottle, sufficient for a very large number of lantern-plates.

INK FOR GLASS.—The Vanguard Company also send us a special preparation of black ink with which titles and diagrams can be inscribed with an ordinary steel pen on glass without previous preparation. We find that the ink so used gives an extremely intense black line and does not "run." For particularly fine work the ink may be used on plates prepared with the company's newly introduced "Substralene." The ink is supplied at 1s. per bottle, and, in addition to its use for lantern work, is a useful preparation in the dark-room for rapidly writing labels on bottles to be used for a time only for a given solution.

## New Apparatus, &c.

**The "Bebe" Pocket Camera. Sold by Carl Zeiss, 13 and 14, Great Castle Street, London, W.**

Reduction of the hand camera to the smallest dimensions has become an accomplished fact within the past year or two—a fulfilment of the prophecy uttered many years ago by the late Piazzi Smythe, who, we believe, was the first to dwell upon the efficiency of a lens of large aperture and short focus for hand-camera work. Such a lens, however, is of little service unless it is united with precise construction and extreme rigidity in the camera. To attain these two qualities, and at the same time produce an instrument of the folding type, has engaged the attention of camera mechanicians of late. In no instrument has this been accomplished with greater success than in the new "Bébé" pocket camera, which Messrs. Carl Zeiss are just introducing into this country, fitted with their *f*/4.5 "Tessar" of focal length 7½ cm. (= practically 3 inches). The size of plate which this camera accommodates is one which is now a kind of standard for such pocket instrument, namely, 6 x 4½ cm., providing a picture on the plate, which measures almost exactly 1½ x 2¼ inches, or a shade over this. When folded, the dimensions of the camera are under 3¾ x 2¾ x 1¾ inches, but within this small space the makers have provided a full range of movements for the adjustment of focus, speed of shutter, and diaphragm of lens. Focussing is done by turning a lever, which lies between the front of the camera and a thin metal chamber on the outside of this, carrying lens, shutter, and finder. The focussing movement, which is akin to that of an ordinary focussing mount, allows of objects being obtained sharp up to 3 feet from the camera. On the lens-front being moved in to the full by the use of this lever, the lens is set at focus for infinity. This is a practical convenience since, owing to the great depth of a lens of such short focus as 3 inches, the camera will most generally be used with the focus set at infinity.



The shutter speeds, from ½ to 1-100 second, are obtained simply by turning a pointer along the scale; alteration in speed may, of course, be done whilst the shutter is set. Setting is done very rapidly, simply by moving a metal knob about a third of the way along the top of the camera front; the knob returns of itself, and pressure on a metal stud then makes the exposure. This stud may be shifted about ⅛-inch, so as to cover the figure M (indicating instantaneous exposures). and then gives exposure of the bulb type, the lens remaining open as long as the release is kept pressed down. The makers provide a useful screw cap for the release, which protects the latter from accidental damage when the camera is not in use. The scale of the lens diaphragms, from *f*/4.5 to *f*/36, is conveniently arranged on the camera front, which likewise carries the direct vision-finder, a sighting-hole for which is mounted on the back of the instrument.

The back of the camera is made to take either single metal dark-slides, film pack adapter, or changing box, a light, but substantially made, carrier being used for the dark-slides, and also for the ground-glass focussing screen. The carrier is instantly locked in place by a small bolt, but is as instantly removable when film pack or changing box is to be used. With the exception of the bellows, the "Bébé" is constructed throughout of light metal, and weighs with the ground-glass screen in place, 14 ozs. The front is supported on four hinged struts, which hold it in position with the utmost rigidity.

Our own preference in hand-camera work is for a changing box, and we are, therefore, glad to find that the makers fit the "Bébé" with one which, like the camera, is made throughout of metal, and is most certain and efficient in action. It consists of an inner chamber of light metal, carrying one dozen plates in sheaths, the changing being effected simply by drawing out this reservoir and replacing it. This removes the exposed plate from the top of the pile and transfers it to the bottom, an indicator on the back showing the number of plates exposed. By setting a screw head to an arrow mark on the drawer of the box the act of pulling out the drawer, or, rather, we should say the act of returning it, covers the plates with a thin opaque shutter of flexible metal, whilst by moving the screw head a shade further in the same direction, the reservoir is locked, and cannot be drawn out except by turning back the screw head. The changing box can thus be used with the greatest readiness, and the operation of covering the plates before detaching it from the camera is one which occupies only a second or two, and does not involve the user in the worry of a loose removable shutter. The box, which holds twelve plates or cut films in sheaths, measures under 3¾ x 2¼ x 1½, so that even if the camera be carried, as it most conveniently is, with the changing box attached, the whole bulk of the "Bébé" is less in thickness than 3 inches and in length than 4¼ inches. Our own preference would be to carry the instrument in a sling case, which would take it in this form, and the user could then obtain it ready for service simply by pulling out the front on to its four metal struts. Those who prefer dark-slides, however, will find the "Bébé" of such slight dimensions that they can readily carry it in a side pocket.

We have nothing but the highest praise for the strong and scientific construction of this apparatus, which is evidently made with every regard to securing to the full the qualities of the well-known *f*/4.5 Zeiss "Tessar." As a camera for the holiday tour it is ideal, for it dispenses with half of the movements which are necessary in the ordinary way for hand-camera work, whilst if it is desired to use it upon a stand a strong bush allows of it being so fixed and of focussing being done upon the ground-glass screen. Complete with its objective, six single metal slides and stout leather sling case, the price of the "Bébé" is £10 10s. The changing box, which, as we have said, is emphatically our own preference as a means of carrying plates, is sold at an extra cost of £2 15s.

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The Westminster Photographic Exchange, 119, Victoria Street, S.W., and 111, Oxford Street, W., advise us that they have recently amended their hours of business, which are now as follows :—Weekdays, 9 to 6.30; Saturdays, 9 to 2. As these hours do not agree with those in the Company's published literature, our readers are begged to make a note of the alteration.

## CATALOGUES AND TRADE NOTICES.

Trapp and Munch Papers.—A descriptive price list, containing also working directions for the various papers, reaches us from the firm of Trapp and Münch, Friedberg, Hesse, Germany. In it, leading German portrait photographers, such as Dührkoop, Kosel, Perscheid, and others, write of their constant use of the T. and M. products.

Countess Cameras.—Mr. C. W. Gasswell, of Hampden House, Kingsway, London, W.C., sends us an illustrated twenty-four page list of these highly portable cameras, for which he is the agent in Great Britain and the Colonies. The cameras include folding, pocket instruments of the smallest size, as well as those for quarter, postcard, and half-plate, and are issued with a variety of lenses and shutters.

How Can I Enlarge?—A full price-list, issued under this title by Messrs. W. Butcher and Sons, Farringdon Avenue, London, E.C., details the many patterns of enlarging lantern and camera, easels and illuminants, for the coming season. It contains also some ten pages of useful notes on the making of enlargements. Those who wish to acquaint themselves with the extremely moderate prices at which enlarging apparatus is now supplied, should write to Messrs. Butcher for a copy, which will be sent free on receipt of a postcard. Dealers will find that a few of these handbooks placed upon their counters will form a useful stimulus of the sale of enlarging appliances.

Reproductions of Works of Art.—The catalogue of the Medici Society, Ltd., 7, Grafton Street, London, W., reaches our table, together with a few examples of the excellent reproductions of Old Masters which are issued by this firm at moderate prices. We hear much nowadays of the interest which photographers should take in art, but how many evidences of it do we see in photographic studios? Instead of covering every available inch of wall space with specimens of their own work, photographers would be well advised to make use of a few of these charming Medici reproductions in their reception-rooms. They might choose, for example, Hoppner's "Countess of Oxford," the price of which is 15s., or Gainsborough's "Duchess of Devonshire," issued by the Medici Society at 25s. The catalogue, containing half-tone reproductions of a large number of the works of Italian, English, Flemish, and French and German artists, will give them ample scope for selection, and incidentally will teach them a good deal about the value of simple backgrounds. The list fully specifies the sizes and process of the reproductions, and of frames suitable for them, and may be had on application to the Society at the above address.

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# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, October 6.

Cowlairs Co-operative Camera Club. Reduction and Intensification.

### Saturday, October 7.

Sheffield Photographic Society. "A Loon in London." W. L. F. Wastell.

### Monday, October 9.

Dewsbury Photographic Society. "Beyond the Estérels." Chas. B. Howdill.
City of London and Cripplegate Photographic Society. "Marine Photography." F. J. Mortimer.
Leeds Camera Club. "Ozobrome: What Can be Done with it." W. H. Womersley.
Bowes Park and District Photographic Society. "Agfa Flashlight Photography." E. E. Hill.
Bradford Photographic Society. "Lantern-Slide Making." W. H. Reed.
South London Photographic Society. Lantern Slide Competition.
Swansea Camera Club. Autotype Carbon Demonstration.

### Tuesday, October 10.

*Royal Photographic Society. Annual Address by the President. Presentation of Medals.
Birmingham Photographic Society. "Monastic Life in the Middle Ages." Harold Baker.
Leeds Photographic Society. Social Evening, President's Address.
Sheffield Photographic Society. "Retouching." John Way.
Halifax Camera Club. With the Club Enlarger. The Members.

### Wednesday, October 11.

Sale Photographic Society. "Exposure." J. Pilkington.
North Middlesex Photographic Society. "Autochromes and Flashlight." Talamon Bernard.
West Surrey Photographic Society. "Negative Making." Chapman Jones.
Croydon Camera Club. "Bromide Printing." J. M. Sellors.
Partick Camera Club. "A New Printing Process."

Leicester and Leicestershire Photographic Society. Autotype Carbon Demonstration.

THURSDAY, OCTOBER 12.

Liverpool Amateur Photographic Association. "Home Portraiture."
London and Provincial Photographic Association. "London Streets by Night and Day." A. H. Blake.
Handsworth Photographic Society. "Some Thoughts on Our English Cathedrals." Wm. A. Clark.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, October 3, Lord Redesdale in the chair.

A discussion on the fitting up of the dark-room was opened by Mr. John H. Gear, who described his own personal preferences in the way of dark-room accommodation, and showed photographs of his own dark-room fitted in the manner described. When arranging an ordinary room for development work, said Mr. Gear, the best place for the sink was behind the door, so that stray light coming under or around the door did not fall directly on developing dishes. It was of great advantage to block up the window in such a way that full daylight could be admitted when required. A black blind running in frames was a convenient arrangement, but a very efficient plan was to make a screen or compo. board stiffened with battens in one side, edged to felt to make a light-tight joint with the window frame, and held in place by two bolts on each side, one at the bottom and one at the middle.

The ventilation of the dark-room was frequently entirely ignored. Air was admitted, most readily, by a row of holes in the bottom of the door covered by a strip of blackened wood, fixed at an angle so as to exclude light. An outlet for air was best provided in the upper part of the room, and could be very conveniently done by arranging a long rectangular box along the top of the window frame, the compo. shutter, as above described, terminating in the box so as to leave a passage of air over its upper edge. The speaker favoured a lead-lined sink, not earthenware; the latter was disadvantageous, in that it easily allowed of measures or negatives being broken if they fell upon it. A lead-lined sink should have the lead bossed in, not soldered, and should be of large size, 8 or 9 feet in length, 2 feet in width, and from 6 to 8 inches deep. The water supply was most conveniently obtained from a swing tap, but such taps would soon leak under the ordinary water-pressure, though by arranging a tank, giving 6 or 8 feet of water-pressure, they would remain intact for years.

The convenient illumination of the sink was an important point. Mr. Gear advocated an upright partition (about half way along the sink), in which was mounted the dark-room lantern, with a window each way, so that a brighter light might be used on one part of the sink compared with that employed for development. In addition, it was a great advantage to place a bright orange light near the ceiling of the room, screening the working bench from it by means of a board fixed immediately below the lamp. This gave a convenient, though faint, general illumination of the room, and made it much more comfortable to work in. Mr. Gear strongly condemned the placing of the hypo bath *under* the sink. That position meant scattering hypo on the floor every time a plate was removed from the bath. In making a safe-light for ordinary (non-colour sensitive) plates he first soaked (fixed, washed, and dried dry-plates), one in a solution of flavazine and the other in erythrosine, binding the two together with a piece of blotting-paper between. To test the safety of filters he placed a sensitive plate 3 feet from the lamp and gave it a series of exposures of 15, 30, and 45 seconds. If it showed no fog with 30 seconds' exposure he thought it might be adopted with safety. For panchromatic plates he found the "Virida" Lumière screens excellent. For the light at the top of the room he used a liquid filter, consisting of a saturated solution of potass bichromate, containing some eosine and a little ammonia. This was used of thickness about three-quarters of an inch, and behind a 16 candle-power lamp. Mr. Gear referred briefly to developers, and stated that the standard solution which he kept at hand was pyro soda, made up as follows:—

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|---|---|---|
| A. | Pyro | 1 oz. |
| | Citric acid | 50 grs. |
| | Soda sulphite | 6 ozs. |
| | Water | 19¼ ozs. |
| B. | Potass bromide | 1 oz. |
| | Water | 9 ozs. 1 dr. |
| C. | Soda carbonate, cryst. | 5 ozs. |
| | Water | 20 ozs. |

The B and C solutions would keep indefinitely, and so would the pyro stock solution if the sulphite was rinsed with water to free it from sulphate before weighing out, and if it was kept in small stoppered bottles, completely filled. To make the developer: A, 40 minims; B, 5 minims; C, 40 minims; water, 1 oz.

Mr. Gear, in drawing attention to other photographs of his dark-room, pointed out the convenience of an electric heating plate for quickly drying negatives when the latter were urgently wanted, or when the utmost sharpness of detail was required, as in negatives containing fine lines. A drying cupboard was a further great convenience, whilst for warming the dark-room he had found that the "Omega" gas-stove was light-tight and did not require a flue for carrying away the products of combustion. Mr. Gear also showed the enlarging arrangements employed by himself, in which two arcs, placed before a large white screen, were used for the illumination (by reflection) of the negative or transparency.

In the subsequent discussion Mr. W. B. Ferguson contested the utility of a large sink. He had had one about 5 x 2 ft. 6 in., and found that the dark-room was always damp, causing negatives to dry very slowly. With a smaller sink, about 18 inches square, he avoided this trouble, and when he wanted to develop large plates or prints he placed a big shallow lead-lined tray on the sink and stood this away when it was not required. He preferred an earthenware sink, because it was unaffected by acids, and he could tell when it was clean; he also found that a lead sink, if used with hot water, was liable to become uneven. He adopted the plan of laying a sheet of lead on the porcelain sink, and so avoided the breakage of measures, etc.

Dr. Mees mentioned the convenient method of placing a printing frame at the correct distances from the source of light. He made a right-angled piece to hold the frame, fitted it with a couple of pegs projecting from the base downwards, and at stated intervals bored holes in the bench into which the pegs fitted. He strongly condemned placing the hypo bath anywhere but in the sink. Also, there should be a white light over every sink, so that the worker was bound to hold the negative wet from the fixing bath over the sink when examining it.

Mr. Chapman Jones objected to the porcelain sink, because it was never flat. He preferred a shallow sink, not deeper than 3½ inches, as it did not inconvenience the arms. In place of a wooden rack on the sink he used pieces of compo. pipe, bent into V-shape, which he laid in the sink to form a grid; these provided a flat surface for dishes, and did not warp in use. For ordinary plates he found a green safe-light the most comfortable in use, and, he thought, giving a greater degree of illumination for the same degree of safety, though Dr. Mees, in an ejaculation, declared that measurements showed this not to be the case.

Mr. McIntosh showed photographs illustrating how he caused the gas burner of his dark-room lamp to ventilate the dark-room. A length of stove piping from the top of the lamp was led into a larger pipe communicating with the outside of the room. The draught of warm air thus sucked out the air of the dark-room through the open space where the smaller pipe entered the larger.

Mr. Drinkwater Butt advocated a ventilator of the Boyle type, which provided a more energetic removal of the air from the room. In some dark-rooms, which he had equipped, he provided troughs heated by a small gas flame, in which the stock of developers could be kept at a constant temperature. He advocated the method of labelling bottles in which a ground surface was provided on the bottle, by means of a sand-blast, so that the contents could be written in pencil and the inscription rubbed out readily when the bottle was used for a fresh purpose.

The President, in referring to the useful discussion which had followed the paper, offered the thanks of the society to Mr. Gear, and with this the proceedings terminated.

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LYCEUM CLUB PHOTOGRAPHIC CIRCLE.—On September 27, Mr. Alfred Lyddon, of the London Polytechnic, inaugurated the autumn and winter series of lectures by giving a most interesting and instructive demonstration on "Some new methods of improving photographs from the artist's point of view." All the members and their guests were most keenly interested, and warmly thanked Mr. Lyddon for all the trouble he took to explain these new methods. The whole process was clearly and minutely demonstrated.

# Commercial & Legal Intelligence.

## NEW COMPANIES REGISTERED.

Houghtons (India), Ltd.—This company has been registered with a capital of £10,000 in £1 shares. Objects: To carry on the business of manufacturers and dealers in photographic appliances, chemicals, lenses, materials, etc. First directors, E. W. Houghton, F. M. Isaacs, and T. W. Spink. Each member holding 1,000 ordinary shares may appoint a director. Remuneration, £50 each per annum. Registered office, 88-9, High Holborn, W.C. Private company.

Ideal Studios, Ltd.—This company has been registered in Edinburgh with a capital of £500 in £1 shares (400 preference). Objects: To acquire and carry on the business of Henry Coates, photographer, Perth. First directors, Henry Coates and Wm. B. McCallum. Registered office, 10, Scott Street, Perth. Private company.

J. and R. Couper, Ltd.—This company has been registered in Edinburgh with a capital of £2,000, in £1 shares. Objects: To carry on the business of photographers. Registered office, 108, Hope Street, Glasgow. Private company.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## THE PROPOSED UNION OF PHOTOGRAPHIC ASSISTANTS.

To the Editors.

Gentlemen,—Although I had not intended to join in this discussion, I was at the meeting, and cannot allow Mr. Goodyer's letter to pass without very strong comment. That the number turning up was small matters little; I could give instances of movements appealing to a much vaster public which produced smaller results, proportionately, *at first*, and whether or not this union can achieve what it desires, nothing but good could result from discussions among assistants. My impression of those who were present was that they were the "right stuff"—men with a serious object in view.

Mr. Goodyer has nothing to suggest but the bad old rule of "Every man for himself." He has shown us that he has reached a happy condition by an unusually fortunate series of circumstances, aided, no doubt, by some native ability and the above rule. I would suggest to him that he should make the experiment of imagining that he had never met this firm that was willing to train him in his business while paying him a good wage, and that he was one of the class that he wishes would "discontinue." Oh, yes, it's easy enough to discontinue; but what then? What would Mr. Goodyer have them turn to? What line could he take up under the circumstances suggested? I repeat, let him make the experiment and actually try to obtain a situation of some sort.

Further, is it not the "discontinuers" from other trades that form one of our greatest obstacles? This suggestion of Mr. Goodyer's is not in the slightest degree Utopian, as he thinks; it is retrograde. The thing to aim at is a proper training at the start.

Now, I find it difficult to come to the more serious point of my letter without verging on the personal, which is so objectionable, but I cannot help it. Mr. Goodyer appears not satisfied with the space accorded to him in your columns, but thinks himself, a master photographer, entitled to attend uninvited a meeting convened for assistants, and, by not announcing himself, to pose as an assistant and to join in the discussion and vote (or abstain from voting). Having done this, he does not scruple to publish facts (not quite accurately) about a meeting which was of the nature of a private committee. He then retreats behind a wall, impenetrable but through your columns, by saying that he will not trouble you again.

If Mr. Goodyer has the feelings that he professes towards the others in the business, I put it to him that such conduct as he has shown is not calculated to improve relations between masters and men, but that he is quite eligible for membership of the P.P.A., in which he would find ample scope for improvements in many directions; or perhaps he considers the principle of "*Sauve qui peut*" the best for masters as well as for the men.

I will conclude by saying that my feelings of indignation on reading Mr. Goodyer's letter were so strong that I thought it advisable to wait two days before writing my comments upon it.—Yours faithfully, Play Fair.

P.S.—My anonymity is not for the benefit of Mr. Goodyer, and you are at liberty to send him my name and address should he wish.

To the Editors.

Gentlemen,—Whether the time is ripe or not for the formation of a union for the photographic assistants is a question which they themselves will have to decide. As to its desirability, there is, to my mind, no question, but if such a union is brought into being I trust that it will be comprehensive enough in its constitution to enable those operators who are engaged as press photographers to become members. I, who have for a number of years eked out a precarious living in that branch, should only be too glad to make one. That there is need for organisation in our ranks is being made more and more manifest by the ever-growing tendency amongst some newspaper proprietors and others to cut prices, which in too many cases are already too meagre. As your columns are open for the discussion of this important question, I hope that other press photographers will take advantage of the opportunity now offered them in ventilating their ideas thereon.

Finally, to my thinking, one thing is most essential. Should the scheme come to fruition, the union should not be run on the lines of the Institute of Journalists, but should be a real trades union, affiliated to the Trades Union Congress and General Federation of Trades Unions, with the strength and solidity which such an alliance carries with it. I am certain that success would then crown the efforts of the organisers.—I remain, Yours, etc., A. Lamb.

To the Editors.

Gentlemen,—Apropos the correspondence on the Photographers Assistants' Union, I suggest that if they gave the same attention to the union as they do to the work, the union will last about three weeks.—Yours faithfully,

An Employer of a Large Number of Assistants.

October 2, 1911.

To the Editors.

Gentlemen,—Now that Mr. Goodyer has had his say with regard to the union, perhaps he will grant me the right of reply, which, I think, I am entitled to. For this purpose I will take him from the beginning. Now, Mr. Goodyer's first objection to me is that I am not serious, because I wrote an advertisement which did not meet with his approval. Well, all I can say is, I feel sorry for him, sorry that he was born into this world without a sense of humour. My advertisement was written and sent off as an investment to gain supporters to my appeal, and, regardless of how it was worded, I have got to ask myself, "Did it pay?" The answer is, Yes; it was two shillings well invested. I suppose he would have written it in a stereotyped manner, and then have wondered that he got no replies. That is not my way. I believe in doing things in an unusual manner, getting from the "beaten track," as it were. Next, Mr. G. wants an "influential" person to take it up. Well, I will go one further than "Cavendo Tutus," and suggest that King George V. be approached, with the idea of getting him for our first president. If you really want someone to kow-tow to, you may as well have someone worth having. I am not a believer in tin gods, and if I want information or help from a man, I care not who he is, I am going to him. Now, as regards the remarks re the London meeting, I think Mr. G. ought to have a talk with an official of a trade union, who would quickly tell him that the procedure, as taken at that meeting, was the correct one. I do not know a great deal of union matters. I am only in the learning stage; but Mr. Goodyer, with his seriousness of mind and business ability, appears to know a great deal less. And please do not mislead people by trying to make the meeting room appear smaller than it was. It was guaranteed by the Eustace Miles Company to hold fifty, and I certainly did not expect that there would be a larger number present than that. I have not been down here long, but I think I have the Londoners pretty well weighed up. I suppose Mr. G. thinks that I ought to have taken the Albert Hall, but if I had done so would he have helped towards the expenses? I have an idea that he would not; but there, one never knows. Of course, being on "his own," it is very nice for him to be able to indulge in Utopian ideas. I had similar ones at one time, but high ideals and fine sentiments do not fill your stomach when you are hungry, and as an assistant I have got to look at the bread and butter side of the question. Of what use are artistic abilities when there is no market for them? It is the man who can "hustle" who is wanted to-day, not the man who indulges in Utopian day-dreams.

I will not upset Mr. G. by giving the opinion of the Manchester supporters re himself. But if he could spare the time and money to attend one of their general meetings and announce who he is, I think I can guarantee him a warm evening.—Yours truly,

PHIL JARRETT.

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To the Editors.

Gentlemen,—With reference to the suggested union for photographic assistants, I certainly wish Mr. Jarrett every success in the proposition he is up against. Whilst writing I may say a few things which might be of interest to some of our assistants.

In Eastern and Western Canada to-day we have the underpaid assistant, but invariably you find he is a man of theoretical experience, and has just enough practical experience to carry him through, and I think it is reasonable that an employer gets sore when he keeps on coming in contact with this class of assistant.

Photographers are up against it in Canada. They are not all millionaires, and unless a man knows his work and can produce results he is of no use to any studio in the Dominion of Canada, and the same applies to the British Isles, or, in fact, any country.

Results are what the employers want. They do not want us as ornaments, as a great many assistants are apt to imagine. Employers in Canada treat assistants well, and are always ready to help the assistant, either in experimenting or carrying out any suggestions. If you think you can teach your employer something, by all means teach him, but be sure you know what you are spouting about, or you may be in the wrong. They are all willing to adopt a good plan.

I am not an employer myself, but I am a satisfied assistant, willing to help brother assistants to the best of my advantage. Before capping this letter I want to say I have had close on eight years' experience in the business, and am one of the numerous Lafayette boys who are holding good positions in Canada and the rest of the colonies, and before coming to Canada I always stuck up for a high price—and got it. So my advice to some of you complaining assistants is: get a hustle on, wake up and learn something about the business, then command a wage, and if you do not succeed by practical experience you've got to show me.

I hold a man who can produce results is the man the employer wants, and is willing to pay for.

Finally, I say the union is all right, but how are you going to classify the assistants, such as the stickyback man, press photographer, commercial photographer, and portrait man? Also, how are you going to arrange the wage question?

Will you take the commercial assistant's wage as a standard, as I think he is about the highest paid man in the business?—I now conclude, yours faithfully,

GEORGE CHAS. REIDY.

Toronto, Ontario, Canada.

September 25, 1911.

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To the Editors.

Gentlemen,—Could any of your readers give any idea as to why previous attempts to form an assistants' union failed to gain support? Before endorsing any scheme it seems to me necessary to consider the relative merits of two alternatives.

First, an ordinary trades union or friendly society trying to fix a scale of wages. This, for a trade of small businesses in which the labour of master-men forms no inconsiderable part. I may add that the gravest problem of existing friendly societies is the increase of sick claims, and that a small society, with widely scattered membership, is not in the best position to resist imposition. The subscription must needs be fairly high at the best of times. Sick pay of only 10s. a week could hardly be secured for less than £1 a year. Conditions generally do not favour the establishment of new friendly societies. The second alternative, and one to which I incline, is a society with as wide a membership as possible, and as low a subscription as possible, say, 5s., or even 2s. 6d., a year, giving no immediate benefit except legal assistance, waiving the provident side and wage standard—at any rate for a time—and concentrating on the necessity of obtaining direct government action by legislation to regulate the now unlimited admission of young workers into photography as a profession, and to establish a standard of efficiency, both for them and existing assistants, by the proper use of educational facilities.

It may seem ambitious, but it is the only real hope for all concerned in professional photography—make it a profession!

I propose to show briefly why this step is necessary, and why it is by no means impossible to attain. Photographers get hold of this one basic fact. Low wages, long hours, unhealthy conditions, Sunday labour, unfair competition, ruinous price-cutting. None of these are possible except with an unlimited supply of semi-efficient and consequently cheap labour. Photography is by no means a trade with unlimited powers of expansion, like, let us say, engineering; but the odd thing is, the general public thinks it is. Photography is not a trade of high wages, and never really can be; but, again, they think otherwise. I should like to be able to show them the number of businesses who paid only one employee £2 a week ten years ago, and then, again, the number to-day. Some of us who are sadder, and therefore wiser, having good reason, know; but still this strange delusion of parents and guardians goes on.

Two, and even three, apprentices and learners are still taken by many businesses, although a limit of one youth, male or female, to every business would give a rather more than ample supply of what adult labour is ultimately required. The technical classes still merrily turn out their quota, not perhaps quite so numerous as in their early days, but still more than enough. They cannot, by their nature, reach the bulk of assistants, and, unlike other trade classes, they are not strictly limited to those employed in the trade. So good work is marred, made a source of harm, and will be until professional photography takes over its own technical education, as it ought to.

Quite the latest in this connection is the L.C.C. Day School of Photography, which turns out girls with two years' thorough training in all the usual branches, and asks for situations for them, at not less than 10s. a week. Why? When did the famine cry for female labour go up? Interested Londoners might ask their councillors.

I do not say that any of these "ways in" are, within their obvious limitations, bad in themselves. We want them all, in their proper places. I would even add one more to them—a really good correspondence course, which, supplementing his practical everyday work, would be really invaluable to the average photographer.

No, none of these ways are bad. It is the blind, indiscriminate, almost reckless, way in which they are allowed to pour the good, bad, and indifferent in almost overwhelming numbers into our unfortunate trade. That is our case against them.

Photography is a congested trade; all the way through that is the trouble. For the assistant this means a trade of boy and girl labour out of all proportion. For any of them there is little hope for the future except boy and girl wages.

This waste of good human material is enormous. I will venture the statement that not one-half of those who take up photography as a living can remain in it. Many of them come from a fairly well-to-do class. For these a change can be made advantageous, but there are numbers who remain, as well as numbers of those who have to go, for whom the consequences can only mean failure, if not actual tragedy. If only one-third of these aspirants remained, the trade would probably be by no means understaffed.

It may be urged that these economic conditions are not peculiar to photography. That is so. My answer is that, here at least, there are ways and means of correcting it quite open to any government to apply without in the least committing it to any 'isms to which as politicians they might conceivably object. And also, that in no other skilled trade are these conditions so acute and far reaching. In photography all round, things have almost reached breaking point.

Successive Government reports on industrial conditions have all unanimously endorsed my main contention—the evils of "blind alley" occupations for youths. Our state is even worse. We have a "blind alley" occupation masquerading as a skilled trade. Most of us have even paid for the privilege of entering it. So many Government efforts have been made towards better technical education, lessening the hours of labour, and giving it healthier conditions, also working towards the abolition of unnecessary Sunday labour, that I need do no more than mention them. They are all matters that intimately concern the improvement of the photographic assistant and his trade in particular.

The thing to do now is to unite into as large an organisation as possible, and plainly tell the Government of the day what we want and why we want it. It is up to us now to make the next move. On all our points Government has already given their general approval. Our need is the greatest for giving them particular effect; we have therefore the greatest right to ask. Trade Boards for special purposes in certain trades already exist. We are a small trade, and it would need no gigantic effort of legislation to right our wrongs. Moreover, we are seeking not merely to protect photographers, but likewise to prevent a great waste of human effort on the part of the general public, with its almost inevitable disillusionment. We want to protect them.

From what direction is opposition likely to come? The amateur? There is no need to interfere with him or him with us. Frankly, most of them are out to make a somewhat expensive hobby pay its way. The wish is father of the thought, as a rule. There is an ignorant and terribly conceited type of amateur that can be excessively irritating, for it is the sort of ignorance that is too clever to learn, and, unfortunately, this is the type the average professional sees most of and forms his opinions on. There is only one cure for him. He sometimes comes into the trade altogether "to make his fortune."

I am of the opinion that the amateur as a whole takes very little business away from the capable professional, and never can. A few exceptional amateurs certainly do become successful professionals, but their numbers will always be small. It is on their exceptional artistic gifts and training, on which they invariably make good. Professional photography can do with this sort of intruder and make them welcome.

The dealer? There is a widely current opinion that the cheapest cutting trade uses enormous quantities of plates and paper. Any reputable wholesale house with a name will smile. This class of trade uses "sweated" plates, and only one, or a fraction, to each sitter. It prints on "straw" paper. Ask your favourite maker if he coats on straw paper stock, and he will tell you things about cheap bromide paper that will open your eyes. Most emphatically he does not make it. That trade is no good to him.

Now, to sum up, this must be largely an assistants' movement. The main demand must come from them. But there is nothing to prevent sympathetic employers joining them as honorary members. Better still, the P.P.A. might also make its own move on parallel lines. It would even be quite possible to arrange a joint deputation to Government to ask for all these vital things, and the moral effect would be greatly enhanced, for in photography the interests of both employer and assistant are closer than most of them imagine. One word of warning. The employers must make no attempt to fix a scale of prices. Photography is a trade of many prices, and there is an honest, cheap trade to be done. As with the assistants' wage-scale, let the improved economic conditions settle it in the future. These things make for complications and bickerings. Once establish honest conditions of working, and honest wages and prices must infallibly come from them.

In conclusion, let me say that I write this in no spirit of opposition to Mr. Phil Jarrett. He has given us the lead, and I for one will back him up if he will show us what is possible. What I am afraid of is that the constitution he submits, good as it is in many respects, falls in the main into the error that has caused failure in all previous attempts. It is based on too close a study of trades unionism rather than the peculiar conditions of photography itself. We want to get this thing right this time. That is my reason for intervening.

Just one word for your Bognor correspondent. He takes the old individual view that there is always room at the top. Right enough, but for how many? General standards do count for something, and I would ask him to recognise them and make his half-truth into a whole. "You cannot breed an Imperial race on gin and kippers," neither can you breed a race of artistic photographers on 25s. a week.—Yours sincerely, T. W. P.

51, Ashleigh Road, Mortlake, S.W.
September 25, 1911.

## THIOMOLYBDATE TONING OF GASLIGHT PRINTS.

To the Editors.

Gentlemen,—May I say a word or two regarding the query of your correspondent last week about sulphide toning?

If the prints, after bleaching, took an unusual time to tone to ordinary depth, I think it very likely that, as you suggest, they were not completely freed from hypo. It is a great mistake to think, as I cannot help fearing some workers do, that when bromide or gaslight prints are going to be sepia-toned, it is not so important to wash as thoroughly after fixing as would be necessary for, say, a P.O.P. print.

As regards your correspondent's further procedure, however, I have an uneasy feeling that he did not re-tone the print after rebleaching. Of course, he may have entirely repeated the process, as you not unnaturally assume, but yet his words, "pinkish tinge," have brought to my mind one or two other queries of a somewhat similar nature received here in the past. Other makers of toners no doubt get such queries also, though, in their case, I expect the complaint is likely to be that the tone is apt to be too yellowish a brown. I am glad to say that since this (the "Cubrome" thiomolybdate) toner has been on the market, now some four years, very few complaints have been received.

I suggest that the cause of your correspondent's trouble is to be looked for in the actinic value of the light that he is using. I have made and toned prints on the Verotype paper, and once I got the exposure right, got both good prints and good tones. This paper I found to be perhaps a little more sensitive to light than some brands of gas-light papers. This, however, I considered at the time, and still hold, to be an advantage, since it allows of quick work, and the paper is not so sensitive as to give trouble in this respect. In fact, I should venture the opinion that the paper was all right and the chemicals not to blame, but that the light worked by was too much of a good thing. It was very usefully pointed out a short time back that competition in the metal filament lamp and incandescent mantle trades had caused these lights now to be of so high an actinic value that more care should be taken in gas-light printing than used to be necessary when the old fish-tail burner and the early filament lamps predominated. I now believe that this explains the occasional "pinkish tinge" trouble, as well as the probable production of innumerable flat over-exposed prints.

The "pinkish tinge" I expect, if the truth be known, is nothing more than a slight veil of silver, sepia-toned, and is caused by incautious exposure to the light while placing paper in the frames, etc. Or the negative may be of the soft "portrait" type, and the prints having perhaps been made in a machine, it was not possible to place a sheet of tissue paper between the negative and the light. Even with a modern mantle, I have found it at times difficult to get pure high-lights without the sheet of tissue to diffuse the light, and metal filament lamps are still more penetrating in their rays.

It is a fact that a very finely separated deposit of silver, when toned with the thiomolybdate toner, tends to take a pinkish tinge, while if the sulphiding agent be sodium sulphide, the veil takes a yellowish tone, the effects being the visual ones of two different tones of brown particles very widely spread.

Some years ago I mentioned in an article that a good many solutions would re-halogenise the sulphided image, and Mr. Welborne Piper, and you yourselves, Gentlemen, went still further, and showed that the list of these reagents might be increased.

Luckily for the permanence of sepia-toned bromides, these chemicals are not commonly met with in the air outside their proper places—bottles and toning dishes. But, to come back to your correspondent's query, a ferricyanide-bromide bleacher, for one thing, will go far in this respect, and as your correspondent placed the once sulphided print in the bleacher again, he doubtless found that the "pinkish tinge" largely disappeared. In fact, he simply bleached or re-halogenised it. If he had completed the process, and placed the print in the sulphiding bath a second time, I expect that the "pinkish tinge" would have been once more in evidence, for the silver deposit is still there, though not in so visible a state.

Your correspondent now asks if the re-bleached print will be permanent. I am assuming, of course, that he did not complete the process; and if by permanent he insists that it must not change in tone in the slightest, then I fear that the answer is that it is not permanent. It would be safe enough were it re-toned (as well as having been re-bleached), but then, as I say, the pinkish tinge would probably reappear. The print will probably never change much, and there will be no fading such as is seen in old silver prints sometimes; yet, as silver bromide and ferrocyanide will darken on exposure to light and gas fumes, a slight change of tone is to be expected in this case. The trouble doubtless lay in the high-lights, and I suggest that he gives the prints a short immersion in a very weak Farmer's reducer after rinsing off the developer. The high-lights will be clear then, and there will be no almost invisible veil of silver to take a "pinkish tinge." A simpler remedy, if I am right, will be to cover his light with a piece of canary tissue, or try a piece of tissue paper to diffuse the light as it falls on the printing frame.

If he has no ferricyanide on hand to make up the Farmer's reducer, he might add some of the bleaching solution to some freshly made hypo. Doubtless that would answer, and as Mr. Piper, I think, has shown, when this reducer contains bromide it has other advantages.

As regards the general permanence of bromides toned with the "Cubrome" thiomolybdate toner, perhaps I may be allowed to say that a short time back we were pleased to receive an unsolicited testimonial from a professional photographer, which bears very exactly on this point; his words were: "I may say that what I have done with the toner have stood the test well, having two seasons' sun on them, and damp seasons also."

It would seem that the testimony of a practical worker, given in this spontaneous manner, is worth more than a great deal of photo-chemical argument, for after all we do not yet know nearly enough of what really goes on in the prints, the reactions of silver salts in gelatine appearing to differ greatly from those that the same compounds exhibit in a test tube with distilled water.

After all that has been written on the subject, we may surely, it seems to me, sum up sulphide toning as being a permanent and reliable process if carried out properly. But the sulphiding should be thorough and there must be no silver haloids left in the print to become affected by sunlight or gas fumes. — I am, Gentlemen, Yours, etc. HARRY E. SMITH.

Edmund and Co., 1A, Ezra Street,
Columbia Road. E.
September 30, 1911.

### TANK DEVELOPMENT.

To the Editors.

Gentlemen,—The thanks of all "bread and butter" photographers are due to Mr. Morse, of Chicago, for his letter on this subject, and to you, Gentlemen, for publishing it on page 754 of your last week's issue. Your comment upon the letter is good in its way, and I do not propose to deal with it. I wish simply to support Mr. Morse. I might say, however, that if all makers of developing tanks would reprint your excellent comment and issue it with their instructions, no one would be disappointed with the system, and no harm would be done. As things stand now, some tanks are claimed to do the impossible, and I for one look upon some of them as a delusion and a snare for the man who has to get the best result and earn his living by so doing.

I am perfectly willing to admit that if one uses the same brand of plate throughout, exposes correctly, and develops for the proper time, a tank will do the work equal to a dish, but even then I cannot imagine any photographer, to whom every negative is a matter of £ s. d., risking his exposures by developing them in what may be termed a blindfold manner in a tank, when visual development by the dish system is possible. I look upon tank development as a lazy man's method, and those who use the system and who get failures richly deserve them.

From what I can gather the tank system is the most strongly recommended to those who return from holidays with a large batch of exposed plates; but surely such people are the very last who should use a tank, because of the differences of subjects and exposures. Very often such workers cannot obtain their favourite plate when touring, and brands of plates vary considerably in their treatment, but makers of tanks are slow to admit it. The excellent development table issued with Azol ought to open everyone's eyes to the danger of developing in a blindfold manner. We learn from the table that, say, a Wellington "Landscape" plate needs 12½ minutes in a 1 : 100 solution at a temperature of 65 deg. Fahr., but an Edwards "Empire" would need 65 minutes in the very same solution. A Barnet "Medium Ortho" would need 18 minutes, a Marion "Portrait" 30 minutes, and a Paget XXX 45 minutes.

It may be argued that professionals always use the same plate and give the correct exposure. Even if this be granted, a slight error in temperature will lead them astray when working blindfold. Take, for example, the well-known Marion "Portrait" plate named above as requiring 30 minutes at 65 deg., it would need an extra 13 minutes if the developer happened to be ten degrees colder, or a total time of 25 minutes if the temperature was 70 deg.

Thus it will be seen that several factors govern the work of securing a properly developed negative from a correctly exposed plate, and I am of opinion, after considerable experience, that it is better to see what one is getting in a dish when one's living depends upon the results, rather than to place the exposures in a tank and leave the rest to luck. In conclusion, let me strongly recommend the attention of readers to Mr. Morse's letter and your very sensible comment in case they have been overlooked.

GODFREY WILSON.

# Answers to Correspondents.

**PHOTOGRAPH REGISTERED:**

W. H. Day, 252, Dudley Road, Birmingham. *Photograph entitled, "After a Day in the Park."*

ACID FIXER. — Kindly inform me if the fixing bath containing chrome alum, referred to in your issue of 15th inst., page 709, is a safe one to use.—CATHAY.

Certainly, it is a good formula.

FINGER-PRINTS.—Can you tell me in what issue of the "B.J." you gave an article on finger-print photography?—FINGER-PRINT.

The recent paper by M. Stockis is the one to which we expect you refer. It appeared in "B.J." June 16 last. Some further details of methods of photographing finger-impressions were given by a correspondent in "B.J.," July 23, 1909.

GUM-BICHROMATE.—Can you give me a few elementary hints on gum-bichromate printing in your correspondence columns? Also name of a cheap book on the subject? I see "The Photo-Miniature" is out of print.—C. K. H.

The gum process is not one which can be dealt with as briefly as is necessary in these replies. We advise you to follow the directions in the manual by R. Demachy and Alfred Maskell, published by Messrs. Hazell, Watson, and Viney, Ltd., price 1s.

CATARRH.—Can you tell me if any of the chemicals used in developing and fixing plates or gaslight prints cause nasal catarrh to the operator? I use for developing, Velox developer, Watkins' time developer, and metol-hydroquinone. For fixing, acid bath and plain hypo.—BOWDON.

None of the chemicals in the ordinary way can give rise to catarrh. Metol may cause symptoms similar to catarrh, but we cannot understand how the solution can reach the mucous membranes of the nose.

BOOK ON ALGEBRA.—Could you inform me of any book on algebra which treats the subject in a simple, common-sense manner, perhaps somewhat after the style of "The Calculus Made Easy"?—A. H. L.

So far as we know, there is no text-book which treats the subject in the free and easy style of the author of "The Calculus Made Easy." But there are plenty of excellent text books, such as those of Hall and Knight ("Elementary Algebra"), and Hamblin Smith. Write to Messrs. Longmans and Macmillans for their catalogues.

**Copyright.**—1. In what number of "British Journal" did Mr. Corke's (Sevenoaks) article on "Fireside Portraiture in the Studio" appear? 2. Having purchased a business two years ago, and not having had the copyright of negatives taken by predecessor transferred, what steps can I now take to do so, and if negatives taken by predecessor were not copyrighted by him, can I copyright them now in my own name?—Fireside.

1. July 12, 1907, post free 2½d. from Messrs. Greenwood and Co. 2. The negatives having been sold without transfer of the registered copyrights, these latter are now lost.

**Soda-carbonate.**—I have a quantity of sodium-carbonate, a sample of which I enclose in a match-box. I shall be much obliged if you will inform me if I may use this soda for developing plates and paper. I am told that the only change in the soda is through loss of water through the hot weather this summer. I shall feel quite satisfied if you state whether the soda in this state is chemically the same as when semi-transparent.—Edmonton Enquirer.

Yes, certainly it is the same, but partially dehydrated. From its solution in water, we should judge the sample to be of fair purity, but the only test for it is to use it in making up, say, the B solution of a pyro or M.Q. developer, and compare the result against a developer in all respects the same except that a soda carbonate above suspicion is used for the B solution.

**Backing.**—I have made up the following backing for plates, but find that the use of it does not prevent halation in the least degree. A paste of about the consistency of mustard is made with vegetable or lampblack and glycerine, with just a sprinkling of dextrine, a little water also being used to temper the stiffness of glycerine. This thick paste is applied well to the plate, and backed up with a piece of brown paper. The effect is the same with both "Royal Standard" and "Marion" plates. There is no difference after exposure between a backed and an unbacked plate. Can you give me the cause and remedy?—Thanking you.—Backing.

It is not a good backing formula—too much glycerine—but we should have expected it to have had some effect. A better preparation is caramel, of the kind sold by Lichtenstein and Co., Silvertown, London, E. Mix 1 oz. with 1 oz. strong gum solution, about 2 ozs. burnt sienna, ground in water, and 2 ozs. of alcohol.

**Eosine as a Test for Fixing.**—In your issue of the 1st ult., under "Analecta," is a note that "1-50th of 1 p.c. of eosine" added to fixing bath is a good means of telling when prints are properly washed, but it is not made clear how much of the (.0002 to 1) solution of eosine is to be used. Will you kindly inform me how many drams or ozs. to add to, say, 20 ozs. of hypo solution; also whether it would answer equally well with an acid bath and do for films and plates as well as for prints—F. C. B.

As we replied to a correspondent in our issue of September 15, p. 715, the proportion of eosine is equivalent to 8 grs. per 100 ozs. of fixing bath. We think it would serve equally with acid baths, the principle of the test being that where prints lie over one another in dishes or washers, the water does not obtain access, and so the eosine, and therefore (roughly) the hypo, is not removed. In the case of plates or films, which can be readily placed separate from each other for washing, there is not the same object in using this indicating method.

**Studio, Etc.**—1. Can good work be done in a studio with a north-west light, and if so, what arrangement of blinds do you suggest for sky-light and side? 2. Is there any preparation on the market that can be used for stripping gelatine films for titling postcards? 3. What sort of slides are generally used by press workers; as I find D.D. slides are awkward, and liable to admit light where the slides draw out? Are there any slides on the market that the shutters draw out completely, yet are light-tight? 3. Can you recommend a good book on photography in the studio?—Studio.

1. If you adopt the common plan of a double set of curtains, one black and one white, for both sky-light and side you will be able to use the studio at all hours and seasons. 2. Nothing better than hydrofluoric acid, used according to the directions in the "Almanac," page 751. 3. Preference is about equally divided between the solid pattern with draw-out slides, and the book-form, with hinged shutters. We consider the former far more convenient for press work. If well made, they are perfectly reliable, but from time to time require looking to, and, if necessary, the light-traps fitting with fresh plushes. 4. There is no very modern work on studio practice. The best is that by Duchochois, published by Hampton and Co. The title is "Lighting in Photographic Studios." 5. Unless you are prepared to carry about a camera of the great bulk of a half-plate reflex, we should choose the Goerz-Anschutz pattern. Better an ordinary reflex than a twin lens, and we should advise you to satisfy yourself as to the convenience in use of the shutter you name before deciding on it in preference to a focal-plane.

**Salary.**—For the past three years I have been in a photographic studio. The owner having another occupation, practically the whole of the business came to me. For the past two years I have done all studio operating, some outdoor operating, developing, bromide, gaslight, and P.O.P. printing and toning, mounting, both wet and dry, spotting and finishing. I also attended to all books and correspondence. When I tell you that of my own free will I have stayed five out of every six nights every week at the business, doing dark-room work, or anything else best done in the quiet, after shop hours, it will give you a little idea how I love, and am interested in, the work. As I have now worked the business up to a high standard, and the owner's health is failing, he (the owner) has now disposed of the said business, and although the present owner would very much like me to stay on and manage it for him, I should very much prefer, if possible, to get a place in or near London, so that I could attend some of the excellent photographic classes to make myself more efficient in the theory of photography, and also learn retouching, tinting, etc. Would you kindly tell me what wage I could ask, or what is generally given to an all-round assistant, and whether such places are difficult to get? I am nearly nineteen years of age, and tall. My customers tell me I am excellent with children, when operating, having plenty of patience.—Rosebud.

Your record is no doubt excellent, but vacancies for lady operators are few, and in the general run of London businesses you must look to obtaining a place as receptionist and retoucher. Why do you not take a series of postal lessons in this latter branch, which is the most essential qualification for a young lady wishing to come to London? Your present experience is most suited for a small country business such as the one you have been in.

◆

Messrs. J. H. Dallmeyer, Ltd., have now removed to their new large factory on land adjoining the site of their old premises. The correct address for letters, parcels, and the like is Church End Works, Willesden, London, N.W. The telephone number continues as before, namely, 176, Willesden. The other telephone number, which is shown in the "Telephone Directory," should be disregarded. The telegram and cable address remains as before, "Dallmeyer, London."

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2684. Vol. LVIII. FRIDAY, OCTOBER 13, 1911. Price Twopence.

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The "British Journal Almanac." (Fifty-first issue, 1912.) The text and advertisement portions of the forthcoming issue of the "Almanac," to be published on December 1, are this day (Friday) closed for the press.

### SUMMARY.

Some notes on a branch of at-home portraiture, which photographers might take steps to bring before their customers, namely, portraits of invalids, are given in an article on page 774.

At a meeting held in Manchester last Friday an organiser, to be paid by results, was appointed to work up the proposed union of photographic assistants. (P. 783.)

A further number of letters *pro* and *con* the proposition for a union are published on page 787.

Some further useful notes on the production of relief-effect advertisement postcards are contributed on page 783.

In further reference to the arrangement of the dark-room sink, discussed last week at the R.P.S., we point out the advantage of inclining the sink to have a sharp fall in all directions to the waste outlet and providing grids, either on the sink bottom or on the walls, so as to obtain a level surface for working. (P. 773.)

Lord Redesdale, in his presidential address before the Royal Photographic Society on Tuesday evening last, drew a vivid picture of the life and work of Leonardo da Vinci, expressing most forcibly his own views on the legitimate and otherwise in photography. (P. 786.)

The Traill-Taylor Memorial Lecture is this year to be delivered on November 14 by Dr. W. Rosenhain, who will take for his subject "Optical Glass." (P. 773.)

In a further chapter on the preparation and use of dark-room safe-lights, Dr. A. P. H. Trivelli deals with filters for use in the development of Autochrome plates. (P. 777.)

The conclusion of the paper by Mr. Harold Jeffreys on methods of toning P.O.P. with sulphide or sulphide substitutes, is concluded in this issue, and describes the results of many experiments on the suitability of various methods as regards permanency and pleasing tone. (P. 775.)

A hint, which perhaps some manufacturers of printing papers may be moved to take, is to provide wrappings for the papers of such size as to allow of sheets being readily removed, without endangering others, until the contents are exhausted. (P. 774.)

The methods of a fluorescent reflector which, in its application to the mercury-vapour light, is said to give to the latter a daylight effect, figures under "Patent News." (P. 785.)

### EX CATHEDRA.

**The Traill-Taylor Lecture.** The fourteenth Traill-Taylor memorial lecture will be delivered on Nov. 14 next, at the Royal Photographic Society, by Dr. W. Rosenhain, who will take for his subject "Optical Glass." Dr. Rosenhain, as a member of the staff of the National Physical Laboratory, is an authority on the technical aspects of this important subject, and may be expected to deliver a discourse which will be full of information and suggestion, both to photographers and photographic opticians. Tickets of admission to the lecture may be obtained on application to the secretary of the Royal Photographic Society, Mr. J. McIntosh, 35, Russell Square, London, W.C.

* * *

**Dark-Room Sinks.** In the discussion on the fitting of the dark-room which took place at the R.P.S. on Oct. 3, Mr. Gear advocated a very large sink, while Mr. Ferguson recommended a small one, on the ground that a large wet area contributed to the dampness of the room, and so prevented the rapid drying of negatives, prints, etc. The latter speaker made an excellent suggestion in regard to sinks when describing his own. He uses one only 18in. square, and when a larger one is desired he places a big lead-lined dish over the small sink, with a waste running into the latter. Dampness in the dark-room is a frequent source of trouble, and there is no doubt that the sink is responsible for it. In most of the dark-rooms we know any steel instrument is spoilt by rust in a very short time, and Russian iron lanterns so speedily come to grief that it is not safe to leave them exposed. The cause of the dampness is not the mere fact of water being laid on. This would have no effect but for the presence of a large area of wet sink surface which dries by evaporation. Naturally, the bigger the sink the bigger is the surface, and the greater is the amount of moisture which is taken up by the air in the room; but size alone is not the sole cause of the trouble. The chief cause is the use of badly designed or badly set sinks. A good sink may be so badly set as to never empty itself except by evaporation, while many sinks are so made that they will not empty. One speaker at the R.P.S. meeting laid stress on the necessity of level-bottomed sinks, but it is obvious that such a sink cannot empty itself down the waste pipe, and must for some hours leave a wet surface exposed to the air of the room. A level surface upon which dishes can stand is, of course, very desirable, but this surface need only be a grid upon which water cannot stand. The sink bottom proper under the grid should have a sharp fall in all directions to the waste outlet, so that the sink may empty itself completely in as short a time as possible. The grid may be of wood, well varnished, and it will then not absorb water, and so contribute to the dampness of the room.

**Storing Bromide Paper.** Of late years plate manufacturers have modified their methods of packing plates so as to contribute to the convenience of the user, but for some obscure reason the makers of bromide paper have not followed suit, and still pack up cut sheets of bromide paper in the way that was adopted in the early days when bromide paper first came into use. Whether the packing consists of a box or of envelopes, we always meet with the same trouble. A few sheets are abstracted for use, and then the remaining sheets refuse to go back into their original receptacle, which invariably seems to be far too small. Until the manufacturers decide to make matters rather more easy for the user, the only resource is the use of a light-tight box for storing the paper, and we have found nothing to be quite so convenient as one of the metal developing boxes designed to hold a developing dish and fitted with a light-tight cover. Unfortunately, large boxes of this type are expensive, but it should be possible to make similar receptacles at a fairly low cost. Wooden boxes would be just as effective and much cheaper, while strong millboard need not be despised.

* * *

**Flashlight Work.** With the approach of winter the thoughts of the photographer naturally turn to evening engagements, such as dances, bazaars, dramatic performances, and the many other events which can only be photographed by flashlight. Most operators succeed fairly well with single figures and small groups, but find that larger ones rarely turn out quite satisfactorily. The reason for this is a simple one, nothing more than an insufficiency of light. It may be taken as a general rule that if burned in a properly designed lamp or tray, the amount of light produced is in direct proportion to the amount of illuminating material consumed. This fact must be considered in conjunction with the well known one that the intensity of light decreases in the ratio of the square of the distance between the source of light and the object. To apply these data practically we must ascertain the correct quantity of powder required for an exposure at close quarters, say, at 10 feet between *light* (not lens) and sitter, and multiply this by the *square* of any greater distance at which it is desired to work. For instance, if we find that 30 grains of flash powder gives a well exposed negative at 10 feet, we must use 25 times as much, or nearly 1¾ ozs., for a similar subject at 50 feet. This indicates the necessity, not only for using the most actinic powders obtainable, but also for placing the light as near as possible, consistent with even lighting, to the subject, taking due precaution that the flash is well screened from the field of the lens. Due allowance must be made for the reflective powers of the walls and other surroundings, but, as a rule, in the case of large work these are not great, being too far away to have much effect upon the lighting of the principal subjects.

* * *

**More Light.** There are many photographers using the older forms of open-arc studio lamps, particularly those with only one pair of carbons, who are desirous of improving their light, but who shrink from the expense of an entirely new apparatus. In such cases we suggest consulting a practical electrician, with a view to increasing the number of arcs, running them in series in the way now so usual in the best modern patterns. This system is economical of current, as less resistance is required, the current being consumed at the arc instead of being dissipated in heat. Such alteration should not be attempted by anyone not thoroughly acquainted with electrical wiring, as certain modifications may be necessary in details, such as leads, fuses, and the like.

## INVALIDS' PORTRAITS.

Although it is not the most cheerful class of work—the portraiture of the ailing and infirm in their own rooms—it is fairly well remunerative, and deserves a little more thought and cultivation than is generally accorded to it. As far as temperament goes, invalids vary in a similar manner to healthy sitters, from patience to irascibility, but as a general rule are placid, rather welcoming the photographer as a relief from the tedium of their existence than regarding him as a nuisance, which many ordinary sitters profess to do. Success in this department of photography depends greatly upon the demeanour of the operator and the perfect adaptation of his apparatus to the work in hand. The breathless methods of the Press photographer are quite out of place, the good "bedside manner" of the family doctor being more appropriate to the circumstances, even the medical style of dress being

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## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

Among other new features in the forthcoming 1912 Almanac, now in an advanced state of preparation, are articles as follows:—

### Lantern-slide Making. By the Editor.

A complete practical guide to the making of lantern-transparencies by reduction and contact, illustrated with special drawings of apparatus; processes of development for black and warm tones; warm tones by after-toning, and other methods of producing the best results.

### At Home Portraiture. By C. H. Hewitt, F.R.P.S.

Precise directions for indoor and outdoor portraiture without a studio. Illustrated with diagrams and art supplement plates, showing effects of good and bad lighting.

### Hints in Pictures.

A section entitled "How to Do It," helping the beginner to perform such operations as stripping negative films, mounting prints, etc. One hundred and twenty illustrations.

⁂ As announced on the preceding page, our publishers have this day closed the pages of the 51st Almanac for the press. Practically every advertiser in the photographic trade having taken space in the forthcoming Almanac, no useful object is secured in keeping the advertisement pages longer open, even supposing that the exigencies of preparing the immense edition of this bulky volume allowed of our publishers doing so. It may be possible to include a further odd page or two whilst the final sheets are proceeding to the machines. Even this is doubtful, but our publishers ask us to say that they will do their best for advertisers who may have been unable to take advantage of the 1912 issue of the Almanac until this late hour. The large size (over 1,000 pages) and edition (25,000 copies) of the Almanac, coupled with the making of the "Index to Goods Advertised," inserted in the volume as a guide to its contents, leave the publishers no option as to the date of going to press.

more acceptable to the majority of elderly ladies who form the bulk of subjects than a suit which suggests a hurried adjournment from the golf links. As the working space will usually be found to be very limited, the smaller the camera is the more convenient it will be found in use, the reflex type, either with single or twin lenses, being the best. In many cases it will be necessary to turn the camera upon its side to enable it to be used close up to a wall, so that a reversing back is indispensable. Quarter-plate is quite large enough, and a lens working at *f*/5.6 is quick enough, although there is no disadvantage in having one of larger aperture. The focal-plane shutter is best put out of action, the camera being worked as an ordinary field camera with cap or front shutter, thus avoiding the slight noise inseparable from nearly all focal-plane exposures. The front shutter reflexes and twin-lens models are ideal for the purpose, but in the case of the latter the front panel should be divided so that the two images can be accurately centred for short distances. With modern lenses this can be done without detriment to the focussing.

Of necessity, little can be done in the way of posing, the most that should be attempted being to shift the sitter into a well-lighted position, and then to find a standpoint from which a more or less artistic picture can be obtained. Here it is that the small, compact camera scores, as it can be placed anywhere, upon a piece of furniture as frequently as upon its own tripod. It is worth while taking some trouble to arrange suitable draperies, so as to avoid the appearance of a sick room. Even if the sitter is in bed, the bed-clothes should be covered, so as rather to suggest one resting upon a couch than a bedridden invalid. H. P. Robinson's "Fading Away" is satisfactory as long as it is considered from an artistic and impersonal point of view, but as a portrait or family group it is nothing less than harrowing.

Some may disagree with the idea of using so small a camera, but it is not intended that the size of the negative should be any index to the size of the finished print. We have now so wide a choice of apparatus and materials f enlarging that it is almost as easy to turn out cabinet prints from a portion of a quarter-plate as to print them by contact from a half-plate negative.

# THE SULPHIDE TONING OF P.O.P.

## II.

I now suggest a theoretical explanation for the fact that the diminution of the alum diminishes double toning. At the commencement of the action the catalyst is uniformly distributed over the surface, and as the image is not uniform in density it is very probable that the action in the high-lights will be greater, relatively, than that in the shadows. Absolutely, however, it is less, and as for each molecule of silver sulphide produced an extra molecule of soda trithionate is formed on the spot, thus the quantity of catalyst rapidly becomes proportional to that of the substance forming the image, and in consequence double toning can no longer take place. Now, if a large quantity of alum be added, the first stage, in which double toning is liable to take place, will last for a considerable time, and in consequence double toning will do much damage before a satisfactory colour is obtained. If the quantity is small—just sufficient to start the toning—the action afterwards looks after itself, and no double toning can take place. On this basis 1 part of alum in 200 will be ample, and 1 in 400 probably sufficient. The fact that double toning recommences at the purple-brown stage suggests that diffusion takes place within the film, or on its surface, and equalises the distribution of trithionate, and thus the uniformity again breaks down, this time permanently. In all cases the action of fixing is completed before toning starts, otherwise the trithionate would attack the soluble salts first and degrade the whites by precipitating sulphide.

The action of the alum on the hypo is not completed in the cold, and consequently a considerable amount of alum remains unaltered. This produces the hardening action, so that prints toned in this bath can be glazed without further treatment.

It remains to examine the permanency of the method. According to Mr. R. E. Blake Smith, the causes of fading are:—

1. The action with the gelatine of hydrogen sulphide or other unstable sulphur compounds.
2. Retained lead.
3. Retained silver.
4. Insufficient washing after fixation.

Hydrogen sulphide is not present, but tetrathionate may possibly give such compounds as are suggested. Nothing but trial can test this. Retained lead is, of course, impossible, as no lead is used.

Retained silver is a form of silver combined in such a way as to be insoluble in sodium thiosulphate. It is described as due to the action of an acid solution of hypo containing much silver. This toner is certainly acid, and it therefore seems that if the same portion is used too often, especially on unfixed prints, permanence is endangered. On examination I found that if a print is fixed before toning no silver is retained, whether the tone obtained is warm brown or purple. Also if the bath was not overworked there was no trouble on this score, even if the prints were neither fixed nor washed as a preliminary. About a dozen quarter-plate prints may be safely toned in four ounces of the toner, while if fixed first a still greater number can be toned in it.

Prints in my possession toned in this bath three years ago have not changed in the least. This is, of course, not an adequate time for a complete test of permanence, but still it shows that fading, if any, is not rapid. The absence of retained silver also suggests permanence.

Rendering a hypo-alum bath alkaline completely destroyed both its toning and hardening effects.

Three prints, one fixed, one washed only, and one dry, were simultaneously placed in a hypo-alum bath at thirty-five degrees C. The fixed and dry ones were almost alike in their behaviour, but the washed one, while it changed colour most rapidly at the beginning, was slowest in reaching a good tone, and double-toned sooner. No difference in density was perceptible.

Thus, on the whole, it seems advisable to fix first, keep the alum down, and warm the solution to thirty-five degrees C.

The hypo-alum method can thus be recommended as inexpensive and simple, but has the grave defect of giving only one good tone.

I next proceeded to find out whether a good purple can be obtained by any other sulphide-toning method. The soluble thio-salts are free from both objectionable odour and strong alkalinity, and I attempted to find some of them which would be a satisfactory substitute for gold. Of course, if the compound is very difficult to obtain or is more expensive than gold would be, it is of no use for the purpose. This immediately excludes thiochromites, thiotellurate, thiouranates, and so on.

### Thioantimoniates.

The most obvious salt to start with is Schlippe's salt, $Na_3SbS_4 \cdot 9H_2O$. This is a commercial article and is easily prepared. Being a powerful sulphuretting agent in mercurial intensification it seemed a very probable solution of the difficulty.

I made up a one per cent. solution of Schlippe's salt in cold water and placed a print, plainly fixed in hypo, in this solution. It toned rapidly, giving a good brown and purple, without the slightest double toning. In the final washing, however, the thioantimoniate seemed to decompose, as a yellow stain, apparently of $Sb_2S_5$, was produced in the whites. The next efforts were to avoid this stain. I tried adding soda carbonate making the toner of the formula:—

| | |
|---|---|
| Soda carbonate anhydrous | ¼ gm. |
| Schlippe's salt | ¼ gm. |
| Water to | 130 cc. |

This toned well, but still left a slight yellowness. Increasing the carbonate to two grams did not keep the whites perfectly clean, but the colour was discharged by adding a little ammonia to the washing water. Still, this was very troublesome, and a better method was needed. Caustic soda might have prevented it, but its softening action precluded its use. Ammonia seemed to prevent the toning. A dilute solution of hydrogen peroxide was found to discharge hypo and Schlippe's salt together without producing any reduction. The toning continued in the final washing, and slight yellowness was produced again.

When the preliminary fixing was done in ammonia instead of in hypo, the discolouration was absent, but the gelatine softened, and also the tones were not good. Antimony was absent from the film.

When I attempted to mix Schlippe's salt with hypo and use as a combined bath, the antimony was completely precipitated as sulphide, producing deep stains on the paper. Consequently this is of no use.

### Thiostannates.*

No soluble thiostannites are known. I dissolved stannous chloride in the calculated amount of caustic soda, boiled with sulphur passed in sulphuretted hydrogen and again boiled to expel the excess. This gave a colourless solution, containing nothing but sodium thiostannate.

$$SnCl_2 + 4NaOH = Na_2SnO_2 + 2NaCl + 2H_2O.$$
$$Na_2SnO_2 + 2H_2S + S = Na_2SnS_3 + 2H_2O.$$

Acidifying this gave a precipitate of stannic sulphide, while sulphuretted hydrogen was given off. Thus the thiostannate was actually there. When left for thirty minutes on a print a 1¼ per cent. thiostannate refused to tone, although the highlights had become purple. Thiostannate must therefore be considered a complete failure.

The only other similar compounds of the so-called "common" metals are (1) thioantimonite, which is certain to behave like Schlippe's salt, only worse, since it will give $Sb_2S_3$, which has basic properties, where Schlippe's salt would only give $Sb_2S_5$, which is almost purely acidic; and (2) thioarsenite and thioarsenate, which are not to be recommended on account of their poisonous character.

There remain the "rare" metals. Those that would be cheaper in use than gold must be employed. This practically limits the choice to molybdenum and tungsten, since thiovanadates are difficult to obtain.

### Thiomolybdates.*

I saturated a solution of ammonium molybdate with hydrogen sulphide, which gave a very deep yellow solution, so deep, in fact, that a two per cent. solution was almost opaque when in a two-inch layer. I diluted to make a quarter per cent. solution, and immersed a print that had been plainly fixed in hypo. It gave excellent brown and rich purple tones, as good as anything I have seen obtained with gold. The action was rather slow, but there was no tendency towards double tones at the ordinary temperature. A faint brown stain, due to molybdic sulphide, was left, but this was prevented by a trace of ammonia in the solution. The colour of the solution usually disappeared in the final washing, but sometimes there was a difficulty in discharging it, so that alkalis had to be added to the washing water.

According to Mr. H. E. Smith, prints toned with thiomolybdate are liable to become yellow in time. I have not experienced this defect myself, but the remedy ("B.J." Almanac, 1910, page 549) is as follows:—

First make a solution of the composition

| | |
|---|---|
| Ammonium carbonate | 400 gms. |
| Cold water | 1,800 ccs. |
| Ammonia (.880) | 600 ccs. |

Add one part of this to three parts of a ten per cent. solution of *normal* ammonium phosphate $(NH_4)_3PO_4$ and apply for ten minutes before fixing in a bath containing four ounces of the above ammonium carbonate solution to the pint. Prints are then washed for one hour and toned as before.

### Thiotungstates.

Sodium thiotungstate was very difficult to prepare, and gave two reactions which I believe to be new; at least, they are not mentioned in either Roscoe and Schorlemmer's "Chemistry—Metals," or in Dammer's "Handbuch der Anorganischen Chemie." I dissolved an ounce of sodium tungstate in the minimum quantity of water, and saturated with sulphuretted hydrogen. I then boiled to drive off the excess, intending to use the solution left. The gas, however, continued to come off, and when at last it stopped the solution consisted entirely of tungstate. Consequently the reaction was completely reversed.

$$Na_2WO_4 + 2H_2S \rightleftarrows Na_2WS_2O_2 + 2H_2O.$$

I again saturated the solution as before, and precipitated by adding alcohol. There was a powerful and disgusting smell of ethyl mercaptan, which I at first attributed to the action of the excess of hydrogen sulphide on the alcohol. A little of the precipitate was dissolved in water and dilute hydrochloric acid added. Instead of the expected black precipitate of tungstic sulphide $(WS_3)$ there was a white one of tungstic acid. Consequently the thiotungstate had been completely decomposed by alcohol with formation of tungstate and ethyl mercaptan.

$$Na_2WS_2O_2 + 2C_2H_5OH = Na_2WO_4 + 2C_2H_5SH.$$

At this stage I determined to avoid further difficulty by merely taking care that no substance was added to upset the toning action, and obtained the following method of preparation:

Make a twenty per cent. solution of sodium tungstate. Heat if necessary to dissolve, and saturate with hydrogen sulphide. This gives the thiotungstate with an excess of hydrogen sulphide, which is counteracted by adding two per cent. of .880 ammonia. Thus we have now in the solution small amounts of ammonium sulphide and ammonia which do no harm.

One part of this was added to forty parts of water to make a toner. The action was much akin to that of thiomolybdate. It gave good browns and purples, but double toned slightly. This was cured by doubling the strength. Heating was quite unnecessary. There was no precipitation, and on account of the lightness in colour of the solution there was also no staining.

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* Both thiostannates and thiomolybdates as toning agents, are the subject of patent protection.—Eds. "B.J."

The following is a summary of the results obtained by the sulphide-toning methods:—

| Toning agent | Strength | Smell | Double toning | Best Temperature. | Tones given. | Use as combined bath. | Stain. |
|---|---|---|---|---|---|---|---|
| Sulphide ... | ½ % | Bad $H_2S$ | Slight or none | 15° | All | None | None |
| Tetrathionate ... | ·3 % + 8 % hypo | None | Little | 35° | Brown | Fair | None |
| Trithionate ... | ·8 % + 16% hypo | None | None | 40° | All | Fair | None |
| Hypo-alum ... | 5 % + 15% hypo | None | Little | 35° | Brown | Fair | None |
| Thioantimoniate | ·2 % + 2 % $Na_2Co_3$ | None | None | 15° | Brown & purple | None | Orange ppt. removed with difficulty |
| Thiostannate ... | 1 % | None | No use. | Does | not | tone. | |
| Thiomolybdate... | ½ % + $NH_3$ (trace) | Faint $NH_3$ | None | 15° | All | None | Yellowstain removed in final washing |
| Thiotungstate ... | 1 % + $NH_3$ (trace) | Faint $NH_3$ + $HS_2$ | None | 15° | All | None | None |

One advantage of thiomolybdate and thiotungstate is that owing to the precipitation of the corresponding sulphides in the darkest parts the printing does not need to be carried as far as for gold toning. As to which is the better of the two, I myself prefer thiotungstate. Mr. H. E. Smith, the proprietor of the processes, prefers thiomolybdate, although in his patent specification he does not say why he does so. In cost of working there is little to choose between them. Both require a washing of at least fifteen minutes between fixing and toning, and a further wash of one hour after toning. Thiomolybdate keeps better in solution, and has also the advantage of being obtainable solid. Thiotungstate is too soluble to be crystallised, and consequently unless the salt of potassium or ammonium is used, it can be obtained only in solution.

These two processes have already been patented by Mr. H. E. Smith, and the toning agents must be obtained from Messrs. Edmund and Co., of Ezra Street, London. I expect they will be able to supply such a thiotungstate solution as is here recommended, although I cannot be certain. They do supply thiomolybdate in solution under the name of "Cubrome Sepia Toner."

Whenever a print is fixed in plain hypo before toning, the acids always present in the emulsion produce trithionate, and as this is uniformly distributed over the film, double toning is produced. This can be avoided by adding a grain of sodium bicarbonate to each ounce of the fixing bath. Bubbles of carbon dioxide will be seen all over the film, but do no harm. Five minutes' fixation is sufficient.

### Lead Toning.

This method is more of a chemical curiosity than a practical process. The print is fixed in fifteen per cent. hypo with sodium bicarbonate added. It is then washed for ten minutes in running water and bleached in

| | |
|---|---|
| Lead nitrate ........................................... | 400 grs. |
| Potassium ferricyanide ............................ | 600 grs. |
| Acetic acid (B. P.) .................................. | 3 drachms. |
| Water to .................................................. | 20 ozs. |

This converts the image into a mixture of lead and silver ferrocyanides and silver chloride. The print must not be left in the bleacher any longer than is absolutely necessary. Water alone will not remove all the lead soaked in, so that it is necessary to soak several times in water and three per cent. nitric acid alternately. When this is done the print is immersed in weak ammonium sulphide. This gives a warm brown image of lead sulphide, which completely masks the silver sulphide also produced. The colour is not disagreeable, although inferior to most of the other toners. As lead sulphide requires hot concentrated nitric acid to bleach or dissolve it, this process may be regarded as permanent. The disadvantages are several. Four different baths and a thorough washing after fixing are needed. Several objectionable chemicals are employed, which make the process still worse. The final print is of about the same density as the original proof.

The thiotungstate and thiomolybdate methods give quite permanent results as the molybdic and tungstic sulphides precipitated are just as permanent in ordinary conditions as is the rest of the image. Consequently these two methods may be regarded as the best of the series, and in all respects quite comparable with the gold method.

**HAROLD JEFFREYS, B.Sc.**

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# SAFE-LIGHTS FOR THE DARK-ROOM IN THEORY AND PRACTICE.

## V.

### Dark-Room Safe-Lights for Autochrome Plates.

THE Autochrome plates, which would appear to be sensitised with isocol, show sensitiveness throughout almost the whole of the visible spectrum. They are, therefore, very similar in this respect to the Wratten panchromatic plates, which have, however, greater sensitiveness in the red. Before preparing a safe-light for the development of Autochromes MM. Lumière and Seyewetz[48] studied the loss of sensitiveness experienced by various colour-sensitive plates on immersion in water or developer. They found an appreciable loss, especially for panchromatic plates, towards yellow, orange, red, and green. Thus, for the development of Autochromes, one may choose either a red or a green safe-light, provided that the plate is not exposed to the light when in the dry state.

MM. Lumière and Seyewetz obtain the best results for a red safe-light by means of the Abney formula already referred to, whilst for a green light they employ tartrazine and malachite green. They advance the green safe-light as preferable on the ground that the eye is specially sensitive to it, and that, therefore, a feebler illumination may be used.

They supply, for the development of the Autochrome, safe-lights of coloured paper under the name of "Virida." These are supplied of yellow colour, prepared with tartrazine, and of green, prepared with malachite green. They advise the use of sheets of the "Virida" papers in number proportional to the strength of the light. For illuminants of lower power, candles, or oil lamps, a screen is made of two yellow and two green papers: for a 16-candle-power incandescent electric lamp, the safe-light is made of three yellow and two green papers. The papers should be arranged so that the light passes first through the yellow sheets. These dark-room safe-lights, which are also recommended for the development of other plates, are far from being as "safe" for the development of Autochromes as the "Safe-light series III." of Wratten and Wainwright.

A Lowy[49] prepares a filter which is still safer for Autochromes, although, at the same time, less "safe" for the Wratten spectrum panchromatic plates. He selects a combination of dyes which allow only the light to pass which corresponds exactly to the minimum of sensitiveness of the Autochrome plate, namely, the red at C and the green between E and F. For a glass plate measuring 10 x 7 inches the following solution is used:—

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[48] Eder's "Jahrbuch," 1909, p. 27.

[49] "Photographische Korrespondenz," 1909, p. 121.

| | |
|---|---|
| Gelatine solution 10 per cent. | 20 ccs. |
| Glycerine | 2 ,, |
| Bordeaux red new R 3 per cent. solution | 5 ,, |
| Tartrazine 4 per cent. solution | 6 ,, |
| Light green S 5 per cent. solution | 7 ,, |

The dyes are those of the Badische Company, Ludwigshafen.

As soon as the gelatine has set, the filter is dried as quickly as possible in a warm and well-ventilated room. Before using it a cover glass is attached by means of an edging of silk or rubber paper.

Although this filter may be considered as the "safest" for the development of Autochrome plates, there are serious objections to the Löwy formula, viz.:—(1) The use of dyes which are not chemically pure; (2) the use of glycerine—which makes it difficult and sometimes impossible to dry the film; (3) the large quantity of gelatine in the solution, which thus sets too quickly.

I have sought to prepare a filter by using chemically pure dyes in a 6 per cent. solution of gelatine. It is easier to make, and, if it is not safer, is at any rate as safe as the Löwy filter.

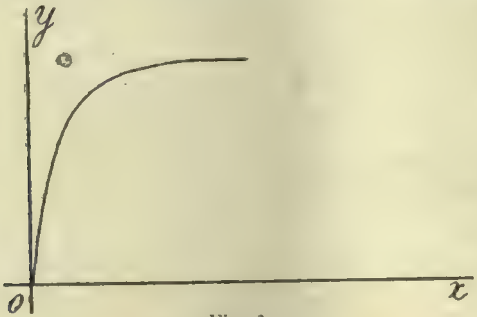

Fig. 1.

I have not endeavoured to transmit the green rays between E and F, but have contented myself with passing the red rays. As the green is only very faintly visible, one allows to pass so little that it would exercise only a very feeble effect on the brightness of the filter, whilst the "safety" of the dark-room illumination is thereby considerably increased. The formula of this filter is given later in greater detail as filter No. VII. Filter No. VI. gives a brighter light, which is quite sufficient for a skilful worker but is not as safe. In using this latter the Autochrome plate should not be exposed at all to the light before development.

### General Remarks on the Composition of Safe-Life Preparations.

In already mentioning the conditions which should be observed in the preparation of safe-lights, it has been said that the pure dyes should be used, and that acid and basic dyes should not be mixed together in the same solution. It is necessary also to pay regard to other factors, and, first of all, to the quality of the light supplied by the dye. Among the organic dyes, yielding invariably a light which is not constant, one should, as far as possible, select those which are least open to objection in this respect if one wishes to obtain safe-lights which retain their properties. This is not always possible directly. Thus, for the filter No. III., to be mentioned later, I know of no dye giving a more constant light than the very fugitive rose Bengal, possessing a similar absorption spectrum and intercepting as strongly the green rays.

The light given by the filter may be made much more constant by using the dye at a still greater concentration. The fastness of the dye is not altered in this way, but the time necessary for an appreciable change to become evident is thereby considerably prolonged. This increase of concentration is possible only in certain cases, and in these only up to a certain limit. We will first consider this limit of concentration.

The molecules of colouring matters are not distributed in the coloured gelatine in small particles but exist in a state of absorption in the gelatine. The general character of this absorption may be represented graphically by Fig. 1. Let XOY be the system of co-ordinates in which the time of absorption is shown on the abscissa and the quantity of substance absorbed, on the ordinate. Admitting that during a certain time a substance A is absorbed, or adsorbed by the colloid body D, the curve of the figure shows the time of absorption. At the start B absorbs a large quantity of A, that is to say, will show great rapidity of absorption up to the point at which a certain quantity of A had been absorbed. Afterwards this absorption will fall off rapidly, and will become little by little an absolutely negligible quantity. In other words, a given quantity of B can only absorb A up to a maximum degree. This fact is of importance in the composition of safe-lights: when a solution of coloured gelatine is allowed to set and dry, this solution may have absorbed only the quantity of dye capable of being absorbed by the dry gelatine. If this maximum is exceeded the dye will separate from the gelatine on drying and becomes deposited in small grains or crystals which greatly reduce or entirely spoil the clearness of the filter.

The maximum quantity of dye, which can be taken up by gelatine, varies with the particular colouring matters; for a large number this maximum may be very roughly stated as about 1 gm. of dye for 6 gms. of gelatine.

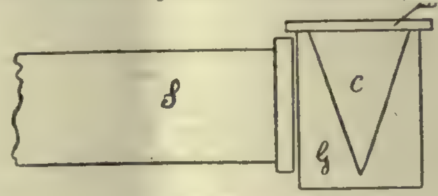

Fig. 2.

The green filter of Fr. Haberkorn for the development of red-sensitive collodion plates does not satisfy this condition of not adding to the gelatine more dye than it can absorb. Moreover, in it a very fugitive dye acid green is used to the amount of 1½ gms. for 6 gms. of gelatine, whilst the maximum quantity absorbable is considerably less than 1 gm. of dye per 6 gms. of gelatine. The result is a turbid and irregular filter when dry. This is probably the reason why Fr. Haberkorn advises coating one of the surfaces of the filter with matt varnish.

Some notes have already been made on the absorption of actinic rays by this filter. I consider that when using a dark-room lamp of the Wratten type it is necessary to render the screens matt, since the light is already sufficiently diffused to give an agreeable illumination of the dark-room.

We will now consider the cases in which it is possible to produce the maximum degree of absorption of dye by the filter.

If a solution of a dye in a cell with parallel walls be examined in the spectroscope, or better in the spectrograph, an absorption spectrum of given character is obtained when the dye is at a particular strength. If it is wished to examine the changes which the absorption spectrum undergoes with a variation in the strength of the solution, the only possible method consists in examining successively several solutions at different degrees of concentration. This extremely tedious method has been very ingeniously simplified by Dr. C. E. K. Mees. He introduces the dye solution into a cell of prism form shown in Fig. 2, and places the slit of the spectroscope S perpendicularly to the long side of the cell. The prismatic cell has walls which externally are parallel: inside, in the glass portion G, is the triangular space C, in which is poured the solution of the dye. For the details of the arrangement the reader is referred to a circular which is obtainable from Messrs. Wratten and Wainwright.[50]

In this cell it may be considered that the thickness of the solution is directly proportional to its strength. If use is made of a long slit the spectrographic method gives an image yielding directly the curve of the absorption spectrum of the dye.

If, in the prism of Fig. 2, one turns the images obtained through 180 degrees, one has at the base of the abscissa (Fig. 3) the absorption spectrum of the dye at the greatest degree of concentration. By gradually moving from the abscissa one obtains successively and gradually the absorption spectrum of the same dye for degrees of weaker and weaker concentration. The ordinate shows then the line of the concentrations.

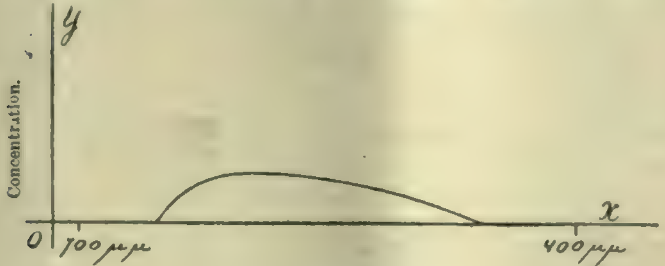

Fig. 3.
Absorption spectrum—Type I.

In these absorption spectra it is possible, in my view, to distinguish three types which do not differ much from each other, but allow of all the possible transition stages being shown.

Fig. 3 represents type I., in which the dye solution shows always a change of absorption spectrum as a result of altering the strength.

Fig. 4 represents the type (II.) in which the absorption spectrum also changes, as in type I., by reducing the strength of the solution, but ceases to show change in the spectrum after reaching a given limit of concentration.

Fig. 5 shows type III., in which the dye solution shows a change of absorption spectrum with reduction of the strength. It differs from type I. in that this change occurs only on one side of the spectrum.

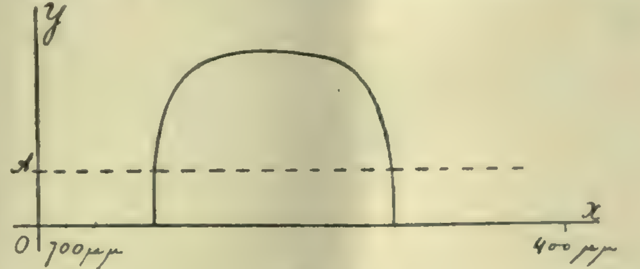

Fig. 4.
Absorption spectrum—Type II.

This change in the absorption spectrum is shown in practice, and is of considerable importance in governing the choice of dyes for dark-room safe-lights.

It may be asked if the difference between the types I. and II. is not purely a superficial one, and if type I. would not pass into type II. in the case when one would show only increase of the strength, that is to say, the thickness of the solution above zero, and then if, equally, there would not be for a given concentration a point after which no further change would be produced in the absorption spectrum. This question can be answered in the affirmative, but in practice one does not reach these great strengths of solution; either the quantity of absorbable dye will be exceeded or the dye solution will become too dark, and so the absorption band disappears entirely in the spectrum. This latter is the case, among others, with naphthol green and toluedine green. It is not necessary to attempt further evidence that the dyes having an absorption spectrum similar to that of type II. are those most suited for dark-room safe-lights.

If choice has been made of one of these dyes (see Fig. 4) of concentration A, one can introduce without fear into a filter formula the maximum quantity of the substance which is absorbable without the absorption spectrum undergoing modification.

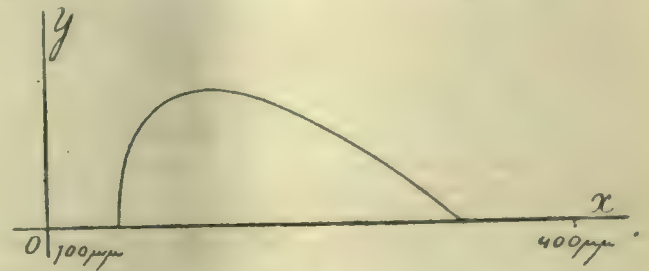

Fig. 5.
Absorption spectrum—Type III.

Xylene red and tartrazine are examples of such dyes. For the same reason crystal violet serves better for the Abney safe-light than methyl-violet, since it possesses an absorption spectrum more like that of type II. than methyl-violet.

If the dye shows an absorption spectrum of the III. type one can consider it as representing type II. if, for example (Fig. 5) one uses only the red which is transmitted. Red is the colour, the absorption band of which indicates a change which is analogous to the absorption spectrum of type II. If absorption of the blue and violet is done by means of another dye, such as tartrazine, we have nothing more to do, to all intents and purposes, with the separation of the absorption band of the blue and violet which changes to type I. In this way one can also consider the absorption spectrum of this dye in accordance with type II., and employ a strength up to the maximum of the quantity absorbable.

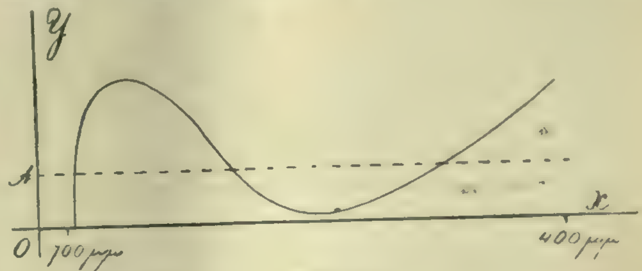

Fig. 6.
Absorption spectrum of a green dye.

If a dye has more than one absorption band, as many green dyes have, it is found that it allows to pass the extreme red as well as the green. Its absorption spectrum is analogous to that of type I. (see Fig. 6) by the absorption between the green and yellow—that is to say, the orange on one side and the part of the spectrum between the green and blue, i.e., violet, on the other hand. Its absorption spectrum is analogous to type II. as far as concerns absorption in the red.

A dye of this nature can, for example, represent a green colour to a degree of concentration A. By raising the concentration the dye becomes a darker green, and at last there is obtained a grey nondescript colour in which the red and green neutralise their complementary effects. At a still further degree of concentration the green is still further effaced, and the red becomes predominant. Typical examples of this are afforded by chlorophyll and by the König dyes.

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[50] The arrangement adopted by Mees differs only slightly from that shown, but in principle it is the same. For the purpose of explanation the simpler arrangement is shown.

The green and dark red for dark-room illumination for which, according to König, the red extends up to 670, whilst in the case of most other dyes it does not go beyond 700 and 698, so that these dyes are almost black before (as the result of greater concentration) the red becomes predominant.

The use of one of these green dyes for the preparation of filters allowing only the extreme red to pass will be only seldom possible, since it would be necessary to raise the degree of concentration up to, or even beyond, the maximum quantity absorbable. In this case it will be better, in order to attain the same end, to use the dye in the maximum quantity absorbable and to arrest the green still remaining by means of a red dye such as xylene red. This is what I have done with others in safe-lights of the formulæ VI. and VII.

The choice of the glass is in strict relation with the type of absorption spectrum of the coloured solution. Obviously, a screen covered with a film of coloured gelatine of uniform thickness will be more durable than another in which the gelatine varies in thickness. At the end of a certain time, change of colour or bleaching will be noticed first at the places where the gelatine is thinnest. As a result there will be a reduction of the "safety" of the screen, which eventually will become useless. It is possible to obtain a uniform coating of gelatine only upon the surface of a perfectly horizontal sheet of glass, and therefore it may be said, as a general rule, that dark-room safe-lights are of really great keeping properties when a flat glass, such as plate, is used instead of the ordinary window glass.

In practice the high cost of plate glass is frequently an obstacle, and for this reason I have already advised the use of negative glasses, which may be considered the best and the cheapest which can be employed. The glass is not perfectly flat, and does not allow of obtaining a perfectly uniform film of gelatine over every point of its surface. As the thickness of the coloured gelatine film may be considered as directly proportional to the concentration of the dye in the gelatine, one can already, from the curves of absorption spectra given above, obtain an idea whether a dye or mixture of dyes is suitable or not for negative glass. In cases where it is not one would be obliged to use plate glass.

In the case of a dye having an absorption-spectrum of type II., no particular defect will be noticed if the film of dyed gelatine is not of the same thickness throughout. But this will not be the case with a dye of absorption-spectrum of type I.: here the defect will be the more marked, the smaller the angle made by the curve with the abscissa. For this reason it is not possible to coat ordinary negative glass with the dark flat-glass plate. Naphthol green also has an absorption-spectrum of type I., and, on this account, require the use of flat-glass plate. Naphthol green also has an absorption spectrum approximating to type I., but with a curve forming a larger angle with the abscissa. It is still possible, when it is used in a formula, to use negative glasses which are as flat as possible, and should, therefore, be chosen with considerable care.

In the use of dyes, the absorption-spectrum of which approximates to type I., there is obtained at the end of a certain time, in consequence of a bleaching action, the same effect as if the concentration of the dye in the gelatine were reduced. One thus obtains safe-lights which are brighter, and, as a result, less "safe." They should not, however, be considered useless since they can still be of service in the development of less sensitive emulsions. In consequence of this bleaching the life of these filters is less than that of screens prepared for the same purpose and composed of dyes, the absorption-spectrum of which corresponds with type II.

If it is wished to prepare brighter safe-lights for the development of slower plates, it is preferable to compound another formula by means of other dyes of which more of the absorbable material is used in place of selecting the same formula and reducing the quantity of the dye. In this way only in principle, though not invariably, is it possible to obtain safe-lights of lasting quality.

To return to the question of the maximum absorbable quantity of a dye it may be useful to say that in the formulæ to be given later I have avoided giving this full quantity, keeping it as much as possible a little below. The reason is that the quantity is not always the same, even for an identical dye. The gelatine and its condition exert a considerable influence. The older the gelatine the smaller is the quantity of dye which it will absorb. On this account the gelatine should be of as recent make as possible. Attention may also be drawn to another defect. Many samples of gelatine contain absorbed salts which dissolve in the distilled water employed in washing, or dissolve when the gelatine is liquefied. These salts may produce, in the case of acid dyes, such as rose Bengal, an insoluble precipitate which reduced the "safety" of the filter. In this case the gelatine should be washed for a longer time in distilled water than has been previously indicated, and if this is not sufficient to remove the defect the only alternative is to select gelatine of a different brand.

A. P. H. Trivelli.

*(To be continued.)*

# THE EFFECT OF THE ALKALI IN PHOTOGRAPHIC DEVELOPMENT.

[The following is a translation made with some abridgment of a thesis describing an investigation carried out by M. Louis Bourgeois for the doctorate of science of the Lausanne University. The full text of the paper forms a volume of 116 pages, published by E. Lavanchy, Morges, Switzerland.—Eds. "B.J."]

## VII.

Thus, amidol was found to give its well-known good results when used without an alkali, but is practically useless in conjunction with soda carbonate. Used without the alkali it has proved inferior to pyro in the length of gradation in the half-tones and in its elasticity, with the exception, however, of stand development.

The formula employed for para-amidophenol was the following :—

| | |
|---|---|
| Sulphite anhydrous | 25 gms. |
| Para-amidophenol hydrochloride | 5 gms. |
| Water | 1000 ccs. |

The developing factor was found to vary in direct relation with the alkali. A value of 15 was taken in the case of solutions containing .2, .4, or .6gm. anhydrous carbonate, and one of 18 for solutions containing from .8 to 4 gms. We have found in the case of this developer a certain difficulty in obtaining extreme purity in the transparent portions, particularly when working with too small a portion of alkali. In the case of plates about the middle of the series the transparent parts were pure, but the fog reappeared on further increasing the alkali. Density, which is fairly good in the negatives developed with sulphite alone, diminishes very slightly on increasing the alkali. Gradation in the half-tones falls off slightly towards the middle of the series, whilst the colour of the silver deposit is black. A quite appreciable fog is noticed on the alkali exceeding an average proportion. There is no halation, and details are well rendered.

Glycin was made up as follows :—

| | |
|---|---|
| Glycin | 10 gms. |
| Sulphite anhydrous | 25 gms. |
| Water | 1000 ccs. |

The developer is practically useless when made up without alkali or with only a small proportion. Glycin, which we have had in use for many years past for stand development, has always given us excellent gradation, though not equal to that with pyro or metol. MM. Lumière[21] have found that in a glycin developer the addition of alkali less than 1 gm. of caustic soda for 2.4 gms. of glycin has yielded a developer of only extremely poor reducing property, and in all cases much weaker in effect than the use of an alkaline carbonate in sufficient quantity.

The transparent portions are not absolutely clear, but the densest deposits, on the other hand, of great intensity, their opacity increasing slightly with the quantity of alkali. Fog is very slight, but readily makes its appearance. Density falls off slightly with the use of large quantities of carbonate. The colour of the deposit passes from a dark brown (for small quantities of alkali) to pure black (for large quantities). The half-tones are slightly eaten out by the carbonate, but not to such a marked extent as in the case of hydroquinone. Halation may often be noticed, especially in the first plates of the series. The developing factor, which is not quite regular at first, becomes absolutely constant with proportions of alkali exceeding 1 gm. anhydrous carbonate per 60 ccs. of bath.

TABLE X.—ORTOL, FACTOR 10.

Formula :—Ortol, 7·5 gms.; potass. metabisulphite, 3·5 gms.; sulphite, 50 gms.; water, 1,000 ccs.
Alkali solution, 20 per cent. soda carbonate anhydrous.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 112 | nil | 4 h. 10 m. | normal | 6 | black | very good | grey | good detail |
| 113 | ·2 | 35 min. | too weak | 11 | greyish black | the middle tones gone | none | " |
| 114 | ·4 | 12 m. 30 s. | normal, rather weak | 9 | " | " " | slight | " |
| 115 | ·6 | 7 m. 30 s. | normal | 6 | black | " " | none | detail somewhat defective |
| 116 | ·8 | 6 min. | " | 8 | greyish black | " " | " | " " |
| 117 | 1·0 | 4 min. | fairly heavy | 6 | black | middle tones lacking | light | " " |
| 119 | 1·2 | 4 min. | normal | 6 | " | " " | considerable | " " |
| 120 | 1·4 | 3 m. 30 s. | " | 6 | " | " " | none | " " |
| 121 | 1·6 | 2 m. 30 s. | " | 6 | " | " " | light | " " |
| 122 | 1·8 | 2 m. 20 s. | normal, but weak in the middle tones | 5 | " | " " | none | " " |
| 123 | 2·0 | 2 m. 30 s. | fairly dense | 6 | " | " " | a good deal | detail poor |
| 124 | 4·0 | 2 m. 30 s. | normal | 6 | " | " " | none | these last three plates show tints on the gelatine side |
| 125 | 8·0 | 2 m. 30 s. | " | 6 | " | " " | very slight | — |

TABLE XI.—AMIDOL AT TEMP. 17° C.

Formula :—Amidol, 2·5 gms.; sulphite, 25 gms., water, 1,000 ccs. Alkali solution, 20 per cent. soda carbonate anhydrous.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 90 | nil | 18 min. | normal | 5 | black | good | none | detail very good |
| 75 | ·2 | 10 min. | weak | 10 | greyish black | defective | " | shadows and half-tones poor |
| 76 | ·4 | 8 min. | rather weak | 9 | " | " | " | detail not so good |
| 77 | ·6 | 7 min. | weak | 10 | " | " | very slight | shadows completely veiled; detail not so good |
| 78 | ·8 | 6 min. | " | 11 | " | bad | " | " " " |
| 79 | 1·0 | 6 min. | " | 9 | " | defective | slight | " " " |
| 80 | 1·2 | 6 min. | " | 9 | " | " | " | " " " |
| 81 | 1·4 | 6 min. | " | 10 | " | " | " | " " " |
| 82 | 1·6 | 6 min. | " | 9 | grey | " | greater | " " " |
| 83 | 1·8 | 6 min. | " | 9 | " | " | " | " " " |
| 84 | 2·0 | 6 min. | " | 9 | " | " | considerable | " " " |
| 85 | 4·0 | 5 min. | rather stronger | 9 | " | " | " | " " " |
| 87 | nil | 8 m. 30 s. | rather weak | 7 | black | very good | none | determination of development factor: the factor was not determined with rigid accuracy for increasing quantities of alkali; it appeared to be 20 for 4·5 anhydrous sulphite |
| 88 | ·5 | 6 min. | " | 8 | " | not so good | " | |
| 89 | nil | 10 min. | " | 10 | " | " | " | |

## Conclusions.

The only general theoretical conclusion which may be deduced from the foregoing experiments is that one cannot discover a definition of the part played by the alkali which would apply to all developers. The function discharged by the alkali is too variable in its nature for one to be able to assign exact limits to it. It changes according to the developer employed: with some it is necessary to take a large quantity of alkali in order to obtain the best results; with others the quantity of carbonate may be extremely small, even nothing. The alkali will force out details in certain cases, whilst in others it tends to destroy them. From the practical standpoint the experiments may be said to have led to the following conclusions :—

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[21] "Zeit. für Wiss. Phot.," loc. cit.

### TABLE XII.—PARAMIDOPHENOL. TEMP. 17° C.

Formula :—Paramidophenol chlorhydrate, 5 gms.; sulphite, 25 gms.; water, 1,000 ccs.
Alkali solution, 20 per cent. anhydrous soda carbonate.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 150 | nil | 1 h. 30 m. | somewhat heavy | 3 | opaque black | good | slight grey | good detail |
| 151 | ·2 | 22 m. 30 s. | weaker | 6 | greyish black | ,, | ,, | ,, |
| 152 | ·4 | 7 m. 30 s. | heavy | 6 | ,, | ,, | none | ,, |
| 153 | ·6 | 6 m. 15 s. | normal | 8 | black | not so good | ,, | half-tones degraded but quite clear |
| 154 | ·8 | 6 min. | ,, | 6 | ,, | half-tones gone | very slight | plate stained |
| 155 | 1·0 | 5 min. | ,, | 5 | ,, | good | none | detail not so good |
| 156 | 1·2 | 4 m. 50 s. | ,, | 7 | ,, | ,, | very slight | ,, ,, |
| 157 | 1·4 | 4 m. 12 s. | ,, | 6 | ,, | ,, | ,, | good detail |
| 158 | 1·6 | 3 m. 36 s. | ,, | 5 | ,, | ,, | ,, | ,, |
| 159 | 1·8 | 3 min. | somewhat weak | 6 | ,, | half-tones better | ,, | ,, |
| 160 | 2·0 | 3 min. | normal | 6 | ,, | good | ,, | ,, |
| 161 | 4·0 | 3 min. | ,, | 6 | ,, | ,, | considerable | ,, |

### TABLE XIII.—GLYCIN. TEMP. 17° C.

Formula :—Glycin, 10 gms.: sulphite, 25 gms.; water, 1,000 ccs. Alkali solution, 20 per cent. soda carbonate.

| Plate No. | Soda carbonate anhydrous. | Time of development. | Density of negative. | Opacity. | Colour of silver deposit. | Gradation. | Fog. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 126 | nil | 17 hrs. | very heavy | 4 | brownish black | bad | intense | detail deficient, over-developed |
| 127 | ·2 | 7 hrs. | ,, | 8 | pinkish brown black | ,, | ,, | detail deficient |
| 128 | ·4 | 1 h. 30 m. | heavy | 4 | yellowish black | not so bad | yellowish | milky tint on glass side |
| 129 | ·6 | 59 min. | nearly normal | 6 | pinkish black | defective | pinkish | detail better |
| 130 | ·8 | 19 min. | rather heavy | 4 | black | better | very slight | ,, |
| 131 | 1·0 | 10 min. | normal | 7 | ,, | ,, | ,, | ,, |
| 132 | 1·2 | 9 min. | ,, | 6 | ,, | ,, | ,, | ,, |
| 133 | 1·4 | 8 min. | ,, | 8 | greyish black | ,, | ,, | ,, |
| 134 | 1·6 | 7 min. | ,, | 7 | black | poor in half-tones | considerable | ,, |
| 135 | 1·8 | 7 min. | ,, | 5 | greyish black | ,, | ,, | ,, |
| 136 | 2·0 | 7 min. | ,, | 6 | black | ,, | slight | ,, |
| 137 | 4·0 | 6 m. 30 s. | ,, | 5 | ,, | half-tones somewhat deficient | ,, | ,, |

(1) In all the developers tested increase of the quantity of alkali corresponds with a reduction of the time of development, a fact which, of course, has long been known.

(2) In practice it is necessary to take into consideration the several data arrived at in the foregoing paper and varying with each developer.

(3) The intensity given to the negative by the alkali depends chiefly on the developer itself.

(4) With the maximum quantities of alkali the fog produced is not general in the case of all the developers.

(5) Alkali in fair quantity does not completely destroy contrasts, but it invariably reduces them in proportion, greater or less, according to the developer.

(6) Softness of negatives does not depend on increasing the quantity of alkali, but on the time of exposure and the temperature of the bath. Our experiments showed us that many of the best negatives were obtained with a developer containing little or no alkali. This fact explains why, in cases of over-exposure, lack of alkali in a developer does not lead to hardness, but appreciably prolongs its development, and, in the case of certain reducers, does not allow of sufficient density being obtained. It follows from this that a rational system of development is one obtained with little or no alkali, and therefore slowly, not the rapid method of development which is the result of the greater number of formulæ the proportion of alkali in which is almost always too great.

L. Bourgeois.

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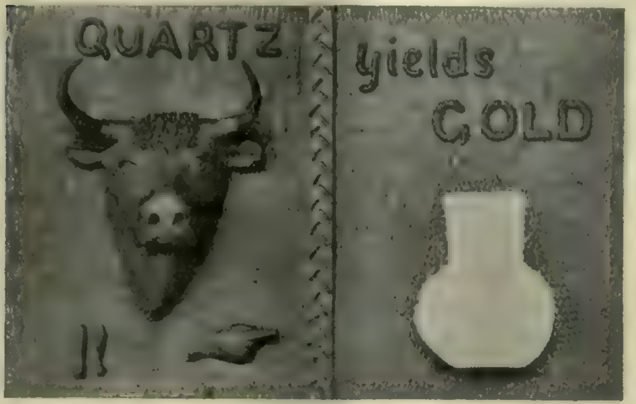
Mr. Bertram Park's Photographs are on view at the Camera Club, 17, John Street, Adelphi, until November 15. Mr. Park is one of the most recent stars in the firmament of pictorial photography, and though not of the very first magnitude at present, shows such unmistakable signs of increase in brilliancy that it is advisable to record observations of him at present. So far, Mr. Park divides his efforts over many branches of work; but he seems to have most feeling for figure work, and undoubtedly succeeds best in that department. His "Magdalen" is perhaps the best among the landscapes that include architecture, and "The Three Birches" is his highest flight in pure landscape. His portraits often incline to hardness, receiving antagonism rather than support from their backgrounds. Especially is this the case with "Herbert Grimwood" in character. "A Study in Light Tones" is the nude that is also shown at the London Salon, and possesses more charm of modelling than is evident at a first glance. In posing, Mr. Park is very successful. The "Portrait," which gives a lady seated with a book, is noticeable on this account; but, on the other hand, another "Portrait," No. 35, suggests too vividly the "posiness" of the cigarette card. "Naomi" is an interesting version of the head of Miss Best, the painter's model. Miss Muriel George figures very frequently in one way or another in this collection of prints.

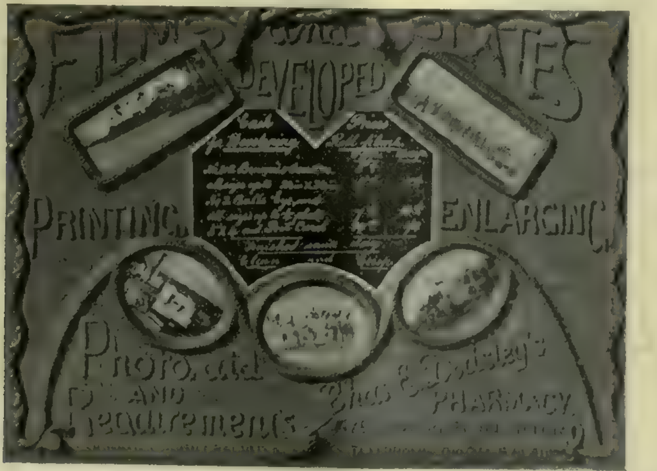
## RELIEF-EFFECT POSTCARDS FOR ADVERTISING PURPOSES

The preparing of bas-relief models in Plasticine ready for photographing, as described in my article, which was reprinted in the "British Journal of Photography," September 29, 1911, will, I am sure, be made more understandable if illustrated by photographs of the finished cards, similar to those which appeared in the "Chemist and Druggist."

To any reader with the ability or, rather, gift for sculpture, they will present no difficulty, but to, I believe I may say, the majority some model or example is almost essential to enable them to set about the work.



To the novice in modelling the card "Films and Plates Developed" will be the easier. Before making the model in plaster select the photographs to be inserted, and make matt gaslight prints just the size required. The pricing in this instance, or where a quantity of lettering is wanted in a small space, is done in white ink or black paper, not glazed. The ink may be readily and easily prepared by rubbing up a small quantity of zinc oxide with mucilage of gum acacia, to a thick cream, and thinning down with water, as it is used for writing, using a clean steel pen. This ink flows freely, dries quickly, and should it become quite hard may be softened and thinned down for use by the addition of plain water. It never turns yellow. The moulding of the surrounds to the photographs is done with the fingers, the marking as described in the previous paper. It will be noticed that the shadow cast is deeper and more extended than in the card with the ox head on. The almost imperceptible shadow on the latter was rendered necessary by the head which projects very much beyond every other portion.



It will be well to remember that in this bas-relief work for photographing from, it is essential to foreshorten any outstanding object; the visual perspective of the front elevation is the only point to be considered. The objects or articles to which this kind of treatment may be applied are innumerable.

Should Plasticine modelling clay become at all hard or dry it may be rendered pliant by warming and then working into it a very small quantity of ordinary yellow vaseline. **Chas. E. Dodsley.**

## PHOTOGRAPHIC ASSISTANTS' UNION.

### Another Meeting in Manchester.

A further meeting of Manchester photographers' assistants, following upon a preliminary meeting which decided to form a Manchester branch of the National Society of Photographic Assistants, was held in Manchester on Friday night, October 6, when there was a good attendance, including two lady assistants.

It was reported to the meeting that a Committee meeting had been held since the former general meeting, and that a provisional Committee was appointed to draw up rules for the proposed union.

The interim secretary stated that the Committee also decided that the subscriptions handed in so far should be accepted as entrance fee for membership in the union. Those who had paid a shilling subscription would be entitled to be called members.

It was then proposed, seconded and unanimously agreed that the interim secretary, appointed at the previous meeting, should be recognised as secretary of the union. The speakers said he had already done so much in so short a time that he ought to be the recognised secretary.

Mr. Arthur Smith, well known in Manchester in connection with the Labour movement, was then invited to address the meeting on the subject of union organisation. He advised the meeting not to approach the question of forming a union as if it were a big or terrible thing, or difficult to carry into effect, but rather as an ordinary proposition for young men and women to take up with the view of bettering their conditions. One of the main matters was to determine what should be the objects of the movement—not in detail but in principle. The object of any organisation of this kind was to increase wages and improve conditions, but it was not necessary or desirable to enter into details on the question of wages in organising the union. The general conditions should be specified in a brief manner, and the objects of the union limited as far as possible at the beginning. Mr. Smith said his experience was that to state many objects in forming a union was a hindrance in its subsequent work, owing to the various resolutions passed embodying the objects. Then they would find it necessary to sectionalise their trade. Some of them might think their trade was a profession, but it was better to drop cant on a matter like this. They were all workers, and there was the same interest for everybody in the work of the union. They should keep in mind that whatever the differences in status among them, they were merely sections of one industry. They would thus foster that fellowship which was absolutely necessary in any trade union. There should be nothing in the nature of snobbishness among them. It was necessary, further, that they should accommodate themselves to the fact that a man receiving £4 a week could subscribe more than the man getting £1. Discussing the matter with the chairman of the Manchester Trades Council before this meeting, he (Mr. Smith) found that 6d. a week would provide for unemployment benefit of 10s. per week for ten weeks, and 5s for ten weeks. It would also provide working expenses, but, of course, no out-of-work pay could be given until the union had been established twelve months. In regard to women and the lower-paid workers, the contributions could be varied. At 4d. per week, for instance, they could have 8s. for ten weeks and 4s. for ten weeks of out-of-work benefit, and for 3d. they could have 6s. and 3s. Incidentally, it should be said that it was important that women should be paid the same as men for doing the same work. As to the question of organisation, Mr. Smith said development on trade union lines always progressed in accordance with the amount of benefit received. This did not necessarily mean advance of wages as the result of a strike. The organiser might go to an employer or to a company, and by representations made on a friendly, conversational basis, concessions might be got for the general benefit of the workers. The way to establish any trade union on sound lines was to see that something was done so that everybody in the trade could see that it was worth while being a member of the organisation. This required a certain time to achieve, and the question they had to decide was whether it would be more important to establish their union as a trade organisation, apart from any benefits, or whether they should go in for out-of-work benefit, and leave over the raising of the money for an organiser to a later date. The question of collectors was very important in building up organisations of the kind, and it was customary in trades unions to form little organisations within the larger one, whereby the collecting work was done in particular works or districts. The Post Office should be utilised for as many purposes as possible in organising the union. It was important (Mr. Smith said) that they should consider whether they would appoint someone to do the rough organisation work. It was quite possible they would get support from many trades. Already there had been several applications at the Trades Council from photographers working for engineering and printing firms and in photographic factories, and it was quite possible, if there were an organiser, that he should whip in all the various sections, say, to a "smoker." Invitations could be sent to all the people who would be likely to join the organisation, and some prominent speaker could be got to address them. Mr. Smith said that the appointment of an organiser did not necessarily mean a permanent burden. At a later stage the organisation might go along without him.

A number of questions were put to Mr. Smith. He was asked if it would be advisable to leave out sickness and out-of-work pay for the first twelve months or two years. He replied that this would depend on the number joining the union. They might get 2,000 to join the union in Manchester and elsewhere; and the movement should be made a national one.

An assistant pointed out that a meeting had been held in London at which only eleven turned up.

Mr. Smith: Lancashire is the home of the trade union movement. They do not move easily in London. Manchester should be the centre.

An organiser (Mr. Smith said) would not be long in getting in touch with the whole country, and, if members were got in all over, unemployed benefit could be taken up because of the large membership.

An assistant said he knew of photo-engravers who were prepared to join.

Mr. Smith: And the Trades Council are prepared to help you to the best of their ability.

A question was raised as to the number of assistants in Manchester. One speaker said there were about 600, and another that they numbered over 1,000, including Press photographers. Including the towns round about they could get 3,000.

Mr. Smith said that if the Trades Council were used as a basis they could reach everybody.

In course of further discussion, Mr. Smith said one of the first things must be the publication of a journal for the union, and in their trade, with the advertisements they could get, he thought this might be done on a paying basis.

A question was asked as to the number of female workers in the trade. One assistant said they were in the majority. He had travelled all over the country, and had never seen one studio in which this was not the case. Moreover, in every advertisement it was "lady or gentleman," and a thousand to one it was a lady who got the job. Ladies were preferred in every department. Therefore, one of their principal objects as a union must be to have ladies get the same payment as men.

Reference was made to previous attempts to form a union—one twenty years ago and another about thirty years ago. It was stated that these attempts failed for lack of support.

After some further discussion, it was proposed that Mr. Smith should be appointed organiser. Mr. Smith said he was quite willing to do all he could to establish the organisation. The question of the basis of payment was one which should depend on the number of members. Whoever was appointed organiser should be paid so much per member.

It was unanimously agreed to appoint Mr. Smith organiser, and a permanent committee, with president, secretary and treasurer, was constituted.

It was further decided to hold a smoking concert on as early a date as possible, at which an address should be given by Mr. J. R. Clynes, Labour M.P. for North-East Manchester. This will be the formal inauguration of the union, and it was decided to send out invitation cards to possible members.

# Photo-Mechanical Notes.

### Mertens' Rotary Photogravure.

The issue of the "British and Colonial Printer and Stationer" for October 5 gives a very complete and detailed account of the operation of this process at the office of the "Hamburger Fremdenblatt." The article is illustrated with views of the machine, and, as well as describing the apparatus, it gives the time taken to perform the various operations. Thus we learn that coating the cylinder takes a minute for every 1½ inches, that the exposure to mercury-vapour lamps is from eight to fifteen minutes, and that the developing and etching operations take about two hours. From these figures it is no wonder that the process should be used only for supplements. The writer states that the results are far superior to any that could be obtained with relief half-tone, and that the proprietors appear to be very well satisfied with their installation, which has cost them about £5,000. This article should certainly be read by everyone interested in rotary photogravure. The same issue of the "British and Colonial" contains also a column description of Mr. Saalburg's various patents for producing rotary photogravure in colours.

### Assistants in Process.

"Another S" writes:—"With all due respect to the 'British Journal of Photography,' it does not, so far, widely circulate among the operatives in process establishments, and therefore it is not surprising that your correspondent did not obtain more than four replies to his advertisement in your columns. Advertisements when they are inserted by process firms at all, usually go to the 'Daily News,' 'Chronicle,' or 'Telegraph,' but by far the commoner method of seeking assistants is through the supply houses, who now make the employment bureau a feature of their business. The first to do this, Messrs. Penrose and Co., indeed have become the Hapgoods of the photo-engraving world, and most workers who are out of employment, or desire a change, are registered with them, and the situations filled in by their agency probably run into some hundreds annually.

"On another point I should like to say that, while it is a satisfaction to be able to read a few notes on photo-mechanical matters without encountering fulsome puffs of some piece of apparatus or other which may or may not be a desirable addition to equipment, when any novelty that is likely to be of interest comes along it ought to be noticed, and in case you have not already done so, I should like you to mention two improvements that will perhaps be widely adopted sooner or later. The first is the extension of the principle of making the lamp holder part and parcel of the camera stand (as it is in Hunter's iron stands), so that the lamps can be pulled back as far as necessary in the case of large originals. To do this the pillar supporting the lamp, instead of being fixed, as hitherto, is carried on a base that runs in grooves at the side of the camera stand. I have only seen illustrations of the device in the catalogues of German dealers as yet. The other novelty is the substitution of the all-conquering Bowden wire (or perhaps I ought to say steel cable), for the rack and pinion, as a focussing device. This is the leading feature in the new camera, with which Mr. Tilley makes his appeal to the process world. It enables the focussing to be done very easily and very rapidly. Nor is it the only improvement on the camera, for there is an iron front, an adjustable screen indicator, and several other features which are possibly of more importance in the eyes of the constructor than they will be in the eyes of the operator, but on seeing the steel wire, the latter will ask how it was that no one thought of it before."

(While we are glad to be acquitted of puffery, we do not think that any piece of apparatus of importance of recent introduction has escaped notice in our columns. Mr. Tilley's camera was, in fact, about to be noticed by us.—Eds. "B.J.")

### Costing Systems for Photo-Engravers.

To the Editors.

Gentlemen,—It may have come to your knowledge that on June 1 last I summoned a meeting of the Process Engraving trade to consider once again the question of price maintenance.

My action was entirely independent and arose purely out of knowledge derived from a professional connection with the trade for many years past.

The meeting was very fully attended, and a resolution was passed appointing a committee to consider the question of costing, and in conjunction therewith the question of prices.

The committee appointed, consisting of representatives of about ten leading firms both in London and the provinces, have held many meetings and have given considerable time and trouble to the consideration of the subjects before them.

As a result they have come to the conclusion that some well-considered costing system should be recommended for adoption by those firms who at present have no system at all, or at the best an imperfect one, and the committee have given much attention to the details of such a scheme.

The members have loyally attended at what must have been on many occasions personal inconvenience to themselves, and they have now devised a costing system which will be suitable for both London and provincial firms, and under any circumstances, and whether for large or small businesses.

I need hardly say it is not intended to inquire into the business management of any firm, nor for a moment to suggest any interference in the way in which a business has been carried on, but it is felt that the general adoption of a proper costing system would very largely tend to do away with the present deplorable cutting of prices, the existence of which everyone admits and no one can defend.

I may say that the committee have in hand other matters for the benefit of the trade, but I am not yet in a position to disclose what these are.

My object in writing to you (of course, with the sanction of my committee) is to inform you that there is now at work an active and enthusiastic body, who are determined to deal with the problems with which this trade is faced, and are filled with a patient determination to leave no stone unturned in their endeavour to discover a solution for them.—Yours faithfully, E. A. WALMILEY.

Cranbrook Chambers, Ilford. October 9, 1911.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between September 25 and 30:—

PRINTING-FRAMES. — No. 21,470. Photographic printing-frames. Frederick Sharp.

PRINTING MACHINES.—No. 21,513. Photographic printing machines. William Edward Lake for Huebner-Bleistein Patents Co., United States.

CINEMATOGRAPHY.—No. 21,608. Cinematograph projection apparatus. Harold Williamson Lake.

COLOUR CINEMATOGRAPHY.—No. 21,261. Cinematograph apparatus for the production of coloured pictures. John Campbell.

COLOUR CINEMATOGRAPHY.—No. 21,576. Flat expansible frame for the development, colour sensitising, drying, and general chemical treatment of cinematograph films. Colin Noel Bennett.

RANGE AND DIRECTION APPARATUS.—No. 21,086. Instrument for estimating the range and direction of motion of an objective ship for which pictures or photographs in various attitudes are available. John Rickards Middleton, Archibald Barr and William Stroud.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

LIGHT-TRANSFORMING REFLECTORS.—No. 16,271, 1911 (July 23, 1910). This invention relates to arrangements for combining with the rays from a source of light which is deficient in some desired portion of the spectrum, rays of other wave-length produced by the transformation of certain rays or waves or one length into rays or waves of another length and of such character as to supply the rays or wave-length desired.

The invention has for its object to provide an improved composition and method of preparation of materials suitable for transforming light rays, and when desired adding light waves of definite character to light from any source.

In practice, while it is found that several different materials and compounds may be used with greater or less efficiency and durability, most excellent results are obtained by the use of rhodamine combined in the proper proportions with acetate of cellulose to which glycerine or acetic acid has been added.

A combination of the materials having a structure retentive of light-transforming property combining efficiency and durability can be secured in the following manner:—

A varnish is formed consisting of 70 per cent. of acetate of cellulose, 10 per cent. of glycerine, and 20 per cent. of acetic acid, the above percentages being the dry weight percentages. To this is added technical acetone to make a 12 per cent. solution. The acetate of cellulose, known in commerce as "cellat," is preferably prepared as follows:—

The cellat is first bleached with permanganate of potash rendered acid with sulphuric acid, and subsequently treated with sulphurous acid for further bleaching and removing the permanganate, the material being finally washed with water until free from salts. This bleaching is not absolutely necessary, but is found to be of advantage. An amount of rhodamine equivalent to three hundredths by weight to the dry weight of the cellat and glycerine, is added, the rhodamine being in solution in alcohol or acetone for convenience. The whole forms a varnish which, when dry, may be used either for reflecting purposes or as a light-screen or filter; that is to say, it may be painted upon a suitable backing and when dry the transformed light reflected therefrom and mingled with the light from the source, or it may be made into a film or painted upon a suitable transparent backing and placed wholly or partially around the source of light so that more or less of the original light and the transformed light will be mingled.

Various forms of backings or supports for varnishes of this general character, and also materials which may be mixed with the varnish for the purpose of increasing the light qualities thereof, may be employed. When the varnish is to be placed upon a backing or support to serve as a reflector of light it is found advantageous to use as the immediate support for the varnish a material, such for instance as kalsomine, white lead, or other material having the property of dispersing light. In some cases it may be desirable to mix the light-dispersing material with the varnish.

As the varnish dries, the acetic acid and acetone evaporate, leaving the acetate of cellulose, the colouring matter, and a quantity of glycerine as the light-transformer.

The varnish may be painted upon a suitable temporary support, dried, and afterwards stripped off the support and used independently of any other support as a light-reflector or screen.

Any desired number of coatings of the varnish may be painted upon the support in succession; for instance, five coats quickly applied one after the other is found to give a very efficient result.

The proportions of the different ingredients of the varnish may be modified to a reasonable extent without exceeding the scope of the invention. Peter Cooper Hewitt, Ringwood Manor, Passaic County, New Jersey, U.S.A.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

FLASHLIGHT.—No. 17,976. Flash-light mechanism. Boucher.

# New Trade Names.

PATHE.—No. 304,768. Electrical apparatus included in Class 8 for synchronising phonographs with cinematographs and the like apparatus, cinematographic apparatus and phonographic apparatus and accessories included in this class relating thereto. Compagnie

Générale de Phonographes, Cinematographes, and Appareils de Précision, 99, Rue de Richelieu, Paris, France, manufacturers. July 16, 1908.

KINEMACOLOR (C. URBAN).—No. 333,708. Cinematographic films for exhibition. The Natural Color Kinematograph Co., Ltd., Kinemacolor Building, 80 to 82, Wardour Street, London, manufacturers. May 18, 1911.

JARNIA.—No. 335,412. Cameras and other photographic apparatus included in Class 8. John Arnold, 6, Brownswood Park, South Hornsey, N., engineer. August 2, 1911.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

FRIDAY, OCTOBER 13.

Cowlairs Co-operative Camera Club. Council Meeting. Trimming and Mounting Prints.

SATURDAY, OCTOBER 14.

North Middlesex Photographic Society. Outing to Teddington and Kingston.

MONDAY, OCTOBER 16.

Erdington Photographic Society. Autotype Carbon Demonstration.
Dewsbury Photographic Society. "The Ruined Abbeys of Yorkshire." Rev. J. Beanland, M.A.
City of London and Cripplegate Photographic Society. "Developing." Montague Wickham.
Leeds Camera Club. "Monastic Life in the Middle Ages." Harold Baker.
Bowes Park and District Photographic Society. "Winchelsea and Rye; The Nobiliora Membra of the Cinque Ports." A. Brooker.
Bradford Photographic Society. "Rothenburg." James Shaw.
South London Photographic Society. "Nature and the Camera." T. J. Ward.

TUESDAY, OCTOBER 17.

Royal Photographic Society. "Photomicrography from the popular side." A. E. Smith.
Doncaster Camera Club. "Negative Making." T. Haigh Connor.
Birmingham Photographic Society. Annual General Meeting.
Leeds Photographic Society. "Portraiture." T. Lee Syms.
Sheffield Photographic Society. "The Catacombs of Rome." Rev. Bernard Butler, S.J.
Halifax Camera Club. Print Criticism. The Members.
Manchester Amateur Photographic Society. "Thornton-Pickard Prize Slides, &c." R. Hesketh.

WEDNESDAY, OCTOBER 18.

Sale Photographic Society. "The Platinotype Process." S. Forster.
North Middlesex Photographic Society. "Still Life." T. W. Reader. Print Competition—Outing, Westminster.
Huddersfield Naturalist and Photographic Society. "A Trip to Brittany." A. E. Porter.
Ealing Photographic Society. Portfolio Criticisms.
West Surrey Photographic Society. "Still Life Photography." R. Baskett.
Croydon Camera Club. "Forest Life." F. Martin Duncan.
Partick Camera Club. "Woodland and Landscape Photography." By Dan Dunlop.

THURSDAY, OCTOBER 19.

Shotts Camera Club. Autotype Carbon Demonstration.
Sutton Photographic Club. Annual General Meeting. "Some Notes on Child Portraiture." V. Jobling.
Liverpool Amateur Photographic Association. "Retouching the Negative." F. A. Cooper.
London and Provincial Photographic Association. "X-Ray Demonstration." J. L. Pigg.
Handsworth Photographic Society. "Bromide Enlarging." A. E. Teague.
Chelsea and District Photographic Society. "August on a Small Holding." H. H. Wrench.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, October 10, the president, Lord Redesdale, in the chair.

The minutes of a previous meeting having been read and confirmed, Lord Redesdale then delivered his presidential address, taking as his subject the life and labours of the celebrated Italian painter of the stolen "Monna Lisa," Leonardo da Vinci. Commencing with some passages of delightful humour, in which he referred to the elegance of the theft from the Louvre, he vividly sketched the condition of art, both in Europe and the East, at the time of Leonardo. He had taken, he said, the life and work of da Vinci as the subject of his address, since the vast knowledge and learning which the artist had of the sciences made him a peculiarly fitting and profitable study for photographers, in whose art chemistry, physics, and, therefore, indirectly mathematics, joined forces with the craft and thoughts of the artist. Men such as Leonardo gave the lie to the dictum of Schopenhauer that preeminence as a painter and powers of exact observation and reasoning were never found united in the same individual. Briefly passing over the parentage and youth of Leonardo and his early training and work as an artist, Lord Redesdale dealt at greater length with his life-long labours in the field of mechanics and his many observations in almost every branch of natural philosophy. A true estimate of the greatness of Leonardo in these fields of learning was denied to his contemporaries because most of his observations were not published during his lifetime, and, indeed, owing to their having been written in cipher, were not understood until many years after his death. Yet it had of late been shown through the researches of German and French literary investigators that in his views on many matters of natural science he anticipated the work of philosophers of the century following his. At the conclusion of a most intensely interesting address Lord Redesdale turned to the lessons for photographers which were to be learnt from a study of the great Italian painter and philosopher. Leonardo, with his passion for truth, would have abhorred the efforts of the photographer to do work in imitation of other crafts of the artist. Lord Redesdale, in a few lurid sentences, threw derision upon the manner in which photography at the hands of some of its modern exponents was made to ape the other arts to the utter disregard of those qualities which made it admirable in itself. On the proposition of Mr. W. B. Ferguson, seconded by Mr. H. Chapman Jones, the Society showed its keen appreciation of the president's address by a most enthusiastic vote of thanks.

CROYDON CAMERA CLUB.—The winter session opened on the 4th inst. After the minutes of the last meeting had been passed and approved as hopelessly inaccurate, the Secretary announced it had been arranged that the Club should contribute to the Affiliation portfolio recently started, and for the first time they proposed asking members to take part in the Affiliated Societies' Exhibition. He understood that no exhibit would be accepted unless at least six members were hanged. Although the Secretary expressed no opinion one way or the other as to the wisdom of this rule, so far as this club is concerned, provided a judicious selection be made, there can be no doubt it would operate beneficially, even if it resulted in a considerable thinning of the council.

Mr. H. T. Dodsworth then read his Presidential address, the first part of which consisted of a recital in classic form and complimentary vein of the proceedings of the last session. A most painstaking amount of writing and re-writing must have been involved, and the President well deserved the cheers which marked its termination. The second part initiated a discussion on "Photographic Technique of the Present Day." For some inscrutable reason the pictorialists solidly defended the present, whilst the reputed technicians mostly eulogised the misty past. Mr. E. A. Salt, championing days gone by, formally opened the discussion, and for once in his life failed to excite the wrath of the artistic element; it was generally felt that he was "off colour." Dr. Mees opposed most of Mr. Salt's contentions, but complimented him on several definitions laid down, which deserved to live for ever in the realms of pure comedy. Mr. J. M. Sellors said that the photographer of to-day was doubtless "spoon-fed," and occasioned much laughter by instancing modern plate-speed numbers as being of great use in assisting the tyro towards correct exposure. The majority of pictorialists, in his opinion, were far better technicians than many purists, who habitually turned up their noses in disdain. In reply to a question of Mr. Salt's he snappishly added he did not in the least wish to infer that the possessor of a naturally retroussé nose was necessarily a technician. Mr. W. H. Smith said if modern technique was so perfect as some had represented, why did the average negative require such a fearful amount of dodging to obtain satisfactory prints? In their House exhibitions the criticisms of their leading pictorialists would generally lead one to believe there was not a decent print on the walls. Mr. Woods pointed out that there were so many printing processes capable of dealing with every type of negative that many workers lapsed into a careless method of working, which naturally did not conduce to good technique. Mr. H. P. C. Harpur, eloquent as ever, and more coherent than usual, strongly maintained that in the technique present-day serious workers were far in advance of their forefathers. Could anyone deny that their photographic progenitors invariably exhibited an abominable taste in mounting, and frequently in framing their wiry and bald-headed landscapes. He had made copious notes, which former speakers had rendered obsolete. Mr. Salt made a brief reply on the many points raised, in the course of which he deprecated Dr. Mees trying to assume the rôle of a pictorialist. The solitary silver medal which Dr. Mees had gained in one of their open exhibitions, probably by some unfortunate error in the compilation of the awards, was insufficient justification.

Walsall Photographic Society.—At the meeting of last week Mr. Wm. Bell gave a most interesting and instructive lecture and demonstration on "Retouching." How to produce the best points on the pencils used, what sort of pencils to procure, the best retouching medium to buy, and how best to apply it to the negative, were dealt with in his opening remarks. Then followed instructions as to knives, and knife work on the negative, followed again by spotting brushes and how to use them, with most valuable hints as to making little tools and contrivances for improving the work at various stages. But perhaps the most interesting part of the lecture was the exhaustive instruction given by Mr. Bell on the proper strokes to use in the actual retouching itself, which was greatly enhanced by the use of an enlarged paper negative, on which the strokes were actually shown, and also by the use of some most artistic pen and ink sketches of the eye, nose, and different parts of the face, which had been drawn by the demonstrator purposely for the occasion. Everything was dealt with in a most masterly manner, and every detail followed with the keenest attention by the large number of members present.

# Commercial & Legal Intelligence.

Legal Notices.—At Birmingham on October 4 the first meeting was held of the creditors of Herbert Edward Newey, camera bellows maker, carrying on business at 9, Great Colmore Street, Birmingham. The liabilities were put at £102, and the estimated deficiency at £63, while the causes of failure alleged were bad trade, foreign competition, and want of capital. The matter was left in the hands of the Official Receiver.

## NEW COMPANIES REGISTERED.

Ideal Studios, Ltd.—September 13, in Edinburgh. £500, in £1 shares (400 Preference). Business: That of Henry Coates, photographer, Perth. Private company. Office, 10, Scott Street, Perth.

Scottish Pictorial Circle.—At the opening meeting of the Scottish Pictorial Circle, the president, Mr. W. C. S. Fergusson occupied the chair, and extended a cordial welcome to the new members and associates of the Circle. A start was being made with a new name and practically a new constitution, so that the future lay in the hands of the individual members and associates. He would ask each to remember that they stood for the advance of pictorial photography in Scotland. Mr. Fergusson then proceeded with his presidential address, taking for his subject the question of "Motive." Many prints that came under his notice, he found, were lacking in motive such as is requisite and essential to success. Workers must not because of that run away with the idea that there was no original motive. There must have been some, but the photographer had failed to get it after all. The landscape, as seen, had the glory of colour, but in the print it fell flat. He did not recommend that one should altogether ignore colour, but it was best to consider the subject as it appeared, and whether it would retain sufficient tone to justify its existence. Supposing we photographed a tree or a street scene, we hardly called that motive. If we photographed the tree looming out of the fog in surroundings suitable, or the street with the sun showing shadows, we no longer photographed for the subject itself, but for the effect produced, and that was the motive of the picture. The impulsive man would often secure an occasional picture by taking many photographs in a hurry, but he was the one who benefited the plate-maker, and it was more from good luck than good guidance that any good results were attained. The deliberative man was not in a hurry, and would abandon the subject altogether unless the motive was likely to be achieved. An effort should be made to show personality as well as motive, and not make pictures after the style of Whitehead's or Demachy's, or any other worker of prominence. Photographers should not be disappointed if their pictures did not always appeal to others, but they should be a remembrance of thought and time that has been well spent.

# Correspondence.

*** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** We do not undertake responsibility for the opinions expressed by our correspondents.*

## A PROPOSED UNION FOR PHOTOGRAPHIC ASSISTANTS.

To the Editors.

Gentlemen,—The correspondence in the "B.J." on a photographic assistants' union, I think, is very sensible, practical, and interesting. I like G. C. Reidy's views, and if assistants would more often study the employers' interest, with a suggestion here and there, that would probably help the employer, say, in saving waste, or some more economical way in using developers, etc. The assistant is no loser for his practical advice, but, alas! how many old-fashioned assistants keep things to themselves rather than tell their employer, and often laugh when they see things going wrong, when perhaps a word from them might put the whole thing right, and how many refuse to "get the hustle on." I remember ten years ago I had a good retoucher. But he was very slow. He would count up how many negatives he had done at a good trade price per head, and only do the number that he considered was sufficient to his day's wage. He received £2 per week. We had several cutting firms open here. Down went the prices. Postcards began to come along, and I had to "get the hustle on" or go under. I seriously thought the matter over, decided to "get the hustle on," but keep my prices as high as possible. Now this individual would not get a hustle on. I explained to him that as prices had dropped he must put less work on negatives, and that he must rush them through as much as possible. This he refused to do, so, of course, he had to go, and for five years his family scarcely knew what it was to have a good dinner. Now he has "put the hustle on," working up B. and W., and retouching at a low price, and earning a good wage every week, although perhaps not quite up to his £2 per week. Now, if only he had "put the hustle on" and adapted himself to altered circumstances, as far as I am concerned, he could have been in my employ at the same wage all the time. Probably he is only one out of many assistants if circumstances call for it.

Paragraph 2 is very correct re the unpractical assistant. Having doubled my staff this last five years I have frequently advertised for assistants, especially for the dark-room. Men have answered and turned up, with splendid testimonials, but when put to do the work simply knew nothing about it. Their first request, when asked to do anything, would be, "you show me the way you like it done," or words to that effect. Or, "Oh, I shall want just a little practice at this, as I have not done any for a number of years." Yet they have written and said they were good at this special work. Several of them came from very long distances, and as I agreed to pay their fare, I found it a very expensive item—one week's pay, railway fare, material wasted, and the inconvenience of having to put my other assistants on overtime, which I paid for to get the work out. Not long ago I had four assistants consecutively for the dark-room that were useless. Two admitted they were hard up and took the job on to get a little cash. I wrote and told them the wage, which was 30s. per week, for dark-room only, and what I wanted them to do.

Now, assistants, if you can form a union that will stop this sort of fraud, "put a hustle on" and do it.

"T. W. P." brings out some good points. The cheap labour, with his other catalogue of nasty things, is a good point. Form the union and make it impossible to be able to utilise cheap labour, and so consequently shut up the cheap jack "slotographer." The cheap jack slotographer will probably cause one or more studios to be closed that would have given you a decent wage and your Sunday free, not a few hours one day in the week, and call it equivalent to Sunday, when all your friends are working, but your half-day in the week and Sunday free, when your other pals and friends are free; and if you are so inclined you can worship your Maker, and get out in the country and see the sights He has prepared for the eye of man, breathe fresh air into your lungs, and feel you are a man, not a machine. "Put the hustle on," support the assistants' union in their good endeavour to get this day for you, which is your just right. Form your union, lift up the name of photography, and I think you will find employers are with you.—Yours truly, F. J. S.

### To the Editors.

Gentlemen,—I am sorry to again trouble you, but when I said I would not do so again upon the question of the proposed union, I had in mind the endless discussion my suggestion offered, which I felt it would be useless for me to continue through the medium of your valuable columns.

I stated my argument plainly, and I feel sure that some will find good points in it, and they may rest assured that any facts stated are correct in every detail.

Unfortunately, some of my critics, carried away by their wrath and indignation at the thought that I should dare to attend a meeting, public only to photographic assistants and the press, have overstepped the borders of criticism and indulged in personalities.

Just a word of advice for their future guidance and I have finished. 'Tis well when engaged in friendly argument to keep a cool head, and, above all, be prepared, if necessary, to substantiate your remarks. By so doing only can you look for success in debate. This is an excellent example. You have stated your case, and, more, failed ignominiously. For your further enlightenment, rest assured that I was not in attendance at that meeting, but an old friend of my assistant days was present in his true capacity, and so splutters out the wrath and indignation.—Yours truly,

L. R. GOODYER.

33, High Street, Bognor.
October 7, 1911.

### To the Editors.

Gentlemen,—I have already expressed some of my views as to a Union, but now I wish to say an association such as "T. W. P." suggests, would have my best support—a society, waiving the wage and hour question, concentrating on the necessity of obtaining Government action in regard to apprentices, etc., etc.

Before permanent improvement can be made the root of the trouble must be found. "T. W. P." gets near the spot when he speaks of the admission of young workers into photography as a profession. Decrease the number of apprentices and have them properly taught, then we shall soon see a change for the better in photography.

To get a little nearer the root of the trouble, I would draw attention to the lack of self-help among assistants. The assistants of to-day will be masters in the future; but what efforts are they making to fit themselves for such positions? It does not matter what Union is formed, there will be no permanent improvement until assistants wake up to the fact that they must help themselves individually more than they are doing at present if they wish for a better state of affairs.

There is a passage in "Play Fair's" letter which bears on this point. In referring to Mr. Goodyer he writes :—"He has shown us that he has reached a happy condition by an unusually fortunate series of circumstances, aided, no doubt, by some native ability and the above rule" (which reads "every man for himself"). To my mind, this views Mr. Goodyer in an entirely wrong light, but that is not the point I want to deal with. I do not know Mr. Goodyer only by name, but I judge he is capable of speaking for himself. Now the question is this : Do successful men reach that happy condition by an unusually fortunate series of circumstances? Certainly not. I know of many cases similar to the one Mr. Goodyer related. Such circumstances are not at all unusual; but a man to be successful must master circumstances, and not let circumstances master him. Nine out of ten assistants would have accepted a lower wage, and not made the slightest effort to benefit by the opportunities given. There's the difference! If Mr. Goodyer had not spoken for himself, who would for him?

I was sorry to note the bitter tone of "Play Fair's" letter. Personal remarks are not calculated to do the cause any good. If assistants only go about this matter in the right way they will find that many master photographers can help them to a very large degree.

In conclusion, I should like to say to the young assistants the future of photography is in your hands. Shape it as well as possible. Consider well the best means of dealing with the present trouble to ensure a satisfactory and lasting improvement—and act. Yours truly, NON-UNIONIST.

### To the Editors.

Gentlemen,—A Trade Union has been formed for Photographic Assistants, and after reading the correspondence on the subject in your columns of late, one would certainly think there was a great and crying need for such a thing. We are told that the employer is a tyrant, that the working hours are cruel, that the wages are not enough to keep body and soul together, that the general conditions are as bad as they can possibly be, and that the only way to stop this most desperate state of affairs is to form a Trade Union, so that the men by combining against the masters may compel this terrible slavery to stop.

Now, gentlemen, may I, as an assistant in a business not a long way from Bond Street, be allowed to say that in my experience (and I have had a long one) I have not yet discovered in our profession any of these fearful conditions to exist. I have no doubt things might be better, for we shall not find much this side of Heaven that is quite perfect; and, incidentally, all of us rejoice that there will be no photography there.

But I want to suggest that if there are points that want correction, we, as assistants, shall not gain the desired result by this weak and foolish Union talk.

In our profession to-day there is a great and crying need, but it does not come from the assistant, it comes from the employer. It is the need for good and honest workers. I challenge any assistant who feels inclined to lean towards a trade union, to go to a good photographer, and he will find that if he is a good worker he can command his own price and his own conditions, for good workers are few and far between, and there is a greater demand than there is supply. On the other hand, if he is no good he had better not trouble, but stick to his 25s., be thankful he can get it, and remember there are other fools who do not get as much.

My contention is that where the worker is good the work is better. The employer can command better prices for it, and so pay better wages; then is the status of all improved. But this idea of a Union, to start by improving the employer, is so weak. It is not the master that makes all the progress, 'tis rather with the man, who produces the satisfactory article. A Trade Union will never achieve anything that's good, for I contend that a Trade Unionist can neither be honest to his employer nor to himself.

Concerning the question of hours of working, photography is not exactly like laying bricks—one cannot lay down one's tools always to the moment—and I have not yet had a governor to whom at a busy time I have given an hour, who has not when times were slack, returned it with interest when I wanted to take the dog out.

It was my keenness on the subject generally, and my interest in my profession, that led me to attend the meeting the other night when this glorious society came into being.

The meeting itself did not strike me very impressively. Mr. Jarrett had expended a deal of subtle humour, *plus* 25s. (for the latter item a collection was made); but, with all that, out of the few thousands of assistants in London and near by, only eleven turned up. I do not think Mr. J. himself had great faith, for he only provided seats for twenty-five. I know there were only twenty-five, because I counted, and I am very good at counting (up to twenty-five). If Mr. J. is only as good, he will not need, I'll wager, to be better, he will be able easily to count up his followers in London.

I note that he says the room would hold fifty. I do not dispute it. Packed lengthways, on the floor, on top of one another (like sardines), the room would hold 150; but it does not affect the question that only eleven were there.

Still, the Union was formed, and, of course, many great works have started with less adherents, but it seems to me a poor return for all Mr. Jarrett's humour—never mind the 25s.

By the way, it seems a pity that some of his friends cannot take a little gentle criticism without showing such a funny temper. One of them, who most unsuitably terms himself "Play Fair," told us in last week's "Journal" that he had to rest two whole days (and, I suppose, nights) to let his indignation cool down before he replied to Mr. Goodyer. Having at the end of this time seemingly got over this bad attack, he writes and makes the foolish statement that Mr. Goodyer (although a master man and therefore a hated capitalist) got into a private assistants' meeting by false pretences, and spoke and voted against the formation of the society. As Mr. Goodyer was not there at all, and as I was the only one present not in agreement, it seems a pity that "Fair Play" did not take a further couple of days to recover.

But to the subject. Honestly, I do not know of what my fellow assistants complain. Some of them, no doubt, do require a Union to protect them. I have met some that deserved three months as well.

Of what does Mr. Jarrett complain for himself? Surely, "for an assistant," he cannot have a bad berth, either as regards pay or hours, for he seems to be able to dash about the country holding little "Bands of Hope" meetings, and generally amusing himself. I cannot really think "his" photography is the better for it.

No, gentlemen, although I hold no brief for the employer, yet in my humble judgment no Union is necessary.

But it is formed. The Society of Photographic Assistants and Allied Trades is with us. It is a good name, I like it, it sounds well. May I suggest that by the side of it, on the society's note-paper, they use as an emblem a clock, ever pointing to six, and for a little motto the following :—

"I've worked eight hours this day,
For my Union rate of pay;
Your plates are in the dish,
For your prints you can fish,
For I wouldn't work a half a minute longer."

—Faithfully yours, WILLIAM G. HEARN.

16, Manchester Square, W.

## TANK DEVELOPMENT.

To the Editors.

Gentlemen,—The chief and almost the only trouble I experience in the use of a tank for developing is air-bubbles adhering to the plates.

This occurs even with the greatest care in procedure, and I think it may be because I draw water direct from main supply.

I thought of fixing a copper cistern of about three gallons capacity (which I happen to have by me) in the dark-room, and keeping a supply of boiled water in that.

Is there any need to have it enamelled, or would the plain copper be harmless?

I quite agree with your correspondents who consider the claims made for the various tanks are too sweeping. Different batches of the same plate will often vary so much in their developing speed, as Mr. Watkins is careful to point out, that only a trial of each batch can save an occasional catastrophe.

The tank with its dilute developer also fails in cases of real under-exposure, though it helps in over-exposure by carrying development beyond what the plate would probably get in a dish, and so increasing contrast, which is needed in such a case.—Yours faithfully,

N. F. H.

[The plain copper should be quite harmless; in fact, you could hardly have anything better than copper.—EDS. "B. J."

## PLATE BACKING.

To the Editors.

Gentlemen,—In your "Answers to Correspondents" I notice an enquiry about plate-backing, and although your advice needs no revision, I am venturing to send you a form of backing that I have found very effective and simple. It is primarily "Boryl-caramel," as supplied by Messrs. Lichtenstein and Co. This is carefully thinned by judicious additions of methylated spirit, water, and a strong solution of (I use) gum arabic, until an even mixture of the consistence of paste is attained. To this is added, drop by drop, Stephens' ebony stain, until a trial coating on a piece of glass gives an opaque film. The backing properties of the caramel are immensely improved by the addition of the stain, although by transmitted light the colour of the stain is rather lake than ebony. It dries very quickly if the water is sparingly added.—I am, Gentlemen, yours faithfully, G. T. HARRIS.

## THE POLICY OF THE P.P.A.

To the Editors.

Gentlemen,—A special general meeting of the P.P.A. is called for October 13 to consider the question of the annual business meeting.

While the members will welcome the opportunity given by the Council to discuss this matter, many will find the new rule suggested unsatisfactory, in that it leaves the holding of an annual congress at the discretion of the Council.

The advantages of an annual congress are obvious. Before the Congress was started the membership of the P.P.A. had been decreasing. It was openly stated by many photographers (though the statement was hardly fair or accurate) that the P.P.A. was no good to them. Since the congresses have been held the number of members has gone up greatly, and the general interest in the association has undoubtedly increased, and yet the authorities have not the courage to make this congress an annual and permanent feature of the P.P.A.

Various reasons have been given for this. It seems that there was a slight loss on each congress, though less on the last than on the first, but the amount is such that a slight re-arrangement of the fees charged would make it up, even if the small deficit were not thought a proper charge on the general funds.

There is also, surely, no reason why we should be dependent on any exhibition or other society for support which may or may not be forthcoming in any given year. If the co-operation can be got, well and good, but, if not, can we not stand on our own legs?

Then there may be a natural fear on the part of those who guide the destinies of the association that a business meeting composed of those who are unfamiliar with the work of the Council and the general business of the Association, may pass resolutions or come to decisions which will not be for the benefit of the P.P.A. But this is a risk which must be run, and the interest aroused will more than compensate for any indiscretion of which a large meeting may be guilty. And I am sure that any criticism of the work of the Council will be made in a sympathetic spirit, and with a full acknowledgment of the arduous work of the Secretary and Council throughout the year.

It would be well, too, if the feeling generally expressed at last congress were understood by those arranging future congresses, viz., that the bulk of the time should be devoted to business discussions and to demonstrations where things would not be rushed at the close of a busy day. One day's outing would be quite sufficient, as many of the members make considerable sacrifices to come on what they hope to be useful and serious business. In saying this, I am making no reflection on the organisers of past congresses, whose efforts were justified by the circumstances, and by the success which attended them. But we must learn by experience, and try to improve things if we can.

To my great regret I am unable to attend the special meeting, and I am, therefore, indebted to you for the courtesy of your columns to enable me to put my views on this important point before my fellow members of the P.P.A.—I am, &c.,

T. DRUMMOND SHIELS.

## TITLE-LETTERING ON NEGATIVES.

To the Editors.

Gentlemen,—I read in your correspondence columns a few weeks back of a reader who was troubled to find a way to title negatives. I have done quite a lot of titling, and perhaps can help him out. The outfit I used is sold by Messrs. Burke and James, of Chicago, Ill., and is named "The Titleit Outfit."

I cannot say for certain the price of the outfit or the exact number of alphabets it contained, as prices differ in each direction. The letters are made of a light copper material, carefully cut, and of miniature size, and can be fixed on the negative with a brush moistened with a special adhesive which is supplied in the outfit. One outfit will last several months with care. The letters can easily be removed from a negative at any time.—Yours truly,

George Charles Reidy.

128, Pembroke Street,
Toronto, Ontario, Canada.

[We believe the "Titleit" outfit referred to by our correspondent is sold in this country by Messrs. O. Sichel and Co., 52, Bunhill Row, E.C.—Eds. "B. J."]

## Answers to Correspondents.

⁂ *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

⁂ *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

⁂ *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood *& Co., 24, Wellington Street, Strand, London, W.C.*

⁂ *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

### Photographs Registered:

E. H. Lord, King Street Post Office, Hebden Bridge, Yorks. *Photograph of a View of Heptonstall.*

T. S. Davis, 29, Ashfield Avenue, Lancaster. *Photograph of E. B. Dawson of Aldcliffe Hall, Lancaster.*

Wallis.—Yes, much too dark. It looks as though the studio light wanted diffusing with light blinds, the sitter placed further from it, and a reflector used. You should study the articles on lighting which appeared in the "B.J." for March 18 and 25, and April 1, 8 and 15, 1910.

Enamels.—Can you advise me on the best book to obtain on the production of ceramic enamels in colours and monochrome?—Enamel.

"Ceramic Enamels," by W. Ethelbert Henry, published by Routledge and Co., 68, Carter Lane, E.C., 1s. 6d.

Eosine.—Please advise me as to firm that sells eosine, as per article in "B.J.," September 1, 1911. I am unable to find it listed in the American chemical books.—Geo. H. Russell.

Mawson and Swan, Mosley Street, Newcastle-on-Tyne; Fuerst Brothers, 17, Philpot Lane, London, E.C.; or Penrose and Co., 109, Farringdon Road, London, E.C.

Warm-toned Bromides.—Can you inform me in next issue of "B.J." if there is any way of obtaining a warm black or olive-black by adding something to the developer of bromides?—Warm Black.

You can use developers which, with extra exposure, will give a warmer-toned colour, e.g., pyro-soda made up with plenty of sulphite. But it is not a very good process, not as good as using the copper toner for a short time on the fixed and washed prints.

Copyright.—1. A coloured lithograph has been brought to me to copy as postcards. At the bottom of print is written—"Copyright applied for." I suppose this means nothing; but to ascertain whether it is copyright I must search the register at Somerset House. 2. Can I get someone to do this for me, or will the officials answer, and what is the charge?—"Koppirite."

1. Yes, search must be made: the registers are at Stationers Hall, Ludgate Hill. 2. The officials do not search: you must go yourself or employ someone. The charge for permission to search is 1s.

Cinematography in Colours.—Has it yet been possible to take photographs on a cinematograph film in natural colours direct? I am told that such pictures are taken and are shown at several places in London, also at Clarke's Argyle Theatre, Birkenhead, who has sole rights for that district. The Investiture of the Prince of Wales is one picture mentioned as being taken in natural colours, and not coloured by hand or mechanical means.—Enquirer.

Yes, certainly, the Smith-Urban, or "Kinemacolor," process, now shown nightly at the Scala Theatre, London, and elsewhere.

Lens for Flashlight.—Would you kindly inform me what type of lens would be most suitable for general flashlight work. Size of plate required to cover 12 x 10. Would it be necessary to obtain an expensive anastigmat, or should I find a good quality R.R. lens answer my purpose? Also what would be the best focal length for lens?—Flashlight.

Get a somewhat short focus, 8 in. or 10 in., the larger the aperture the better. You get lens of the older type which will cover fairly well at *f*/11 to *f*/16, and it is of great advantage to select an anastigmat which will do the same at *f*/8 or *f*/6.

Drying Marks on Negatives.—As a reader of your weekly journal I shall be obliged if you could inform me through your paper how I can eliminate marks in negatives, uneven in character, due to non-uniform drying. I have three really good negatives which are suffering from these defects, and if you can suggest a remedy (in detail) that will rid them of these marks I should esteem it a favour.—W. C. Gimber.

We fear there is no certain remedy, but it is worth while trying the effect of re-soaking for, say, twelve hours, and then re-dry carefully. If this fails, you must resort to retouching or dodging in printing.

Colour Prints.—I have seen an advertisement in your journal for colour photography on paper by a Paris firm. I have read about their invention in a daily paper, so would like to give it a trial, but am handicapped owing to my lack of knowledge of colour photography. How should I commence? Which is the right plate or film, and how should I treat same. Your kind advice through your "Journal" will oblige.—M. Collins.

Your first requisite is a screen plate transparency made on the Autochrome or Dufay plate. The former is supplied by the Lumière Co., the latter by the Autotype Co. From this prints are made on the Uto paper.

Removing Varnish.—Recently I was retouching a portrait negative, which is of particular value to me. The varnish was put on rather roughly, and I was dissatisfied with the coarseness of the retouching, and wished to remove the varnish. I had no turpentine by me, and used spirits of wine, thinking it might do, but it had no effect, and I find now that neither turpentine, benzine, or soaking the negative seems to have any effect on the varnish, which now appears to have become insoluble. Can you tell me of anything which can remove it?—Boyce.

You do not say what kind of varnish was used, so it is difficult to answer your query. We suspect, however, that you have not soaked the negative in the spirit long enough. Try soaking in alcohol all night.

Flashlight.—I am asked to take a group of about 100 men in local town hall by flashlight. Hall would be about 50-60 ft. long, the dome shape (*a*) being a large window. There is an ante-room (*b*) adjoining, which provides a good view point. How much flash powder should be used? Lens working at *f*/6, plate 300 H. & D Where would be best point at which to burn powder—inside corner (*c*)?—A Twelve Years' Reader.

We should say you will be obliged to group the people in and in front of the window, and place the camera straight opposite. We cannot say if the breadth of the hall and the shortness of focus of your lens allow of this being done; but if they do, powder must be burnt to right or left close behind the camera. We should say from $\frac{1}{4}$ oz. to $\frac{1}{2}$ oz. of powder.

**Examinations.**—Shall be pleased if you will inform me if it is possible for me to enter the City and Guilds of London Institute examinations. In this city (Norwich) there are no photographic classes in connection with the Technical Institute, but have studied photography for several years, and should very much like to compete for the ordinary grade examination. If it is possible for me to enter, I shall be extremely obliged if you will inform me whom to write to and address of same.—Xam.

Certainly, you can enter for the examination without attending a class. Write to the Secretary, Examination Dept., City and Guilds of London Institute, Exhibition Road, South Kensington, S.W., asking for the address of the centre nearest to you where examinations are held.

**Economical Washing.** Having had a water meter fixed on my supply I should be glad if you or any reader can give me an idea as to the most economical way of washing prints and plates. I thought of hand-washing them a few minutes, and then putting them through an eliminator. If they are hand-washed throughout, how many changes of water do you consider it necessary to put them through to thoroughly remove all hypo, and how long should they remain in each change, both prints and plates? Up to the present I have been using running water.—Meter.

For plates six changes should be enough, if five minutes' soaking is allowed between each change. For prints we should consider twelve changes desirable, but you must be careful to keep the prints separate from each other throughout the various soakings.

**Copyright.**—1. If under the proposed new Copyright Bill it will be necessary to register a photograph so as to secure effective ownership of copyright? 2. Copyright Bill (191), August 18, 1911. Part 1, Clause 8. In your opinion does this sufficiently protect the owner of copyright? 3. Under present Act or Acts is one likely to recover damages for infringement where reproduction took place from a print made before registration, but published subsequent to registration? 4. Also where publication takes place previous to registration and circulated after registration?—A. B.

1. No; registration is to be optional. 2. It depends how the clause is interpreted by the Judges. We think it may be assumed that defendants will be required to show that they took ordinary pains to discover whether copyright did exist in the work or that they had reasonable grounds for supposing it did not exist. 3 and 4. Under the 1862 Act, if the actual infringing reproduction was made from an unregistered print, the ruling is that damages cannot be obtained. See last lines of Clause 4 of the 1862 Act.

**Retouching.**—I shall be much obliged if you can inform me if it is possible to do good retouching by artificial light. If so, what light could be used, gas or oil lamps? Electric light is not available, and I wish to put in some practice after business. Also can you inform me of a good handbook on retouching, its price, and where it can be purchased?—Remo.

Any powerful light will answer well for retouching if placed in a suitable position. It is advisable to use an engraver's globe. This is filled with water, tinted blue with nitrate of copper, and serves as a condenser to throw a beam of light either upon a ground glass placed behind the negative or upon a white reflector in the usual way. The object of the blue tint is to cool the light for the benefit of the eyesight and to make it more nearly approach the colour of daylight. "The Art of Retouching Negatives," by R. Johnson (Marion and Co.), "Practical Retouching," by Drinkwater Butt (Iliffe and Sons), and No. 12 of the "Photo Miniature," are all reliable guides. You can order them through any bookseller.

**Studio Gaslight.**—I am contemplating fitting up an 18ft. room into an artificial light studio. I should like to know of a light that would entail the least outlay, yet of sufficient power that I could fix myself. Some time ago I saw advertised an arrangement—two rows of incandescent gas mantles, arranged so as to flash simultaneously. 1. Would you recommend this arrangement? 2. Could I get a ½ sec. full exposure or nearly with it? 3. Would you recommend an acetylene flash lamp, and is one to be procured cheaply?—Flashlight.

Efficient gas lamps for portrait work are to be obtained from Howellite, Ltd., 32, Farringdon Avenue; Kodak, Ltd.; the Tress Co., Rathbone Place, and others. We should say that with a rapid iso' plate and a lens working at *f*/4, you could get a decently exposed negative in half a second, using eight to twelve burners. We do not recommend acetylene where ordinary gas is available. You will find the inverted burners better for photographic work than the upright, and they should be used without glass globes, as these stop much actinic light.

**Restoring Stale Paper.**—I have a stock of old P.O.P., browned in colour, and some bromide and gaslight paper, which get fogged in development. Can you tell me any method, through the "British Journal," by which to revive this stock and turning it into any use?—Old Stock.

We know of no method by which you can render the P.O.P. of service again for printing out, but you can possibly treat it for use as gaslight paper as follows:—Immerse for five minutes in ferric sulphate, ½ oz.; ammonium bromide, ¾ oz.; distilled water, 10 ozs. Make by using 5 ozs. hot water to dissolve each salt, and mix hot. Wash paper sheets for ten minutes and dry. The paper is then exposed and developed as for gaslight.

In the case of the spoilt bromide and gaslight papers, try immersing for one minute in a weak bath of acid permanganate, made as follows:—Potass permanganate, 5 grs.; sulphuric acid, 30 minims; water, 50 ozs. Then rinse and place for one minute in soda sulphite, 20 grs.; water, 1 oz. Rinse and expose wet or after drying. This is stated to reduce the speed of the paper to about half.

**Heating Studio.**—I should be glad if you could make any suggestion to help me in a difficulty I have in heating my studio. It is constructed of wood framing, covered on the outside with galvanised corrugated iron, and match-lined internally. The heating is effected by means of the usual form of circular gas-heating stove. After the stove has been alight long enough to warm the air, the whole of the internal surfaces of the studio-walls, roof, camera, lenses, etc., are covered with condensed water. I should be greatly obliged if you could suggest a remedy for this.—J. S.

Evidently the studio is insufficiently ventilated. The absence of a free inlet or outlet of air will give rise to your trouble, particularly in the case of a studio such as yours, which is not easy to warm quickly owing to the air-space behind the outer wall and inner framing. We would advise you to discard the gas stove and fit in its place an internal combustion stove, burning coke or anthracite, which you can keep in day and night at less cost than for gas at present. You can connect with a short length of stove-pipe to the outside air, and it will thus contribute to the ventilation.

**Heating Work-rooms.**—As an amateur photographer, I have a studio, office, and dark-room all under one roof, used occasionally, say about three days a week during the winter months. Studio is about 20 x 14, office 12 x 10, and dark-room 12 x 4. At present I have no means of warming. What is the best method? I have gas in the building, and thought of a small boiler heated by gas with piping and a couple of radiators. The dark-room would be sufficiently warmed, I think, by running pipes through, and this could be conveniently done to reach the office, where a radiator would be wanted, in addition to one in the studio. One of the difficulties is in getting out with the stove pipe. The only way would be through the ceiling, and this is somewhat of an eye-sore, Your advice and help would be greatly esteemed.—S. Jepson.

We should advise you to have a separate gas stove without a flue for each of the rooms. Clark's Siphon or the Richmond are good patterns, now in use in many studios. There is a light-tight stove called the Omega, which is suitable for the dark-room. You would find the boiler and piping troublesome and unsightly, besides which it would take much longer to warm the rooms up to a comfortable temperature, unless it were kept burning continuously.

**Enlarging.**—The best way of utilising the electric arc for enlarging is to fit it so as to illuminate a white reflector placed behind the negative exactly in the same way as if daylight were being used.

If one lamp only be used the reflector must be placed at an angle, but if two lamps are used one should be placed at either side and the reflector placed parallel with the negative. Messrs. Marion and Co. sell an apparatus of this sort fitted with metallic filament lamps, also one to take two arcs. This system will minimise the effect of retouching, scratches on the varnish, etc., to a greater extent than ground glass would, while the illumination will certainly be more even. We do not care for the arc lamp in conjunction with a condenser. It is very difficult to adjust the exposure with thin negatives, and there seems a want of quality in the enlargements. It is annoying when the arc burns on one side to find one side of your picture almost minus illumination, while the other is brightly lighted. This defect is not present when the reflector is used. There is not much to choose between the open and enclosed arcs; the latter requires less attention and consumes less current, but the colour is hardly so good, some lenses not working sharply with it when adjusted to their visual focus. We do not know of any simple manual on the subject, but the electrician who fits up your installation will give you all necessary information as to the renewal of fuses, cleaning of contacts, and such little matters.

Claim for Fogged Plates.—How do I stand? I was taking photographs at a wedding party at their house, and after using up the plates in the dark slides was shown into the coal cellar to change them. I had removed unused plates from the box and had cleared the dark slides all but the last one, when the gas company's man, who seems to have entered the house without warning anyone, opened the door and allowed daylight to fall on the plates in the box. I told him I should claim damages from the company if my negatives were spoilt, but he seemed to treat it as quite a joke, though I warned him it was no laughing matter, as it was then too late to get more plates than those I had. By carefully developing the lower plates I saved them, but the chief pictures, full of detail, of lace, etc., will not stand reducing and intensifying, and the gilt is therefore taken off my work, as these negatives are too black to print or to do anything with. I should like to know if I have a claim for loss against the company.—Badly Fogged.

We think you have no claim. In order to support such a claim you must show the official of the company to have done something he had no right to do, whereas you must admit that he was engaged in discharging his duties, and, quite naturally, finding the house in the throes of a wedding, proceeded straight to the cellar. If you could prove personal malice on the part of the inspector you could perhaps do something against the company, which, we should say, should then be responsible for the inspector's action.

Lens Apertures.—I have a modern anastigmat lens by a well known maker, distinctly marked 7in. focus, largest aperture marked 4.8, the diagram of which is 1 1-5in.; this by my calculation works at *f*/5 3-5. I should be glad to know if it is possible for the above conditions to give *f*/4.8. I enclose list of apertures, showing *f*/11 to be marked correctly; all above smaller than they should be, and below larger.

List of My Measurements.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *f* 4·8 | should | be | $1\frac{11}{24}$ | is | $1\frac{1}{5}$ | = | *f* $5\frac{3}{5}$ |
| *f* 6 | ,, | ,, | $1\frac{1}{6}$ | ,, | $1\frac{1}{8}$ | = | *f* $6\frac{2}{5}$ |
| *f* 8 | ,, | ,, | $\frac{7}{8}$ | ,, | bare $\frac{7}{8}$ | = | *f* 8 bare |
| *f* 11 | ,, | ,, | $\frac{7}{11}$ | ,, | $\frac{7}{11}$ | = | *f* 11 |
| *f* 16 | ,, | ,, | $\frac{7}{16}$ | ,, | $\frac{8}{16}$ | = | *f* 14 |
| *f* 44 | ,, | ,, | $\frac{1}{6}$ | ,, | $\frac{1}{4}$ | = | *f* 28 |

A. B.

We gather from your letter that you have measured the actual diaphragm aperture, not the effective aperture, as you should have done. The effective aperture is the diameter of the largest parallel light-pencil transmitted by the lens, that is, the diameter of the diaphragm aperture as seen through and magnified by the front lens. If you measure in this way you will probably find the largest aperture is about correct. You must, however, make allowance for a slight error in focal length. Seven inches is probably an approximate dimension only, and the right measure may be an eighth-inch more or less. We do not quite understand why the smaller apertures should be too large. Possibly a re-measurement in the way we suggest will show them to be more nearly correct.

Working-up Enlargements.—I would be much obliged if you would give me information in "Answers to Correspondents," or devote a column to particulars and method of working-up enlargements in black and white—clouding in backgrounds and giving vignette appearance to heads, etc., blocked out from groups; brightening eyes, eyebrows, hair, etc., etc., with pencils and stumps; and what kind of materials required, especially the sort of black powder used to make clouds, and method of doing same. I have tried charcoal and blacklead, but cannot get the same black as is on work done by aerograph. I get a good deal of old photographs to copy and enlarge, and, of course, want to make them as good as possible. I give some out to artists to finish, but they rush them over with aerograph and cloud nicely, but spoil all details, and never work up the small parts required, and often lose the likeness by putting heavy lines, etc., round the eyes, so if you could give me sufficient data to work on myself I should be obliged; also if any particular erasers are to be had for removing spots and blemishes and reducing parts too dark.—Finisher.

Working-up enlargements is too serious a matter to be disposed of in a column of instructions; in fact, it is almost impossible to teach the art except by actual demonstration. If you do not wish to use the aerograph you will find crayon in powder, applied with stumps, the best material. You can obtain the black crayon from any artists' colourman, under the name of stumping sauce. It is usually employed in conjunction with pumice powder to give a tooth. It is applied with a bit of soft wash leather for large areas, and leather and paper stumps for smaller touches. Never use hard crayons unless you are very skilful, as the work is apt to look scratchy. Very fine typewriting eraser is best for reducing dark patches, although many skilful workers prefer a knife or scraper similar to that used by lithographers. You can purchase a complete set of crayon materials for 2s. 6d. to 3s. 6d., and your colourman could probably supply a handbook on crayon drawing which would give you some idea of how to set to work.

◆

Aluminium.—Aluminium prices (says the Royal Society of Arts "Journal") have now fallen to a point at which manufacturers cannot sell at a profit. The explanation is, of course, over-production, and as the attempts to form an aluminium syndicate have been abandoned, it is not likely that there will be much improvement for some time. At the beginning of the year the price to German consumers was about £70 per ton, during the past month it has been considerably under £60, and large quantities are said to be obtainable at about £52 per ton. Prices on the London Metal Exchange have been as low as £51 and £53 per ton. At these quotations aluminium is cheaper than copper, and electrical companies are contracting for large supplies. The cost of producing aluminium varies with each company, but it is pretty safe to say that at anything under £55 per ton it cannot be sold without actual loss to the manufacturers.

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THE BRITISH

JOURNAL OF PHOTOGRAPHY.

No. 2685. Vol. LVIII. FRIDAY, OCTOBER 20, 1911. Price Twopence.

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## SUMMARY.

The whole of the text and advertisement pages of the forthcoming 1912 "British Journal Almanac" are now in the printers' hands. It is hoped to be able to publish punctually, as heretofore, on December 1.

Mr. H. Snowden Ward contributes a first-hand description of the photographic house establishment designed by a leading American professional worker, Mr. D. D. Spellman, of Detroit. The studio buildings were erected in a residential neighbourhood, and the external and interior plans drawn up to conform, as far as possible, with the idea of a private residence. Views of the building and of the reception and operating-rooms will be found, together with plans of the premises, on pages 795 to 798.

At a special general meeting of the Professional Photographers' Association, it was decided that when a Congress is held during the months of March, April, or May, the annual general meeting of the Association shall be fixed for a day during the Congress week. (P. 806.)

As an excursion for the members of the forthcoming Congress of the Professional Photographers' Association, a visit to one of the London picture galleries, under the guidance of an artist, may be suggested. (P. 793.)

It is now proposed to found a union consisting of both employers and assistants. At a small meeting held on Monday evening last a draft scheme was submitted, and met with a somewhat contentious discussion at the hands of the ten persons present. (P. 800.)

Some further letters expressing the views both of masters and assistants as to a proposed association, will be found on page 810.

The opening evening of the session of the Polytechnic Photographic School has been fixed for Monday week next, October 30. (P. 808.)

Methods of toning P.O.P. prints without gold by means of thio compounds are the subject of letters from Mr. H. E. Smith and Mr. H. Jeffreys. (P. 808.)

A correspondent claims to have observed that tank-developed negatives yield brighter prints than those developed in dishes, presumably under equal conditions of safe dark-room illumination. (P. 811.)

Some of the precautions which need to be taken in the use of the extra small hand-cameras now in vogue and in the enlargement of the negatives made by means of them are the subject of editorial notes on page 793.

Some of the practical matters connected with negative-making and printing, which at the present time would repay investigation, are referred to in a leading article on page 794.

## EX CATHEDRA.

**The Scottish Salon.** The balance-sheet of this year's Scottish Salon was submitted to a meeting of the Council of the Federation by the Salon secretary (Mr. W. H. Wilson) on Saturday. It showed a credit balance of £12, and earned for the Salon Committee the hearty thanks of the Council. The arrangements for the ninth Salon were then considered. The authorities have again granted the Sandeman Art Gallery, the locale of the first Salon, and the dates have been fixed as follows:—Entries close December 30; receiving day for pictures January 6; opening day, January 20; exhibition closes, February 3. It is expected the prospectus will be ready in a fortnight, and copies will be gladly sent to any Scots at home or abroad by the Salon Secretary, Mr. Henry Douglas, City Chambers, Perth.

* * *

**P.P.A. Excursions.** Referring to Mr. Drummond Shiels' letter in our last issue, a correspondent writes in support of the idea of reducing the number of excursions and visits during the Congress week. He points out that a large proportion of the valuable time is taken up with these, and suggests that it could be better employed on demonstrations and discussions on matters of vital interest rather than in seeing as much of the processes of manufacturing photographic requisites as the makers choose to show. It seems to us that a considerable amount of time should be devoted to informal conversaziones, when the more modest members could ventilate their ideas without having to make formal speeches. Anyone who has noticed the knot of eager querists around a lecturer after the formal proceedings have closed will appreciate this point. A novel feature would also be a visit to a good picture gallery, the Wallace Collection for choice, under the guidance of an artist. Photographers could then see a real Rembrandt, and, let us hope, get inspiration from the works of the masters in portraiture.

* * *

**Holding the Small Camera.** The attempt to make enlargements on a fair scale from negatives obtained in very small "vest pocket" cameras, soon renders it evident that it is not quite such an easy thing to hold a hand-camera steady as is commonly supposed. In these small cameras the conditions are favourable to minimising the effect of vibration, the focal length being very short; but the facility with which such light and handy instruments can be brought into use favours carelessness, the effects of which become very apparent on enlarging. With heavier instruments there is little inducement to hold them at arm's length, extra support is felt to be necessary; but with the small camera we are tempted to try all kinds of feats that we should not dream of with the others, and so trouble ensues. If the exposure is one-hundredth of a second or less, literal "snap-shots" at arm's length can be brought off more or less successfully, but with longer exposures of one-fiftieth or one-twenty-fifth just as much care is necessary as with the larger cameras. This means that some support other than that which can be given by the hands alone is necessary for these relatively long exposures. The camera should be steadied against the chest or forehead, and it is distinctly an advantage for the user to also steady himself if possible against some handy solid support. To derive the fullest benefit from the small size camera we should take every advantage afforded by the use of a very short focus lens with a large aperture. It should be remembered that the extra rapidity of the lens enables one to drive the shutter faster than would be advisable with a larger camera, and therefore the shortest exposure at full aperture will often give all the detail required, and at the same time minimise the effects of a possible vibration. If, on the other hand, we stop down and give longer exposures in the same way that we ordinarily should do with a larger camera, we are incurring the same risk of shaking, and are not reaping the special benefits of the smaller instrument. Owing to the smallness of the negatives enlargement is always necessary, hence a negative that shows signs of shaking is useless. We cannot show a direct print and excuse its smallness on the ground that it does not enlarge well, therefore more care is necessary than with the ordinary quarter-plate hand camera.

* * *

**The Treatment of Extra Small Negatives.** Negatives which are used for enlargement must, of course, be free from blemishes, and, if they are to be kept, must be carefully preserved. Small negatives, such as those measuring only 4½ by 6 cms., are practically useless for any purpose other than enlarging, and therefore there is no reason why they should not be bound up with cover glasses like lantern slides. Such binding preserves them from scratches, and also makes them somewhat thicker and more convenient to handle. Before binding their defects, if any, must be remedied as far as is necessary, and spotting by the usual methods being very difficult on such minute negatives, the best plan is to retouch, first applying a retouching varnish and then removing all defects with the pencil. Masking is also advisable, and for this purpose "Photopake" applied with a brush is excellent. Sometimes an extra cover is necessary, for the glass being so very thin, any scratch on the back of the negative is reproduced on the enlargement. If a cleaned perfect plate is selected and cemented with balsam to the back of the negative, all scratches will completely disappear. The thin glasses being distinctly flexible, it is not sufficient to clip them together at the edges only while the balsam is drying; they need to be clamped firmly in the centre if all air bells are to be avoided, and for this purpose an ordinary lantern-slide binding clamp is admirable. The balsam should be fairly thick, and the negative and glass should be well warmed. A drop of balsam is put on the back of the negative and the cover glass placed in position over it and pressed down, so as to drive out the air bells. The two glasses are then put in the clamp and put in an oven at 150 to 200 degrees F., or held in front of a fire until the balsam is set. Before setting, the edges should be cleaned with a cloth moistened with spirit, otherwise it may be difficult to remove the balsam after it has become hard.

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## SOME OPENINGS FOR RESEARCH.

Many photographers have the time and means to enter the field of photographic research, and while some branches, such as the phenomena of exposure and development, can only be tackled with advantage by those possessing considerable up-to-date scientific knowledge, there is yet plenty of scope for the less learned experimenter who has patience enough to work on the try, try again principle until success rewards his efforts. He can always find encouragement if he remembers the fact that practical photography as it exists to-day has been built up almost entirely by similarly unscientific empiric methods, and that, as a rule, the scientist has only stepped in to explain, and in some cases improve, methods or processes that the empiric worker has already brought to a stage of practical usefulness.

The practical work of photography may be classified into exposure, development, fixing, intensification, reduction, printing, and toning, and in each of these separate items there is much opening for research work. We may consider a few of them, selecting only details in which the unscientific worker can hope to do good work. Taking

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## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

The fifty-first annual issue of The British Journal Photographic Almanac will be published on December 1.

Among other new features in the forthcoming Almanac are articles as follows:—

### Lantern-slide Making. By the Editor.

A complete practical guide to the making of lantern-transparencies by reduction and contact, illustrated with special drawings of apparatus; processes of development for black and warm tones; warm tones by after-toning, and other methods of producing the best results.

### At Home Portraiture. By C. H. Hewitt, F.R.P.S.

Precise directions for indoor and outdoor portraiture without a studio. Illustrated with diagrams and art supplement plates, showing effects of good and bad lighting.

### Hints in Pictures.

A section entitled "How to Do It," helping the beginner to perform such operations as stripping negative films, mounting prints, etc. One hundred and twenty illustrations.

As in recent issues, the systematic review of the practical work of the year under the title "Epitome of Progress" will be a strong feature of the volume.

The lines followed in the previous editions of the Almanac will be maintained in general, but in a number of particulars the arrangement of the volume for 1912 will be modified to make it more than ever the book of universal photographic reference.

Following the closing of the text and advertisement pages of the Almanac last Friday, our publishers, or, rather, their printers, have during the past seven days been engaged in the actual printing of the bulk of the edition. A final reminder to advertisers whose announcements take the form of supplied insets may be given to the effect that the last day for the receipt of these latter is Tuesday week, October 31.

Dealers, newsagents, etc., are advised that a substantial proportion of the edition is already ordered, and therefore those who wish to make certain of obtaining their supplies are requested to place their orders with Messrs. H. Greenwood and Co. without delay.

exposure first, while a great deal of work has been devoted to this subject, the general tendency has been to make the calculation of exposure a rather complex operation. In fact, there is a great deal of hair-splitting involved, for the various systems lead to minute variations that cannot possibly affect the result. There is a big opening here for a simplified system, that will duly recognise the vagueness and possible errors of the various estimated factors, such as plate speed, light value, subject, etc., which have to be considered. It is obvious that variations in exposures which are less than these probable errors can safely be ignored. In the matter of development, the untrained worker cannot do much in the way of theoretical investigation, but he can do a great deal in the practical testing of development formulæ which exist in an altogether undue multiplicity. These formulæ have all been built up by rule-of-thumb methods, and mostly by persons with little time to devote to the subject. The investigator with time available can do a great deal by a similar trial and error system of working, and eventually he may reduce the present chaos of formulæ to something like order.

In regard to fixing, there appears to be doubt whether some special fixing-bath formulæ have not the effect of reducing the density of negatives. A bath that would reduce the density of accidentally over-developed negatives would be of practical value, and worth finding; just as much as it would be worth avoiding for ordinary work. In intensification there is perhaps not much to be done in the direction of new methods. We have already a highly useful series, but details and methods of control might possibly be improved, for none of the methods, save, perhaps, the chromium one, and mercury and ferrous oxalate, seem to have been exhaustively studied. One well worth special consideration is known as the acid silver method.

In the matter of reduction there is very obvious need for a reducer of the persulphate type, but free from the inconveniences of that method. None of the various substitutes that have been suggested seem to satisfy practical workers. Possibly the most satisfactory method would be one involving the processes of bleaching and redevelopment, the second operation being conducted with a developer that will not readily give density in the lights. Methods involving the premature stopping of the redevelopment have been tried, but they are certainly too risky for general use.

In the case of printing, the print-out processes seem to offer the most scope for experiment. Methods of development or of intensification are wanted, in addition to a toning method that will be somewhat simpler and more reliable than gold toning. We might also point out that there are possibilities in the use of colour filters for printing purposes, and experiment might give some very interesting results. A great deal of work is also possible in connection with the toning of bromide prints and lantern slides. In particular, a method that will give the same tone as hypo-alum is much wanted by those workers who prefer the more rapid bleaching and sulphiding method to the slower and less convenient direct process.

These are only a few suggestions to such would-be investigators as do not quite know in what direction to expend their energies. Once, however, a start is made on almost any subject, numerous by-paths will be discovered, the exploration of which should provide all the work and interest that can be desired.

# A MODERN AMERICAN STUDIO.

THE studio of Mr. D. D. Spellman, recently opened at 970, Woodward Avenue, Detroit, has many features that should appeal to photographers in any part of the world. It is the result of long consideration, and of visits to many studios in Europe and America, and is believed to combine advantages seldom to be found in one building. For instance, though every detail is planned for the photographic business, and, in fact, for the particular class of business with which Mr. Spellman is identified, the building is quite suitable for any good-class business or profession. Further, though no part of the place is intended for residence, only the smallest possible alterations would be needed to convert it into a comfortable modern home. The dressing-rooms and toilet arrangements are fitted in permanent style with up-to-date plumbing, and conversion into bedrooms would be easy.

MR. D. D. SPELLMAN.

### Choice of Location.

To move a well-established business from the centre of a great city to a suburban place more than two miles out; to go from a well-known location in a large commercial building and to erect a model studio of one's own, beyond the business limits altogether, must have needed a good deal of determination. Mr. Spellman considered, however, that none of his business was "passing" trade, caught by window and show-cases, but that all his sitters had to come specially to him, either by street car or in their own automobiles, so that a move of a couple of miles along the same avenue and on the same car-line with which he had been associated for years would be no serious disadvantage to any of his clients. He would be two miles nearer to some and two miles further from others, but so long as they only had the one journey a little difference in distance was unimportant. Moreover, in the heart of a residence district there was a better chance of working up the connection with ladies and young children than there was in the city. Though the place to which he moved was

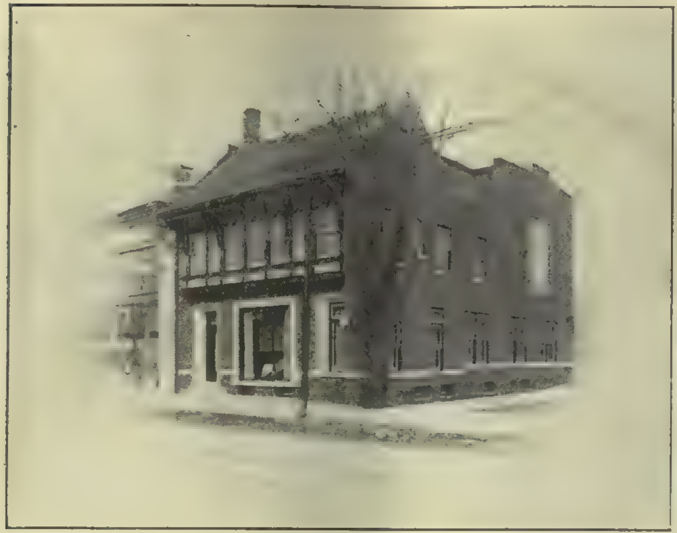


Fig. 1.
The Spellman Studio, Detroit, Mich.

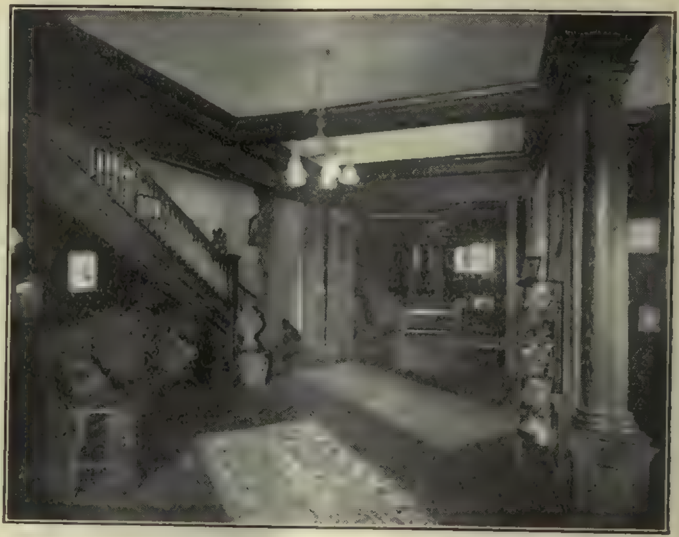


Fig. 2.
Entrance and Reception Room.

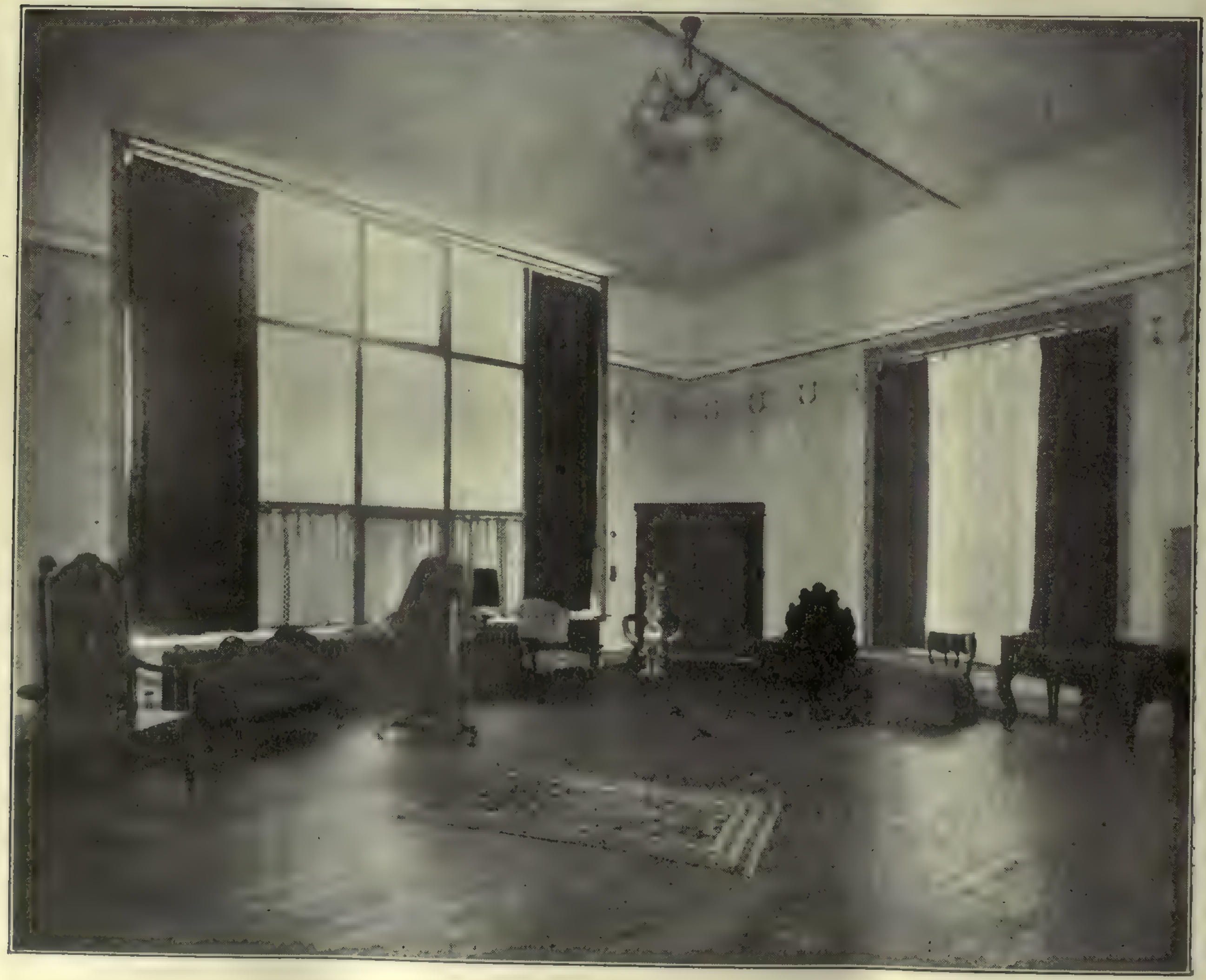
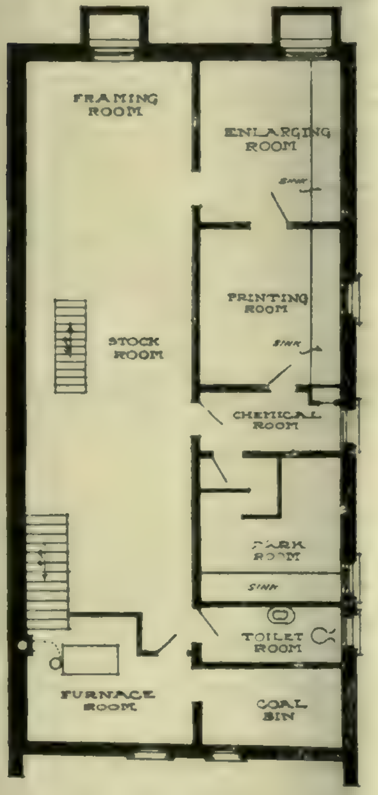


Fig. 3.
Operating Room.

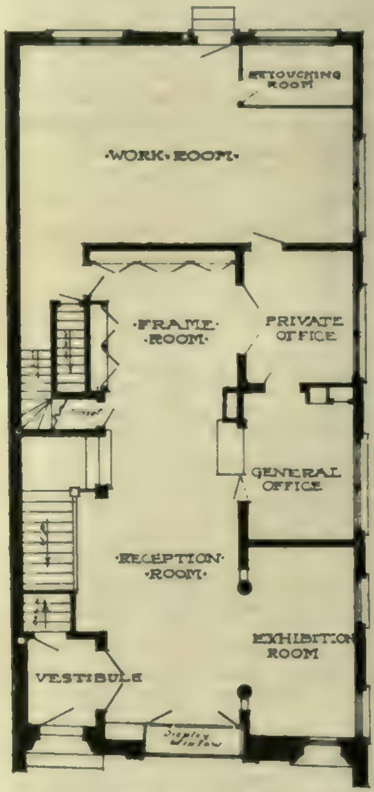
beyond the business limits, it was in the best and the most rapidly growing suburban section, and when he bought the site for his studio he believed that certain classes of business, appealing to the wealthy, would locate in the same direction. Even before the studio was built the belief proved correct, for on the adjoining block was built a show-room for one of the large motor-car manufacturing concerns, and a few blocks further down the avenue, ground was bought for the new City Art Gallery, that will be one of the great buildings of Detroit. Result: Within a few months of purchase the site could have been sold for more than a hundred per cent. profit.

### Selection of Site.

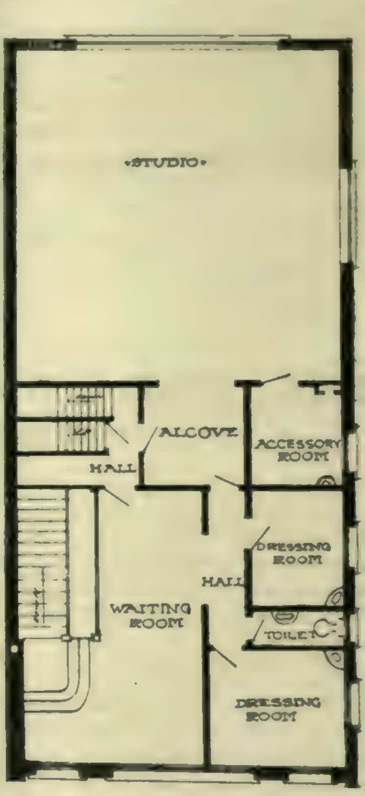
The place is on the car-line that is busiest with wealthy and business people, on the car-line and avenue that take the largest number of pleasure and recreation seekers, and between two cross-town car-lines which serve large sections of purely residential character. It is a deep block, so that the studio cannot be built up in the rear, and ample space is provided for a garden for outdoor sunshine work. At the side, the site abuts upon the pleasaunce in front of a rectory house, beyond which is one of the fashionable churches of Detroit, ensuring continuance of ample light on that side, and enabling Mr. Spellman to build right up to his boundary line without fear of losing his light. Thus the site was economical, because every inch of it could be used for building and for the open-air studio.



Basement Plan.



First Floor Plan.



Second Floor Plan.

### The Design.

While the details were worked out and the erection was supervised by Mr. George V. Pottle, one of the leading architects of Detroit, its main features were decided by Mr. Spellman, as the result of his study of many studio buildings in the old world and the new. The aim was to secure richness and substantiality without any ostentation, and to treat the site so as to make an attractive exterior as approached along the avenue. Therefore, the fine elm tree at the corner of the property was preserved (Fig. 1), and the plain side wall is intended to be covered with green creeper, which will grow closely around white-sashed windows. This notion was based on memories of many a green-fronted English country residence, and the half-timbered front, with heavy overhanging eaves and rather steep red-tiled roof was planned to help the same effect.

### Interior Arrangements.

As will be seen from the view of the reception room (Fig. 2), the ground floor is finished sumptuously and substantially in hard woods, with polished hardwood floors. Here are the offices, reception room, exhibition room, and frame room all opening into one another, with work-room and retouching room behind. The number of specimens shown is purposely kept small, the intention being to show their use in wall-decoration, with a few paintings and engravings, as would be suitable for a refined home. The pieces of furniture are few, but in the offices they are substantial, and in the reception rooms very rich and handsome. The wall coverings are in velours and tapestry, while richly-coloured Oriental rugs lie on the most-traversed portions of the floor. In the office, as a sort of mascot, Mr. Spellman has framed a proof of his first sitting, with the cheque paid as deposit on the order. So long as that remains he will never be entirely without money.

Upstairs, the whole tone is lighter, with finishings of mahogany and bird's-eye maple, and walls hung in solid tones of fast-dyed fabric with classical stencil-patterns beneath high frieze-boards, as may be seen in the view of the studio.

### The Unusual Studio.

The studio itself (Fig. 3) is different from all the operating-rooms we have seen, thirty feet square, seventeen feet high, with two great windows that can be curtained entirely, or to any desired extent. It is without backgrounds in the ordinary sense, but has a number of extremely handsome curtains and shawls on movable frames, to which recent additions have been made with special reference to their use in colour portraiture. Some of the Oriental rugs are also chosen with this use in view, and should prove most effective.

The interior decoration of the studio is simple and very dignified. A soft French-grey reflects a great deal of diffused light, and the large white expanse of ceiling and of walls above the frieze also proves an excellent reflector.

### The Workrooms.

The manufacturing part of the establishment is as carefully considered as the parts open to the public. It has its separate staircases from top to bottom, so that the sitters need not come into contact with the assistants. The whole place is built with a view to being absolutely safe from fire and flood, and the basement has double walls all around, with ample air-space, so that efficient ventilation is very easily arranged. Even in the dark rooms the temperature is kept equable and dampness entirely avoided. The negative-storing shelves are built against strong brick walls, and the whole basement floor is concreted and slightly sloped toward various sinks, so that washing out is extremely easy. Stock is systematised and standardised much more fully than in most studios, for Mr. Spellman looks upon large accumulations of mounting-boards and papers as just so much dust-trap lumber. In the dark room (where several assistants can work at a time if necessary) the sinks are of novel style, for they are built in the room, of steel-reinforced concrete, which gives much cheaper, as well as much better tanks than could be made of wood. Developing is by tank, time, and temperature, a method which works very satisfactorily.

### Printing by Artificial Light

The same reasons which induce the use of tank development also led Mr. Spellman to use artificial light entirely in his printing and enlarging. Saving of material, better average quality of prints, and, what is most important, saving of time and wages, all are secured by artificial light. Its use also tends to secure regular delivery of prints within a definite and short time of the sitting, which pleases the sitters. Bromide enlargements, prints on development papers of the slow contact type, and platinotypes are all alike printed by electric light, so that the top storey of the building, though provided in case daylight printing should ever be necessary, is at present regarded merely as extra space, for emergency.

These notes, with the plans and views of the studio, should be sufficient to give an idea of one of the most modern and one of the most perfectly adapted photographic buildings in the world. Mr. Spellman points out that in designing it he had no wish to compete with the wonder-studios of a few of the great cities. His study of the question satisfied him that many well-known businesses were unnecessarily hampered by heavy rents, establishment charges, and cost of maintenance arising from the positions and lavish construction of their buildings. He determined to have only one aim—the creation of the most efficient possible instrument for working a photographic connection of high class—and he has achieved it very successfully.

H. Snowden Ward.

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# THE ORGANISATION AND MANAGEMENT OF A CAMERA CLUB.

[At a time when photographic societies throughout this country are commencing their winter sessions, we believe nothing but profit can result from a consideration by the officers and members of any society of the article which we reprint below from our excellent contemporary of Boston, U.S.A., the "Photo-Era." Many societies cannot hope to emulate the provisions of studio dark-rooms and enlarging facilities which it describes; and, unless situated among a large population, such a policy can scarcely succeed, but all can benefit from the many suggestions put forward as regards both equipment and constitution.—Eds. "B.J."]

Organisation is one of the most potent factors in human progress. From time immemorial man has advanced socially and intellectually through this benign influence. A retrospect of history alone shows magnificent examples of this theory. The increase in the mental scope of the human race and the centralising of its power through all the ages since primitive man came, bears testimony to the aggregation of mind and energy. That wonderful wall of China, extending along miles of the ancient kingdom of Buddha; the pyramids of Cheops towering o'er the vast desert of the land of the lotus; the architectural monuments of the Greek and Roman empires or the splendid engineering triumphs of our own century—all attest the grand principle of the massing together of man's power to work harmoniously in congregation.

But this matter of the embodiment of talent and resource of many has not alone been manifested in the material world. The ethical side of human nature has likewise been enriched and propagated until it is but second nature in these days of hurry and achievement to turn to organisation for stimulus and direction.

Applying all this, it is the purpose of this article to deal with the organisation and management of a camera club. It shall be the purpose of the writer to make the whole range of the subject as comprehensive as possible. Of course, conditions are varied in different localities, and no set rules can be laid down. It is hoped that in the whole subject may be found much that will benefit those who are interested.

In these days, when photography has become almost a household necessity, and when everyday life is punctuated with pictorial opportunities, is there any wonder that the use of the camera should lead to means of enlightenment and advancement? The memory of events which have moved the world or which have been milestones in our career are best brought to mind by our mental conceptions of how they looked. Pictures are history itself, and history is life. We can no more do without pictures than we can without printing. It has always been man's habit to portray in some form of picture that which was uppermost in his mind. Thus, early man carved upon rude stone the picture of his god. Later he used the hieroglyph and papyrus. Then came the illumined scrolls of the church, and he has gone on and on in his desire to portray by pictures until to-day photography is probably the highest development of pictured life.

Have you ever noticed when several persons are gathered together that if the conversation lags or interest seems to be passive, if someone suddenly says, "Here are some pictures," an almost electrical effect is produced? People will look at pictures by the hour when no amount of reading-matter will content them. It is the mental enjoyment which the eye has the power of transmitting to our mind. The camera is one of the greatest boons which manufacturing genius has bestowed upon us. We hardly stop to consider the mighty advance which the photographic art has made from the days when man had only the brush and the pencil. As the pictures which archæological research are revealing to-day have unlocked the past, so will the pictures which our children are making to-day show to posterity what manners and customs of the present are like. There can be no more enterprising gathering of persons than those who have for their ambition the making and the study of pictures. There should be a camera club in every city and town where a constituency exists. It is as necessary, perhaps, as the work of the school and of the church, for it does in a small way the work of both in educating the moral mind in the good and the beautiful.

Of all the senses with which we are endowed, that of sight is the most wonderful. It reflects upon our soul the beauties of the universe and is the key to the heart. The educational features of a camera club are many. Besides being one of the most pleasing of the physical sciences, photography has a distinct pull on the associations of daily life. Never before were there so many users of the camera. The industry has developed a field to which simplicity is the approach. Photography is a household educator to child and parent alike. With the use of the camera, untold regions of research are brought into discussion. The child sees new objects in the pictures which he captures unwittingly in the wonderful film, and his eyes are opened to a new beauty and love of nature each day.

A camera club will attract persons of refinement and culture, because to love pictures is to love nature and to be instilled with the appreciation of the beautiful in life. A camera club will afford help to the beginner in the art of photography and the keen delight of advancement for the more advanced worker. This is progress for all. Another valuable asset of such a club is the opportunity for the interchange of ideas. Photography requires much experimentation, and the results of others' experience are always at hand in a club. The best photographer learns something new every day—many times from one less schooled than himself. Again, a new member has someone upon whom he may lean in times of perplexity.

There is also an ethical value to the organisation of a camera club in a community. Such a club will have for its precepts matters of a high moral tone. It will stand for the best in the life of the community in which it is formed. While it offers to the young a pleasant pastime, it encourages the highest ideals in thought and speech. It will attract them from poorer pursuits to a better occupation of their leisure. It is strange that to-day with hundreds of thousands of amateur photographers throughout the land there should be so few camera organisations. The latest compilation shows that there are but fifty-six photographic clubs and associations in the United States, and some of these are adjuncts to regular art-schools. Certainly the time is ripe to encourage the formation of more. The material is at every hand. Hundreds of cities and towns will be reached by this appeal in the interest of the art. The forming of such a club need not mean club-life in the general sense of that word. Such a club need not seduce young people from their homes too much, for the underlying structure of a camera club is of a different character than that of many others. Unlike many purely social organisations, a club of camera-workers is imbued primarily with the spirit of study, and in addition has a good time when occasion offers.

For purposes of convenience we shall divide the subject into four or five general heads which will cover the whole matter. We shall discuss after purpose and needs the equipment of a camera club and follow this up with the matter of management. In conclusion, the financial aspect and the real work of a club will be considered.

Having already spoken at some length on the purposes, we shall next treat equipment. Although proper equipment is necessary, there is a wide range in its ensemble. It would be folly to hold the necessary appurtenances of a large club up as a model to a young one, and it would be equally futile to expect a club of some fifty or more members to get along with a small outfit in one room. We shall treat equipment on the large scale so as to bring out the many points of usage which are to be had. Smaller clubs can select from the whole that which is suited to their local and individual needs.

A large club of several years' standing will naturally have a complete outfit. The splendid equipment in such large camera clubs as those of New York, Chicago, and Boston should not discourage those forming the nucleus of a new club. The point to be brought out is that if there is hearty co-operation the rest will come in good time. It is more than probable that members of a new club will be willing to give the use of their own apparatus for a time until the club is able to buy for itself. Almost everyone has at home articles which will help fit up a club-room.

The location of a club is of importance. Although scanty funds may handicap the selection of some "best" location, the idea of rooms in a modern office-building should be striven for. The club-idea is expressed in a large building far more than in a private house. The latter may seem to offer a home-like atmosphere, yet it lacks the business aspect to be found in a neatly-appointed room in a downtown building, as well as a central location in town. It is better to have one medium-sized room in a downtown building than a whole tenement in a residential district; besides, a member takes a certain pride in his club and pleasure in showing his friends over it. It has an individuality all its own, apart from the home. Then try to locate near as many main car-lines as possible and as near the civic centre as money will allow. An elevator to the club-room is a great convenience, but cannot always be had. If janitor-service is not to be had for the price of the rent, individual members may take turns as janitor until the club gets on its feet.

The darkroom is the first item. Much has been written upon this subject and diagrams galore have been set forth upon it. Three salient points are of importance in a darkroom—ventilation, the entrance, and the plumbing. A darkroom should be built as far from the cupboard idea as possible. It should be built into the room complete and portable. This type costs more at first, but saves in the end. There should be bottom air-draughts and light-capped ventilating chimneys on the roof. This will allow a steady air current. Nothing is more fateful to good work, especially in the summer time, than hot, stuffy darkrooms. The plumbing should be open and frequent cut-offs should be placed along the pipes. If the club is a small one, a galvanised iron or enamel sink will serve; whereas a larger one, if needed, may be made of thick planks bolted together, with lead caulking in the joints and painted inside with black varnish. Such a sink will last for years. Try to have a dark maze or zig-zag entrance to the darkroom if space will permit. Although a door is all right, it is inconvenient for another to enter the room if one is working therein. Even a small maze with a curtain is better than a door.

The workroom should be made as convenient as possible. There should be handy places for printing-frames, graduates, and scales. A strong table finds its place in the workroom. On it is the print-trimmer or a press. Receptacles for waste should be at hand and there should be drying-places for films, plates, and prints. A good film-dryer is made like a cage out of pigeon-wire, and in it the strips may be suspended from clips along wires at the top. Another device, which is good for drying prints, is made of frames covered with cheesecloth and set to run like drawers.

In a small club-room the workroom must also be the studio. Partitioned off with several standing screens and a curtain, a section of the room near the best light will do admirably. Perhaps a studio camera may be bought for the club on shares to be paid off later by the club. Current literature should be at hand. If this cannot be afforded by the club, members will no doubt contribute theirs after reading it themselves. The matter in such journals as "Photo-Era" is never old for practical use. A set of technical books is, of course, a valuable asset, but it can be dispensed with at first.

No definite scheme can be given for individual lockers. The screens spoken of in connection with the studio may serve a double purpose by being made available for hanging photographs upon at exhibitions. They should be painted a grey tint. The walls of the room may also be screened for hanging prints.

There are many schemes for laying out an enlarging-room for bromides or for lantern-slides. A north light is the best, and a simple way is to adjust a sky-reflector by means of a hinged board on which is a sheet of white cardboard and thus throw the light through one of the windows into the enclosed area. A darkroom may be so built as to allow a section near a window to be thus used. Have the developing-light in a box over which curtains of orange and ruby fabric are hung. If the camera is set upon a shelf with runs on it, it will serve for both kinds of work. If there is no space for a separate room for this work, it may be done by the light of the workroom by using the camera against an ordinary window. This method is somewhat longer and the operator cannot dodge the print while it is being exposed. A shallow drawer for unexposed paper is a handy affair in the bromide-room or in that where contact-printing is done. H. Ladd Walford.

*(To be continued.)*

## PROPOSED UNION OF PHOTOGRAPHERS AND ASSISTANTS.

A meeting of photographic assistants was held at the Club Union Buildings, Clerkenwell Road, E.C., on Monday evening, to discuss the formation of a union of photographers. A preliminary meeting had already been held, being adjourned in order to consider a draft scheme. The chair was occupied by Mr. W. T. Wilkinson, of New Cross, who was supported by Mr. P. Jarrett (Watford), the secretary pro tem. Those present numbered ten.

At the invitation of the chairman, Mr. Jarrett addressed the meeting. Since the last meeting, he said, he had no doubt that they had seen, in the "British Journal of Photography," what their brother photographers in Manchester had done. He was not only surprised, but pained, to think that the photographic profession should stoop so low as to stab their endeavours in the back in its embryo stage. Personally, he would have thought that a photographer should lead photographers, not a Labour agitator, as they desired to form their association on peaceful lines for the benefit of assistants and employers alike. As they all knew, he went on, it was essential that their headquarters should be in London, as the greater number of their members would be there. Of course, if Manchester liked to form a union of its own in opposition to their London fellows, with a paid Labour leader, then so much the worse for Manchester. The plan he was going to put before them was to avoid all paid executives, each member doing his best for the profession. He would like them to consider the draft scheme, over which he had spent much thought and time, and discuss it. Should they agree to adopt the scheme, they would all have to work hard to endeavour to obtain the signatures of all assistants and master photographers, all striving to lift the profession to the high standard it might hold.

A general discussion on the scheme then took place. The first controversial point which came up was as to the admission of masters or employees into the union. "I must say I do not like including them at all," said one of the meeting, and this opened up one of the most debated questions of the evening. The secretary held that masters must be admitted in order to strengthen the union.

"It would simplify matters if we barred out the employers," suggested the member, to which Mr. Jarrett responded, "The scheme would fall through, for we should never get enough support from the assistants."

The Chairman: The only way to have the masters in would be to give them no voting power whatever. They would have to have no part in the management.

Turning to benefits, a member of the meeting spoke of superannuation. He could not see why they offered it to masters and assistants alike. If an assistant could not obtain work after reaching the age of 65 or 70 years, not being able to make money out of his ability, then the superannuation was essential. But with a master it was different. He had a business out of which he could still make money, even when past money-earning age so far as he was personally concerned.

The secretary replied that the masters would support the union in the same way as the assistants, and would have as much right to the benefits offered.

Another point raised was as to the management. There was going to be a vast amount of educational, financial and secretarial work to do; how were they going to manage it? asked a member, who also suggested that the difficulty would be that employers and assistants would be constantly working and pulling against each other.

It was decided that a society should be formed, to be called the "National Union of Photographers."

The question as to who should manage the union then cropped up again, and a vigorous discussion ensued. Some members wished to bar the employers from active management of the scheme altogether, others would have liked to have seen them given an equal power with the assistants. In reply to the latter it was pointed out that if the masters were numerically equal to the assistants on a committee, they would be more powerful in actual practice, and their decisions would necessarily acquire the added weight which their position as employers gave them. It was contended on the other hand that to offer membership without any voting power would not appeal to employers, and they could not progress with a membership of assistants alone. After considerable debate it was decided that masters and assistants should be eligible for membership. It was also provisionally agreed that a general committee, including president, vice-president, two trustees, treasurer, and secretary, should be appointed, and that there should be an elected executive committee of twelve members, who must be assistants.

At the suggestion of the secretary it was agreed, nem. con., to add to benefits one with respect to railway fares. This was to the effect that a member should be provided with a railway ticket to his destination on securing an engagement (if it be necessary), and that the member should refund the money at the rate of 2s. 6d. per week.

Touching on eligibility for membership, the meeting thought that proof of employment in the photographic trade for six months was not sufficient condition of entry. It was decided that the period should be extended to two years to commence with.

In answer to a question, the secretary said he had not had the scheme examined actuarily, but he had placed it before many business men, and all had considered it a perfectly sound one. He had seen over 500 assistants in London, and a great number of masters, and they all had agreed to join in. He suggested that of the 50,000 photographers in the kingdom, 5,000 would join the union.

The outcome of the meeting was it was agreed that the draft scheme as amended (hereunder given) should be provisionally adopted, and published in the "British Journal of Photography," to which paper, it was also decided, a letter asking for views on the scheme should be sent.

### National Union of Photographers.

The scheme of organisation suggested is :—

#### 1.—Offices.

The society shall have registered offices in London, with committee rooms, and a competent and efficient staff to ensure the proper working of the association.

#### 2.—Membership.

Any skilled person, master or assistant, in the photographic or allied trades, shall be eligible for membership.

Persons employed as doormen, packers, porters, or machine minders will not be eligible for membership.

No assistant, male or female, to be eligible as members unless he or she can show indentures of apprenticeship or references as to employment in photographic trade for a period of two years. This time limit to be extended from time to time by the committee until a minimum of five years' service is reached.

### 3.—Registration Fee.

Registration fee to be left open for discussion.

### 4.—Management.

The management of the society shall be entrusted to a general committee, which shall consist of president, vice-president, two trustees, a treasurer, and a secretary, with the ordinary members.

An executive committee shall be elected, and shall consist of twelve members who shall be assistants.

The executive committee shall decide all matters brought before them by the members of the photographic profession. The president to have casting vote.

The executive committee shall meet at least four times each year, and at other times when summoned by the secretary.

The executive committee shall be elected annually, and on the death, or resignation, of a member, the committee shall elect another, who shall fill the vacant place until the next annual meeting.

### 5.—Branches.

The society shall be divided into districts and sub-districts. Each district to be a centre, and under the control of a local secretary and committee appointed by the local members; failing such appointment and election, by the board of management at headquarters.

Each secretary, both district and local, shall be provided with the necessary equipment and books of instruction.

Each district will be divided into sub-districts, each sub-district to be controlled by a local secretary, to be elected by the secretary and committee of the district.

Each district secretary's duty will be to receive reports from local secretary of meetings held and other business, and report to head office.

Each local secretary to receive subscriptions and forward these to the head office, with a requisition sheet of the payments he has to make; a cheque shall be sent him each week.

Any urgent matter requiring attention shall be reported to the local secretary, who, if he thinks fit, may consult the district secretary.

The district secretary may deal with the matter himself or report to the head office, which shall give it immediate attention.

There shall be district inspectors appointed, who shall go from one district to another examining books and giving advice. It will be their duty to report to the head office daily. There shall be a meeting of local secretaries of each district once a month.

There shall be a meeting of district secretaries once every two months, to be held at the London office, at which the president of the society shall preside.

### 6.—Registration.

Master members shall be registered at the head office, with particulars of their hours of business, class of trade, wages paid, etc., etc.

Assistant members to be registered, with full particulars as to experience, salary required, and grade.

Masters to engage all assistants through head office. Assistants to be offered situations, according to grade required, strictly in rotation as names appear in vacancy register.

### 7.—Contributions.

Members who are assistants, whether male or female, to pay sixpence in the pound on salary received. Contributions to be paid weekly. Maximum, 2s.

Masters' subscriptions to be £2 per year, to be paid in four quarterly instalments, or at the same scale as assistants' pay.

### 8.—Sick and Unemployed Benefits as to Assistants.

Benefit, whether for sickness or unemployment, to be paid on following scale :—

20s. per week for first four weeks; 10s. the second; and 5s. the third period.

a. A member having drawn benefit for less than four weeks and again taking on benefit during the twelve months, shall enter on the second month grade of pay, and so on.

b. No member to receive benefit until he or she has paid fifty-two weekly subscriptions.

c. After a member has drawn benefit for the three months, as allotted, either for sickness or unemployment, or has drawn benefit at three individual times during the twelve months, he or she must again pay the subscriptions as stipulated in b. before being entitled to further benefits.

### 9.—Benefits as to Masters.

Masters shall receive sick but not unemployment benefit, but in lieu of the latter they shall be entitled to assistance, in case of business emergencies, from the society.

The sons and daughters of members entering the profession on their passing a qualifying examination, will be eligible to a course of tuition at the school, where they shall receive first-class instruction in all processes, and in due course become graded certificated photographers.

Photographers will also receive free instruction in any new process they may be interested in.

### 10.—Funds.

The funds of the society shall be invested for the purpose of (1) superannuation, to which all members over 65 shall be entitled; and (2) the building and maintaining of a school and orphanage in connection with the society.

### 11.—Railway Fares.

An assistant upon securing an engagement, may obtain his railway ticket to travel to that engagement, if he so desire, on application to the secretary of his local branch. A member shall show the secretary proof of his engagement before receiving the ticket, and he shall repay the amount of the money due to the union at the rate of 2s. 6d. per week.

The benefits to be derived from this institution are as follows :—

By the masters :—

1.—A regular and immediate supply of suitable assistants at the wages they want to pay.

2.—Assistance in legal and financial matters free of charge.

3.—To the unfortunate, the benefits of a benevolent fund.

4.—First-hand information and demonstration of all new materials, processes, and methods.

5.—Standardisation of sizes and prices according to their district.

6.—Superannuation.

By the assistants :—

1.—Regular employment at the maximum wage to which their degree of skill entitles them.

2.—Sick and accident benefits.

3.—Legal assistance when unavoidable.

4.—Superannuation.

5.—Orphanage and training school for their children.

6.—The opportunity to become efficient in new processes and in the use of new materials, and to learn the higher branches of their profession in their own time.

7.—Regular hours of leisure.

By the trade in general :—

1.—The raising of photography to a profession.

2.—The gradual "weeding out" of undesirables.

3.—The improvement of relations between master and assistants by mutual agreement.

4.—Provision of sick benefit, superannuation, unemployment, orphan, and benevolent funds.

5.—Provision of expert advice to members at all times by post or personally.

The secretary (pro tem.) is Mr. P. Jarrett, 16, Acme Road, Watford, Herts.

[The letter referred to in the above report of the meeting as to be sent to us for publication is a request that we should print in our pages a "coupon" to be filled in by master photographers to the effect that they agree to become members of a union constituted on the lines above laid down. We are unable to allow our columns to be used in a way to suggest a direct canvass of our readers, but we are willing to insert this present note in order to invite their careful perusal of the above report.—Eds., "B. J."]

# Photo-Mechanical Notes.

### The Reproduction of Type Matter.

The Medici Society are now holding at Grafton Street an exhibition of fine printing, showing the work of thirteen private presses. The interest for the process worker lies in the fact that one of these presses, in order to determine the appropriate size for a new fount, has had a page from the existing size reproduced by zinc blocks and printed under the same conditions, so that a very exact comparison as to appearance can be made of the same matter in various sizes. These blocks have been so carefully made that it is very difficult to see that the pages are not from actual type. We are frequently assured that line work is not so good as it used to be, but it is certain that work of this kind has never been better, and until the advent of the four-way powder process in England it could not be equalled, though as good line work was done with the swelled gelatine process. The latter, however, would be much too slow and expensive for modern requirements. But it is certainly a condition of doing good reproductions of such originals as type matter, that the dragon's blood method be used. Moreover, this gives a block which in appearance resembles the type by reason of the straight-down etching and the absence of shoulder, very much more closely than does a block etched with ink and roller in the Austrian manner.

### An Old Master and Its Reproduction.

The Medici Society also have on view at the present time, besides their usual fine display of colour collotypes and other reproductions, an original old master side by side with the reproduction. This is remarkably faithful, all things considered, though it is, as usual, slightly brighter than the original. It seems impossible to reproduce work of this kind without enhancing the contrasts somewhat.

### At the Electrical Exhibition.

There are here numerous arc lights of all types for the process worker, and the Westinghouse Company show the new reflector mentioned in our "Patent News" last week, which renders the light from the mercury-vapour lamp more like daylight. We do not suppose the photographic effect would be by any means the same as daylight, but the appearance of objects under it is much more normal, and faces certainly do not look ghastly, as they do without it. There is also exhibited by Mr. Ciceri Smith his direct-reading micrometer gauge, which should be useful to process workers if it were fitted with a point so that the depths of blocks, electrotypes, and stereotypes could be accurately measured and compared. The reason the ordinary micrometer is not more frequently used is the difficulty of reading the vernier to those unaccustomed to it, but in these instruments the readings are shown in plain figures similar, for example, to a cyclometer. There ought to be many other uses besides those above mentioned for a quick and accurate measuring instrument of this kind in a process house.

**Theft from the Westminster Exchange.**—Dramatic details of an exciting midday arrest of a man armed with an automatic pistol and a dagger, and wanted for shooting at two police officers in Oxford Street, and for shop-breaking, were given at Marlborough Street last Saturday. Accused gave the name of Harry De Vere, and described himself as an artist of no fixed abode. He was charged with breaking and entering the shop of the Westminster Photographic Exchange, Oxford Street, and stealing a Goerz camera, worth £7 10s.; also with shooting at P.C.s Ambrose Askew and Richard Bell with intent to murder them. In the early hours of the previous day the officers, who were in plain clothes, saw a man break the window with a brick wrapped in paper, and take a camera and race off towards Wardour Street. The constables went off in pursuit, and followed the man with difficulty owing to the fog. Suddenly he produced a pistol or revolver, and fired two shots at the officers, wounding one, P.C. Askew, in the arm. The assailant succeeded in getting clear away. The police then instituted a man hunt and made inquiries, as a result of which De Vere was arrested. Prisoner was remanded.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between October 2 and 7.

**Cameras.**—No. 21,675. Photographic cameras for the simultaneous production of chromatic negatives. William Norman Lascelles Davidson and Eyre Coote Townsend.

**Developing Tank.**—No. 21,809. Developing tank for photographic films. John Maxwell Jones, jun.

**Colour Screens.**—No. 21,877. Colour screens for cinematograph and roll films, plates, and the like for colour photography. Henry William Hamblin Palmer.

**Flash-lamp.**—No. 21,889. Flash-lamp for use in connection with photography. Dora Davies.

**Cinematographs.**—No. 22,136. Cinematograph apparatus. Frederick Arthur Pereira.

**Cinematography.**—No. 21,640. A machine for applying colour filters to cinematographic films. William Frederick John Bannister and Walter Harold Speer.

**Cinematography.**—No. 21,690. Toothed film-operating drums of cinematographic apparatus. Compagnie Générale de Phonographes, Cinematographes, et Appareils de Précision.

**Cinematography.**—No. 21,834. Method of and means for exposing and developing cinematograph films and such like. Edward Leopold Buttenshaw.

### *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

**Cinematograph-Phonograph.**—No. 24,563, 1910 (October 22, 1910). The specification describes apparatus for forming the sound record in or on the film in synchronism with the pictures, thereby providing an unbroken sound record equal in duration to the film, and also dispensing with synchronising mechanism. The sound record may be formed on the film either simultaneously with the taking of the pictures or after the pictures have been taken and developed. Katharina von Madaler, 4, De Burgh Crescent, West Drayton, Middlesex.

**Stereoscopic Cinematography.**—No. 840, 1911 (January 12, 1910). This invention has for object an apparatus for obtaining a cinematograph film which will give the stereoscopic effect when projected on a screen in the ordinary manner by means of a single objective.

This object has been attained by giving the photographic apparatus a reciprocatory movement upon guiding bars, which may be curved in such a manner that there is always one point on the axis of the apparatus produced which corresponds with the centre of the scene being taken.

The invention consists in an apparatus for taking stereoscopic cinematograph photographs mounted on a support capable of an alternating translational movement and provided with a cam engaging with a fixed projection, said cam having a profile whose radius of curvature is determined by the distance of the centre of the scene. Antonio Calichiopulo, 7, Via Lagrange, Turin, Italy.

## New Trade Names.

**Renaissance.**—No. 335,667. Photographic lined screens of glass. Linotype and Machinery, Ltd., 188 and 189, Fleet Street, London, E.C., manufacturers of typographical composing and other machines. August 14, 1911.

**Renaissance.**—No. 335,834. Photographic lined screens of celluloid or similar material covered by class 50. Linotype and Machinery, Ltd., 188 and 189, Fleet Street, London, E.C., manufacturers of typographical composing and other machines. August 23, 1911.

# New Materials, &c.

**"Kodura" Development Paper. Made by Kodak, Ltd., Kingsway, London, W.C.**

In this new development paper the makers have embodied qualities which make the very widest appeal to professional photographers of all classes. When we say that the paper is of the class known as development, we use the term, for want of a better, to indicate that it occupies a position between a gaslight and a bromide paper. While prints can readily be made with comparatively short exposures to an incandescent gas burner or electric lamp, yet the times will be considerably longer than for a paper of the bromide class, whilst also the paper cannot be handled freely in weak white light, as can gaslight paper, without extra precautions. It should be used in a bright yellow, or orange light, such as is obtained with orange glass or one thickness of orange fabric. It should be understood that an extremely bright light is, of course, perfectly safe for it. This point requires to be emphasised to the amateur worker, but professionals, as a rule, use even ordinary gaslight paper in a yellow illumination, and, therefore, "Kodura" will call for no change of manipulation in this respect.

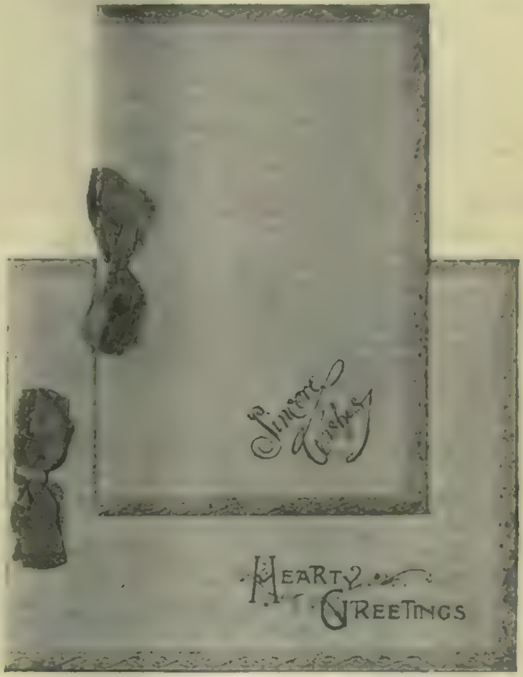
As regards the appearance of the print, the paper is likewise quite distinctive. Using the ordinary developer of metol and hydroquinone, as employed for "Velox," the tone is a warm black of peculiar richness and depth, and very closely resembling that obtained on collodio-chloride paper by gold and platinum toning. Looking at the finished prints, and particularly those on the "Cream Matt" variety of the paper, it is difficult to believe that they are the product of a development process. Those who take the view that a gaslight print is something which produces plucky, even hard, results from somewhat inferior negatives, have had to revise their standards of late, and "Kodura" will lead them to form an altogether higher estimate of the capabilities of a gaslight emulsion. The rich range of gradation rendering detail both in the highest lights and in the lowest tones of shadow is a remarkable achievement among papers of the development class, and we can imagine that many a photographer who has wished to offer his sitters the effects obtainable with collodio-chloride but has not felt competent to place this printing material in the hands of his assistants, can now turn with relief to the new paper by means of which he can readily and rapidly produce prints which would certainly not disgrace any C.C. emulsion.

Of the five grades in which the paper is made the three which specially appeal to ourselves are C (thick smooth matt), D (thick rough matt), and E (thick cream matt). D, in particular, with its surface almost like that of a natural paper, is particularly suitable for portraits of cabinet size and upwards, and capable of giving most handsome results in the case of large heads and strong light tints. Whilst the same may be said of the C paper, the surface here is of a smoother kind more closely resembling a gravure proof. The cream paper is similar in surface to C, but with a delicate buff tint, which does not become pronounced even in the case of vignettes.

The semi-matt papers, A and B, which are respectively of thin and thick substance, are of the surface which is often referred to as carbon. It is, we think, one which best suits a portrait with full dark background, and chiefly in dark tones. But photographers will all be able to indulge their individual preferences among the various papers, which are issued by the Kodak Company at prices based on 25 quarter-plate sheets for 1s. in the case of the A thin paper, and 21 sheets for grades B, C, D, and E. In other words, for a gross of cabinet sheets 6 x 4½ the respective prices are 9s. 6d. and 11s. 6d.

**Professional Christmas Mounts. Sold by John J. Griffin and Co., Ltd., Kingsway, London, W.C.**

From the eight-page descriptive list of their varieties of Christmas photo-mounts, accompanied by a large specimen book, we have been able to judge of the wide choice in styles and sizes which are offered by Messrs. John J. Griffin and Sons. The selection, we are glad to see, includes both the smallest and most modestly priced of mounts, a few also of the gayest coloured variety, which doubtless still appeal to some, and many in the delicate, quiet tints of brown and grey which photographers are now coming to prefer and their customers to appreciate. Where there are so many varieties, it becomes invidious to select occasional examples for special commendation, but we may signalise one or two, not because they are exceptional instances of tasteful design and colour, but for the reason that they are very fairly representative of a large proportion of Messrs. Griffin's designs. Of these, Nos. 1,130 and 1,131 are both of thick mottled grey art paper with embossed border and containing inner white folder; with slip-in oval opening 3⅛ x 2 in., in the case of No. 1,130, and 3¾ x 2¾ in. in the case of 1,131. The price of these cards is 24s. and 27s. per gross respectively.



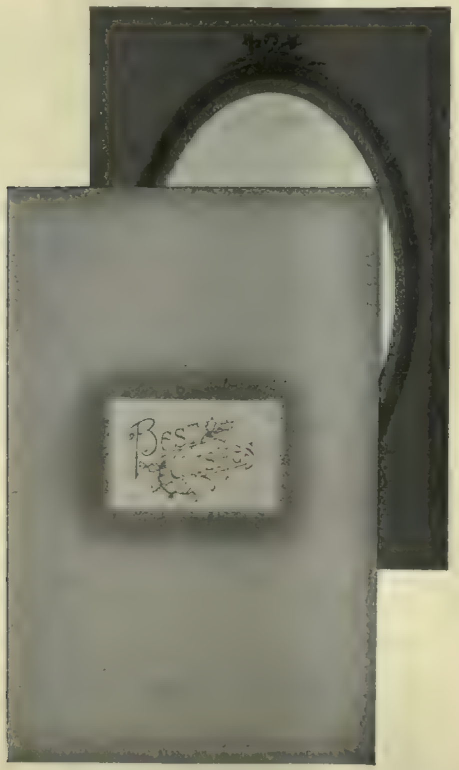
Nos. 1,130 and 1,131.

No. 1,132.

In No. 1,132 the outside folder is of granular white paper, with rough edges and grey linen inset folder, with a neat oval lithographed centre for the print. The latter is an oval of 3 x 2 in., the outside dimensions of the mount being 6 x 4 in. The neat greeting on the outside of the cards is in pale grey ink surrounded by embossed gold design. The price in this case is 24s. per gross.

A further design is that of No. 1,142, of which the front cover and the inside slip-in mount for the photograph are shown in the third illustration. It is a mount of light fawn colour, measuring 7 x 4½ in. The slip-in inset is a dark brown with border of a darker shade, and supplied with figured tissue cover. The opening in the oval is 4⅝ x 3 in., and the price of the mount is 21s. per gross.

These few examples will show the attention to photographic requirements which has been given by Messrs. Griffin, and we can recommend photographers to take early advantage of obtaining a sample packet at the price of 2s. 6d., or to obtain the loan of a specimen book. We may add that with each order of 5s. Messrs. Griffin supply an attractive window card serving to draw the attention of a photographer's customers to the convenience and artistic quality of Christmas mounts.



No. 1,142.

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### "Any-Tone" Gaslight Paper. Made by Any-Tone, Ltd., Staveley, Westmorland.

The name of this new gaslight printing material describes it fairly well. To be precise, one should say that it is a gaslight paper which, developed in the ordinary way, say with metol hydroquinone, yields a print of black tone and of a considerable degree of contrast. In this latter respect it is about on a par with the earlier gaslight papers, and is, therefore, well suited for the use of amateurs, many of whose negatives are deficient in pluck. But the distinctive feature of the new paper is its ability to give, with the normal exposure and the use of a suitable developer, a series of warm tones, ranging from warm black through brown and sepia to a warmth of colour which, though perhaps not quite red chalk, is a very warm reddish-brown. Our own trials of the material have shown us the readiness with which these results are obtained without an excessive degree of exposure, and without prejudice to the gradation of the print. Those who have made trials of obtaining warm tones by over-exposure and restrained developer on an ordinary gaslight paper will doubtless have noticed that the warmth of tone is usually obtained at the expense of pluck in the print, but in the "Any-Tone" paper the full degree of brilliancy is readily retained, and with a given developer tones varying within a range, say, from black to sepia can be obtained simply by giving more or less exposure. Thus for prints from black to sepia a very suitable developer is the following :—

| | |
|---|---|
| Rytol | 1 tabloid |
| Rytol accelerator | 1 tabloid |
| Bromide of potassium | 15 gr. |
| Water | 15 oz. |

For most of the requirements of the ordinary worker, who will wish to obtain by direct development the warmth of tone which he has been accustomed to produce by subsequent sulphide or other toning, this developer alone, or the following, which gives somewhat softer prints, will be sufficient :—

| | | |
|---|---|---|
| A. | Rytol | 1 tabloid |
| | Water | 15 oz. |
| B. | Rytol accelerator | 1 tabloid |
| | Bromide of potassium | 30 gr. |
| | Water | 15 oz. |

Use equal quantities of A and B.

Those who require the bright reddish to red chalk tones are advised to make use of a ferrous citrate developer, which is compounded as follows :—

| | | |
|---|---|---|
| A. | Citric acid | 4 oz. |
| | Carbonate of ammonia | 2 oz. |
| | Water | 20 oz. |

Place all together in a pint jug or basin and stir till dissolved.

| | | |
|---|---|---|
| B. | Sulphate of iron | 2 oz. |
| | Citric acid | 5 gr. |
| | Water (cold) | 20 oz. |
| C. | Common salt | ½oz. |
| | Water | 10 oz. |

Develop with
A. 4 dr. B. 4 dr. C. 8 drops.

Pyro-soda made up with plenty of sulphite, and containing bromide to the extent of from 1 to 2 gr. per oz., also gives an agreeable brown tone, whilst for prints from grey to greenish-grey the rodinal formula given by the makers yields an excellent result, though we have been unable to confirm the makers' statement that with it about one-third the exposure required for the other developers should be given; in our trials we found that this was insufficient, and that the developer called for practically the same exposure of the paper as the others. The new paper yields exceedingly bright and clean prints, and the agreeable colours which are obtained with it will surely appeal chiefly, we think, to the amateur user, though professionals could doubtless make good use of the new material by pinning themselves down to one given developer, and carefully timing exposures for the production of a uniform tone. In this way they should be able to produce prints in numbers all alike in colour with a degree of certainty such as they are accustomed to obtain by sulphide and other methods. In all ordinary respects of manipulation the paper is identical with other gaslight emulsions. The image does not, however, appear immediately the developer is applied, but comes up gradually and attains full depth within a minute or two. With each packet of paper the makers include one or two small "pilot" pieces, allowing of preliminary tests being made.

"Any-Tone" is supplied in shilling packets containing fourteen pieces, 6 x 4½in. Postcards, 5s. 6d. per 100, or 52s. per 1,000. It is also supplied on pot and flashed opal, in each case with polished edges. The price in half-plate size is 10s. per 1,000 for the former, 15s. per 1,000 for the latter.

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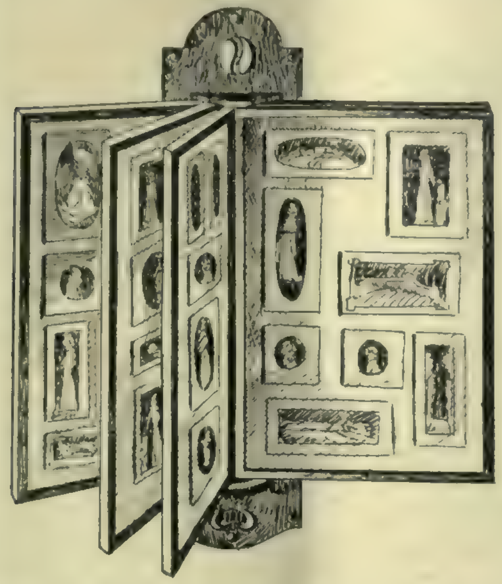
"CRITERION" CHRISTMAS POSTCARDS.—The Birmingham Photographic Co., Stechford, Birmingham, send us examples of the designs occupying the left-hand half of the face or address side of postcards manufactured by themselves as bromide, gaslight, P.O.P., and self-toning. Cards of these brands are supplied with the Christmas designs thereon at the standard prices. The designs are examples of excellent draughtsmanship, and are appropriate to the Christmas season.

# New Apparatus, &c.

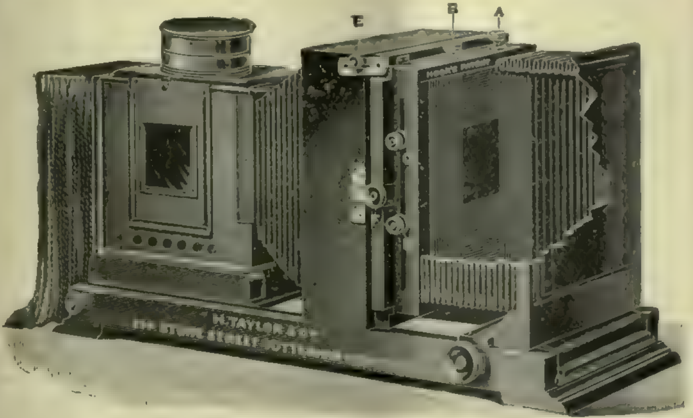
**The Marion Reception-room Screen. Made by Marion & Co., Soho Square, London, W.**

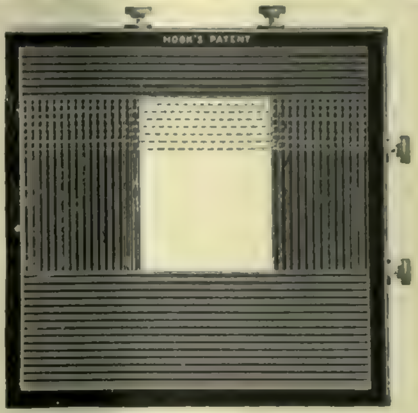
This handsome and convenient fitting for the reception-room allows of the photographer's visitors examining mounted specimens without the necessity of constantly turning these latter over and damaging them. The screen stands to a total height of 42 in., each of its six folding wings having the outside dimensions of 26½ x 18 in. A fabric (Fabrikona) of very pleasing appearance is used as a covering for each screen and provides an excellent background for the photographs. In fumed oak, the price of the screen is £2 5s., whilst modifications of the design illustrated are readily undertaken by Messrs. Marion, and will be expeditiously quoted for on receipt of photographers' requirements.



**The "Taylor" Standard Enlarger. Sold by H. Taylor and Co., 21a, Store Street, London, W.C.**

The special feature of this enlarger is the mounting, close against the negative-carrier, of four masking diaphragms, by means of which any desired part of the negative only may be projected upon the enlarging easel. This allows of the best selection of the subject being made when enlarging the negative, and has the further advantage of giving perfectly clear margins to the enlarged print. The masking diaphragms consist of flexible corrugated screens, which are each separately adjusted to a nicety by rack and pinion. The enlarger is supplied with all other necessary movements, including the tilt of the negative across the axis of the lens, as well as a rotating movement. Ample extension is provided, in the case of the half-plate enlarger of 25 in., so that the instrument may be used also for reduction as in lantern-slide making. Very well made, and with smooth-acting metal work, the price of the enlarger, in half-plate size, without illuminant or projection lens, is £5 5s.





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## CATALOGUES AND TRADE NOTICES.

High-class Enlargements.—Two new lists reach us from Messrs. R. and H. Chapman, The Studio, Buckingham. One is a price-list of enlargements in bromide, carbon, and platinotype produced by this firm from photographers' negatives. Messrs. Chapman do not attempt to undertake work at some of the miserable figures now prevalent, but their enlargements are thoroughly high-class productions at a fair price. They also offer enlargements in Bromoil. The second list describes a few of the special lines of enlargement for professional photographers, and contains particulars of the trade terms on which all their work is supplied to professionals.

Vanguard Preparations.—A revised list of the many developing, toning, and other preparations made by the Vanguard Co., Maidenhead, reaches our table. All who require to avail themselves of reliable compositions for these purposes, also varnishes, colours, background paints, etc., should not fail to obtain the price list, which is sent free.

Enlarging Apparatus.—A useful list describing their various patterns of enlarging lantern, illuminating chambers, etc., has just been issued by Messrs. J. Lancaster and Son, Ltd., Camera Buildings, Broad Street, Birmingham. It includes also particulars of suitable illuminants, enlarging easels, and minor accessories. It is sent free on application.

Control in Gaslight Printing.—A twelve-page booklet, just issued by Messrs. Thomas Illingworth and Co., Willesden Junction, London, N.W., deals with the wide range of results as regards softness, contrast, and vigour obtainable on the Illingworth "Slogas" paper. As our own use of this material has shown us, the two brands of paper, "Portrait" and "Vigorous," are capable of yielding prints as soft or as hard as may be required, and photographers whose work calls for making the best of all manner of negatives cannot be better advised than to give "Slogas" a trial.

The "Primus" Lantern Diary.—The issue of this useful manual, edited by Mr. W. F. Butcher, is regularly brought up to date, and includes within its pages an immense variety of memoranda of service to the lantern and cinematograph operator. These comprise illuminants, electrical matters, as well as a directory giving the voltage and description of current supplied in most places in the United Kingdom. The diary runs from October 1, 1911, to September, 1912, and the volume as a whole is one which the lanternist should find of frequent service. It is sent post free, 7d., by Messrs. Butcher, Camera House, Farringdon Avenue, London, E.C.

Barnet Bromide and Gaslight Papers.—A little book, the Barnet Handbook No. 7, has just been prepared by Messrs. Elliott and Sons, Ltd., Barnet, Herts, containing concise instructions, hints, and formulæ on making and toning their various bromide and gaslight papers. The notes on toning processes give instructions in the sulphide and hypo-alum methods, as well as for the production of blue, bright red, and green tones. These and some further hints on the best methods of reducing over-dense prints and improving the colour of others, render the publication of timely service. It is sent post free on application direct to Messrs. Elliott.

THE "BIS-TELAR."—The Emil Busch Optical Co., 35, Charles Street, Hatton Garden, London, E.C., send us several illustrated pamphlets dealing in a very practical way with the advantages of the "Bis-Telar" fixed-focus telephoto as a lens for hand-camera work. These include an article by Mr. W. Thomas, and quite a small treatise on the use of the "Bis-Telar," by Mr. R. Child Bayley. Both are sent free on application, and are deserving of careful study by those who would realise the excellent use which can be made of a single-extension camera when fitted with the "Bis-Telar." The Busch Co. have also just issued a circular of projection lenses and condensers for lantern and cinematograph work.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### FRIDAY, OCTOBER 20.

Cowlairs Co-operative Camera Club. Platinotype.

### MONDAY, OCTOBER 23.

Leeds Camera Club. Useful Hints—How to use the Club's Enlarging Apparatus, &c. The Members.
City of London and Cripplegate Photographic Society. "Ozobrome." F. C. Boyes.
Dewsbury Photographic Society. "Holland, the Land of Dykes and Windmills." H. G. Brierley.
Bowes Park and District Photographic Society. "Bromoil." A. Allen.
Bradford Photographic Society. "Retouching and Working up Negatives and Prints." W. Bell, Gevaert, Ltd.
Southampton Camera Club. "Radiography." Norman Aldridge.
South London Photographic Society. "Home Portraiture." M. Frazer Black.
Leek Photographic Society. "Devon and Cornwall." J. K. Hyde.
Southport Photographic Society. "Genre and Figure Studies." T. Lee Syms.
Bath Photographic Society. The "Amateur Photographer" Prize Slides.

### TUESDAY, OCTOBER 24.

Royal Photographic Society. Opening of a House Exhibition of Photographs. Charles Job.
Leeds Photographic Society. "The Lake District—Winter and Summer." W. Parsons.
Sheffield Photographic Society. "Bromoil." John Tateson.
Halifax Camera Club. "Album Making." W. H. Womersly.
Manchester Amateur Photographic Society. "The Fascination of Brittany." Miss Walter.

### WEDNESDAY, OCTOBER 25.

Blyth and District Photographic Society. Autotype Carbon Demonstration.
Sale Photographic Society. A Portfolio of Prints by Early Photographic Processes. On loan from the Manchester P.S.
Barrhead and District Amateur Art Club. "The Painter of 'La Gioconda,'" Rev. T. Cook.
West Surrey Photographic Society. "Beauty Spots Round London." Mr. Butterworth.
Croydon Camera Club. "Faking," or "The After-Treatment of the Negative." Edwin W. Taylor.
Edinburgh Photographic Society. "Bromoil." J. F. Duthie.
Partick Camera Club. Monthly Lantern Slide Competition.
Coventry Photographic Club. "Improvement of the Negative, and Contact Printing." By Members.

### THURSDAY, OCTOBER 26.

Darwen Photographic Association. Autotype Carbon Demonstration.
London and Provincial Photographic Association. "Lens Arithmetic." Rev. F. C. Lambert.
Liverpool Amateur Photographic Association. "Wanderings in the Black Forest." W. Lawrence Rea.
Handsworth Photographic Society. The Midland Photographic Federation Portfolio.
Photographic Society of Ireland. "The Down Grade in Modern Photography." H. Hauna.

## THE PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A SPECIAL general meeting of the Association was held at the Royal Photographic Society, 35, Russell Square, W.C., on Friday, October 13. The president, Mr. F. P. Moffat, F.R.P.S., occupied the chair.

The meeting had been convened by the Council in order to discuss, and, if it were so decided, adopt an alteration in the rules providing that the annual general meeting should be held during the Congress in such years as the Association held a Congress.

The hon. secretary explained that with regard to the first paragraph of the rule, the revised form of the proposed new rule was a necessity arising from the impossibility of using the arrangement of sentences of the present rule and merely interpolating words expressing the intention of the proposed alteration. With regard to the second paragraph, the opportunity had been taken of correcting what was clearly an oversight in the original drafting of the rules. As the rule stood, a special general meeting had to be called within fourteen days of the receipt of a requisition for a special general meeting, and seven days' notice of the holding of the meeting had to be given to each member. That would leave only seven days or less to get the notice printed and sent out, and as well hold a meeting of Council. A meeting of Council would be almost inevitably necessary, as the only occasion when a meeting by requisition was necessary was when some section of the members was at variance with the Council. The proposed alteration consisted in substituting twenty-one days for fourteen days, thereby allowing fourteen days' interval between the receipt of the requisition and the sending out of the notice.

The President said the Council had proposed the alteration in response to a desire expressed by a considerable number of members for more opportunity of discussing business matters. If the members used their opportunity by having a real talk about "shop," they would do good, but if it was to be used for the purpose of criticising the management of the Association, harm only could arise. He thought the best way of assisting in the business of the Association was by the formation of local branches. They had such a branch in Edinburgh, and the meetings proved to be of real benefit to their local members by affording opportunity for discussing matters that affected their profession generally and locally, by providing the means of their coming together and making business arrangements for mutual benefit, and in other ways, and as well forming pleasant social gatherings.

On being put to the meeting, the proposed new rule was unanimously adopted. The new rule runs as follows:—

ANNUAL GENERAL MEETING.—An annual general meeting shall be held for the purpose of receiving the report of the Council and the balance-sheet for the past year, the election of a president and Council, the appointment of two auditors of accounts, and such other business as may require the decision of a general meeting. The meeting shall be held on the second Friday in March, but when a Congress is to be held during the months of March, April, or May, the Council shall fix a date for the meeting to be held during the Congress. Notice of the meeting, together with a ballot paper, shall be sent to every member not less than fourteen days previous to the date of the meeting.

A special general meeting may be called by the Council at any time. A special general meeting shall be called within twenty-one days of the receipt by the hon. secretary of a requisition signed by ten members, stating the purpose of the meeting. Every member shall receive seven days' notice of a special meeting, and no subject shall be discussed thereat but that for which the meeting was called.

Previous to the special general meeting a meeting of the Council was held. Present: Messrs. A. Corbett, Alfred Ellis, S. H. Fry, W. E. Gray, G. Hana, A. Mackie, Lang Sims, R. N. Speaight, D. Knights Whittome, F. P. Moffat, W. Illingworth, and H. C. Spink. Mr. F. P. Moffat, F.R.P.S., president, in the chair. An application from a Portuguese photographer was discussed, asking for information with regard to English copyright law, and in addition to general and formal business, a committee was appointed to carry out the arrangements for next year's Congress.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, October 17, Dr. C. E. K. Mees in the chair.

Mr. A. E. Smith read a paper, entitled "Photo-micrography from the Popular Side," in the course of which he showed a large number of lantern-slides, in many cases at high magnifications. He explained the arrangement of apparatus and the procedure which could be followed by those prosecuting this branch of photography as amateurs. At the conclusion of the lecture, Mr. Smith demonstrated the use of one large lens, provided with two separated small diaphragms, for the production of stereoscopic results: he showed photographs which went to prove the usefulness of this method in determining the structural nature of certain microscopic objects. A brief discussion followed the reading of the paper.

Croydon Camera Club.—Mr. J. M. Sellors ("One of those workers we may hear about."—*Vide* the "A.P.") last week ably expounded the merits and convenience of "Bromide Printing," before a full house, including many new members. The lecturer, somewhat rashly as it turned out, had asked for negatives to be brought up, "good, bad, and indifferent," and a large assortment of the last two were placed at his disposal. He regretted that the subject was not one likely to interest the veterans, who generally exhibited a sort of brain affliction, or moonlight madness, whenever the topic was introduced. This would, he anticipated, be fully exemplified by the silly remarks which would be made by them in the subsequent inevitable discussion. The new members looked exceedingly astonished at this courteous preliminary, and uneasily gazed round the room in search of the aforesaid veterans, who, however, failed to disclose themselves at this juncture. We need not follow Mr. Sellors through the practical and familiar details of the subject; it will be sufficient to say that he was entirely successful in producing a number of, mainly, miserable-looking prints from the equally miserable-looking negatives available. Had not Mr. Harpur kindly produced one of his "practically perfect negatives," from which an excellent result was obtained, the beginners present might easily have been misled as to the possibilities of the process.

A curious little idiosyncrasy of the lecturer's drew the first veteran. Whenever Mr. Sellors gives a demonstration he has the trick of concentrating a fixed stare on individuals, possibly without being aware of the fact. Whilst emphatically expressing the necessity of cleanliness in all stages, he, fixing a determined glare on Dr. Mees, earnestly warned all against working with dirty fingers or hands. Such a procedure was fatal. "I must ask you," said Dr. Mees, indignantly, "to withdraw your optical searchlights from me whenever you make an observation of that description." Mr. Sellors obligingly rearranged his projection apparatus, and went on to point out that, irrespective of the control possible by utilising fast and slow papers, and by modifications of the developer, etc., subtle differences, difficult to define, existed between the various brands on the market, which the advanced worker knew how to take advantage of, with improvement to the picture. For a dark-lamp, a roll of orange paper, with a carriage candle inside, was perfectly safe, though whether fire insurance companies will share this view appears more than doubtful. As to exposure, the lecturer said, most were aware that this varied inversely with the square of the distance. A bald-headed veteran, interrupting, here pointed out that if this were the case, at a distance of, say, a mile from the illuminant, fast focal-plane speeds would be required in order to avoid over-exposures. He, the speaker, was not a bromide worker, but it certainly did appear that the process might injuriously affect the brain. Mr. Sellors corrected his slip, and went on to say that he had found that very approximately 20 per cent. more exposure was required than theory demanded for varying distances from the illuminant. An energetic discussion followed the lecture, in which many took part, for occasions are rare when the "blooming practical" can stand on level terms with the scientist with a mass of figures and formulæ at his disposal to conceal facts. It was, however, left to Mr. Wood to give the debate an apparently homicidal character, by the simple observation that he always developed to infinity, for a fixed period of two minutes.

# Commercial & Legal Intelligence.

At Leicester, on October 13, the public examination was held of Horace Parr Holt, photographer, Church Street, Oakham. The statement of affairs showed net liabilities of £111 and assets £14, leaving a deficiency of £97. Debtor said he commenced business about sixteen years ago with a capital of £70. At first he did fairly well, but during the last eight years, owing to strong competition and trade being bad in the town, business fell off. He went on to say that in times of depression the photographer's business was one of the first to suffer, and one of the last to revive. During the last eighteen months he had known that he was insolvent, but had hoped that things would improve. Debtor said he had invented a patent for bicycles, which had not yet been put on the market, but which a patent agent had informed him was worth £2,000 to him (debtor). The examination was closed.

## NEW COMPANIES.

Marshall Engraving Company and the Marshall Studios, Ltd.—September 22, £5,000, in £1 shares. Business: To take over that of colour process and half-tone engravers, photo etchers, artists, stereotypers and photographic printers, etc., carried on by T. C. Eamer, T. J. Eamer, and F. M. Eamer, at 12 and 14, Farringdon Avenue, E.C., as the Marshall Engraving Company and the Marshall Studios. Private company. Office, 12 and 14, Farringdon Avenue, E.C.

Photo Printing and Etching Machinery, Ltd.—This company has been registered with a capital of £1,500 in £1 shares. Objects, to carry on the business indicated by the title. First director, C. Janzer. Registered office, 4 and 5, Gough Square, Fleet Street, E.C. Private company.

Romney Studios, Ltd. (117,988).—Private company. Registered October 9, with capital £500 in £1 shares, to carry on the business of photographers, dealers in cameras and photographic materials, etc. The first directors are T. E. Howe and E. T. Wetherill. Registered office: Gundulph Road, Chatham.

# News and Notes.

The "Nature Photographer."—No. 4 of the "Nature Photographer" continues to demonstrate the help and interest taken in the various branches of natural history work by its promoters. It contains notes on stereoscopic photography, photo-micrography, and particulars of the conditions under which "fellowship" of the Nature Photographic Society is granted.

A Set of Lantern Slides, together with a book of notes, dealing with some of the most beautiful parts of North and Mid Wales, may be had on loan by anyone desirous of giving lantern lectures on Wales, on application to the Traffic Manager, Cambrian Railways, Oswestry. To prevent disappointment, early application should be made for a set to be booked, stating whether coloured or uncoloured slides are preferred.

X-Ray Plates.—The use of phosphorescent screens in taking photographs by means of X-rays not having been successful, owing to the tendency to obtain double images with the slightest movement of the screen, MM. Lumière have now proposed, in order to obviate the use of these screens, to incorporate the phosphorescent substance with the emulsion itself; thus calcium sulphide or tungstate may be used in a very fine state of subdivision.—Fr. Pat. 428,559. June 23, 1910.

Historic Yorkshire Scenes.—Three well-illustrated booklets, dealing respectively with Barnard Castle, Ripon and Fountain Abbeys, and York Minster, reach our table from the office of the Passenger Superintendent of the North-Eastern Railway Company, Darlington, by whom they will be sent to anyone interested free on application. The text in each case is by Mr. Snowden Ward, who, around the photographic illustrations of Mrs. Catherine Weed Ward, has written just sufficient of the ancient history and legends of these historic places to interest the intending tourist and to prompt the visitor to further study. The booklets are most attractively produced and printed.

Photography in Church.—The Sub-Dean of Lincoln, preaching in the cathedral on Sunday evening last, made a strong protest against the taking of photographs in the cathedral during the progress of the service. During the service to commemorate the completion of the Lincoln water scheme the previous Wednesday, he said, two photographers gained access without permission to the organ gallery and took photographs of the congregation. This was done contrary to all rule, and met with the entire disapproval of the Dean and Chapter, who made it a rule in the cathedral to forbid the taking of photographs during service. We were in great danger, he added, of being far too flippant about our religious practices, and of attaching far too little importance to the inner meaning of the reality of the great ceremonies in which we took part. There was a danger in great functions in anything which involved outward show in religion, and it was well to realise this danger.

Southampton Camera Club.—The eleventh annual exhibition will be held from November 6 to 11, in the Shaftesbury Hall, Southampton. Of the four open classes, one will be devoted exclusively to colour photography, either prints or transparencies, whilst that for lantern slides will include subjects in either monochrome or colour. The awards will take the form of salvers, and ten of these will be placed at the disposal of the judge, Mr. Arthur Marshall, for the open classes. Entries close November 1, on or before which date entry forms, duly filled up and accompanied by the necessary fees, must reach the hon. secretary, Mr. C. M. Cooper, 203, Shirley Road, Southampton. The forms may also be obtained by application to Mr. Cooper at the above address. Free carriage of exhibits is offered to exhibitors at the Bournemouth exhibition, October 11 to 21, hon. secretary, Miss Penrice, 41, Wellington Road, Bournemouth, and also to the Portsmouth exhibition, November 15 to 22, hon. secretary, J. C. Thompson, 23, Elm Grove, Southsea.

Bequest of Lantern Slides. — The authorities at the British Museum, writes the "Evening Standard," have received from Mrs. Godfrey the valuable collection of lantern slides which the late Mr. Wallace Godfrey accumulated during his travels. Some little difficulty arose over the disposition of this gift. The Act of Parliament under which the British Museum is governed expressly stipulates that none of the property of the trustees shall at any time or under any circumstances be taken out of the buildings.

The Godfrey slides were handed over to the Ethnological Department, which is under the care of Dr. C. H. Read. Mrs. Godfrey has directed that the slides shall remain at the disposal of Dr. Read and his successors, who will be able, when they think fit, to lend them to societies which desire to exhibit them. The collection is of considerable value. Mr. Godfrey was the honorary secretary of the Camera Club, and one of the best amateur photographers in the country. He travelled extensively in India, Southern Europe, Northern Africa, and elsewhere; and the photographs which he took are equal to anything which the camera has achieved.

The slides number about 1,000, and they include subjects taken in Italy, Tangier, India, and other countries. The subjects for the most part are architectural, and the Indian collection in particular is especially valuable as an archæological record of the interior work and decoration of Hindu temples.

Scottish Pictorial Circle.—The usual monthly meeting was held on Wednesday, October 4. The president, Mr. W. C. S. Fergusson, in introducing Mr. Archd. Cochrane, referred to him as a gentleman who had done much for the advancement of pictorial photography, he had acted as judge perhaps more frequently than any other worker in Scotland, and was always willing to help by way of friendly criticism. These services were greatly appreciated, as was shown by the number of prints submitted by the members. Mr. Cochrane, in his opening remarks, explained that as he considered unstinted praise not to be of much use to the worker anxious to make progress in his productions, it was his intention when considering the various prints to dwell more on the points where, in his opinion, the picture could be improved, and offer suggestions for the improvement of the general effect. This rule Mr. Cochrane adhered to throughout the fifty odd prints he criticised; he went into every print most thoroughly, allowing no point, however small, to escape. His remarks in some cases caused much merriment. A number of the prints got rather a severe handling, but it was done in such a way, being mingled with much quiet humour, that no one could take offence. Mr. Cochrane made his remarks so clear that one was forced to admit the justice of the criticism, and parts that appeared to be pretty severe if taken as it ought to be (and as no doubt it was), should be greatly to the benefit of the workers. Having criticised each of the prints, Mr. Cochrane said he was much impressed with the general high level of the productions, and congratulated the members on the standard of the work shown, expressing the opinion that many of the pictures would find their place on the various exhibition walls, and take a good place in the award lists. It was a most interesting and instructive meeting, and greatly enjoyed by all, and its influence should be shown in many ways, as most of the work submitted was in a more or less experimental or rough proof stage.

The Polytechnic Photographic School.—Last winter the classes in photography at the Polytechnic were carried on in temporary premises, but the inauguration of the 1911-12 winter session is marked by the opening of the new rooms in the fine building which has been erected on the old site, 307-309 and 311, Regent Street. These rooms have been arranged and fitted up with careful attention to detail, and are a model of what class and work-rooms for teaching and practice should be. We say *practice* advisedly, for the teaching at this institution is not confined to lecturing and instruction in theory alone. Basic principles are explained and demonstrations given, but the facilities provided enable each student to carry out the various operations himself—from loading the dark slide to spotting the finished print. It is this combination of a study of underlying principles with actual manipulation which has made the work of the photographic school so successful and the classes so popular with workers, who are anxious to increase their knowledge, improve their positions, and incidentally their salaries. From an advance copy of the prospectus, which lies before us, we notice that instruction is given by Mr. Howard Farmer in three-colour reproduction, and advanced scientific work, including cinematography and emulsion-making. The new school premises include both day and electric light studios, and portrait operating classes are conducted by Mr. C. H. Hewitt, F.R.P.S. In this branch teachers are also engaged who have specialised in some particular direction, so that on a certain number of evenings the classes will be conducted by Mr. Elwyn Neame, whose decorative portraiture is so well known, and by Mr. C. Borup, who has made a feature in his studio work of groups and portraits of an "At Home" character. The technical side of photographic work is dealt with in classes taught by Mr. C. H. Hewitt and Mr. Harold Harrison, where attention is given to the various processes of negative and print production. Mr. Wolfgang Arndt and Mr. A. J. Lyddon deal with retouching and finishing respectively, and we note that the latter gentleman is also giving instruction in colour finishing and miniature painting. In all cases similar instruction is given in the day classes. The evening session commences on Monday, October 30, but an opening night will be held on Wednesday, the 25th, at which a lecture by Mr. Elwyn Neame, with lantern illustrations, "Pictorial Portrait-making," and a demonstration of a special method of finishing enlargements by Mr. A. J. Lyddon will be the two principal features.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

### THIO TONING OF P.O.P.

To the Editors.

Gentlemen,—I have read Mr. Jeffreys' articles on the sulphide toning of P.O.P. with the greatest interest. May I say, in answer to what is perhaps almost a query on his part, that the reason that we supply a thiomolybdate solution is because I found that it could be made with extremely good keeping properties.

Of course, he is treating of P.O.P. toning, while the greatest commercial demand in this connection seems to be for sulphide toners for bromide and gas-light papers. But even so, I quite agree with him that there is not much to choose between thiomolybdate and thiotungstate—that is, for a laboratory experiment. Though for bromide work I certainly think the thiomolybdate tone is likely to please the greatest number, especially as it is easy to vary the tone; but this, of course, is merely a matter of individual taste.

Unfortunately, when it comes to making and selling such things, one has to consider practical commercial utility, and the length of time the toner will keep practically unchanged becomes an important factor. I consider that a toning solution should keep in good order for at least a year, to be on the safe side.

I have long thought that a thiotungstate salt of an alkaline base could well be sold in tablet form, if the right one were chosen, and such a compound would make a good toner. But, after all, it has seemed to me that to measure a few minims of a concentrated solution, or drop a few drops of it, and simply add water, is a more simple matter than to jab at a tablet with a stirring rod until it has dissolved. The choice between thiomolybdates and thiotungstates for a commercial article is little more than a question of saving of time and good keeping properties.

I made some careful tests of the relative keeping properties of these two classes of compounds in solution, and in a back number of the "B.J." gave some of the results, which were greatly in favour of thiomolybdate solutions, though when it is a question of the solid salts, it is apparently the other way about in most cases.

I hope Mr. Jeffreys has not misunderstood my meaning when some time ago I spoke of the "yellowing" of thiomolybdate-toned P.O.P. prints. I may not have expressed my meaning clearly enough, but I did not mean to imply that the prints would actually turn yellow. I have never known one to do anything of this sort, but I found that the high-lights were apt to take a slightly yellowish tone with time, and that the general tone of the print was liable in many cases to change from its original purple-brown to a yellower brown—more of a "photo-brown," in fact. Beyond this, in my experience, the change does not go.

In June and July, 1908, I exposed a carefully prepared set of sulphide toned P.O.P. prints in a 15 by 12 printing frame, with strong springs and plate-glass front. One half of each print was covered with the opaque black paper that one gets in large packets of bromide paper. I chose this black paper because I thought that it would probably be fairly pure, and incidentally, I might say that this paper evidently did not affect the prints. The frame was placed under a skylight in my laboratory, and for two years the prints were exposed to all the daylight and direct sunlight they could get. Of course, the light had to come through the skylight and through the plate glass, but both were kept fairly clean. After some months I looked at the prints, and was surprised to find that the portion under the black paper was exactly the same tone as the exposed half in every case. Yet I knew that the prints had changed in tone, though even to-day the high-lights can scarcely be said to have yellowed. The prints were replaced in the frame, and the exposure to light continued, and every few months I had a look at them. The change of tone being so slight, and affecting as it did the whole surface of each print, I could not very well make any very accurate notes on the matter, as I had no standard original tone to judge them by. Finally I took the prints from the frame in July, 1910, as for some time they had not changed any further so far as I could judge. I beg to enclose four of these prints for your inspection. I think that you may take them to have changed as much as thiomolybdate-toned P.O.P. prints will ever change, for since they have left the frame I am certain that they have not altered further.

One of the prints was simply fixed in plain hypo; two of them had a $Na_2HPO_4$ bath before fixing; and one a NaCl bath. This sodium phosphate bath is not so efficient as the alkaline fixing bath containing $(NH_4)_3PO_4$, that I subsequently devised to avoid this change of tone. Of course, none of these prints had the advantage of that. It would appear from these results that the change of tone in a P.O.P. print after sulphiding is not a matter of light-action at all, but the causes must be inherent in the print.

One of these prints you will notice, Gentlemen, is on a matt collodio-chloride paper. From the lightest detail I see that it was not printed very deeply, and the change in this case is, I believe, practically nil. Collodio-chloride papers in my experience do not change, and do not require any special treatment. Gelatino-chloride and albumen P.O.P. prints, however, require a special fixing bath, and the latter are more prone to change than the former. Of course, these remarks do not apply to bromide paper.

As to supplying a thiotungstate solution such as Mr. Jeffreys recommends, we should, of course, be pleased to do so, if it is proved to have good keeping properties, and if there is any demand for it.

I must admit, however, that for a sulphide toner, I have a weakness for one that can be prepared in a manner that does not make it too troublesome to keep up a high standard of even composition.

This is very important, and I am afraid that I could not guarantee a very exact standard for a thiotungstate solution such as Mr. Jeffreys recommends. In practical work I fear that it would be troublesome to so regulate the amount of $H_2S$ passed as to always add about the same amount of ammonia to neutralise the excess. And I can assure Mr. Jeffreys that the sale of such preparations would not admit of the extra expense of two or three estimations towards the end of each process, even if they could be done volumetrically.

With thiomolybdates, it is true that the process is more elaborate as they are made here, for I will not use any that are not chemically pure to start with. And this means washing with alcohol and drying in a vacuum. But then we have pure products that we can weigh up exactly, and so be certain of sending out a concentrated solution of an unvarying composition. And I should say here, that I have found that the amount of alkali present in the toning solution does largely affect the tone, both with thiomolybdates and thiotungstates.

However, if there is a demand, as I have said, we should, of course, be only too pleased to make anything of this nature that is asked for, but I fear that there will be but a slight demand for a solution for the sulphide toning of P.O.P.

I hope, nevertheless, that Mr. Jeffreys' careful work will go far towards seriously interesting professional workers in this matter, for I am sure that sulphide toning would save them money. In spite of this, I am afraid that a good many who have read Mr. Jeffreys' articles, and this letter, will content themselves with exclaiming mentally: "By Jove! that reminds me, I must order some more gold chloride."—I am, Gentlemen, Yours faithfully,

1A, Ezra Street, H. E. Smith.
Columbia Road,
London, E.

[The prints submitted to us by Mr. Smith certainly show little or no deterioration due to light. If anything, it appears to us that the exposed tones are slightly better preserved than the others. Under the black paper extremely faint traces of yellowing can be detected in the whites, though we can see no signs of such an effect in the exposed portions.—Eds. "B.J."]

To the Editors.

Gentlemen,—I must thank you very much for your favourable comments on my article. I had always considered that the action of hypo-alum on a bromide print was entirely due to the suspended sulphur. It appears possible, theoretically, that a solution of hypo, or even warm water, containing milk of sulphur in suspension, may be a successful toning agent, although the presence of some of the other compounds in the solution may be required to make the reaction take place as rapidly as is required. It is also possible that a bleached bromide print may be toned by immersion in trithionate, but I should not expect the result to be superior, if indeed equal, to that obtained by the Blake-Smith or the thiomolybdate method. It does seem an interesting problem.

When hypo-alum is applied to bromides, a print may be left in it for quite a long time after the required tone is reached, without any serious catastrophe. This is, I think, the main advantage. On P.O.P. it gives the one good tone, but this is spoiled very quickly if care be not taken, and in consequence very few prints can be manipulated at a time. Further, the chestnut brown is not adapted to a wide range of subjects, good though it is. This is what I meant by the "grave defect of giving only one good tone."

In your recent articles on the preservation of sodium-sulphite in solution there are two points that strike me as noteworthy. The first is the occasional rapid destruction of sulphite when carbonate is added. As you will remember, when I was working on this subject last year ("B.J.," April 22, 1910), I found the carbonate to be a preservative, and I cannot see how a pure carbonate can act so violently on a sulphite as to destroy it in a few minutes. The experiment seems to suggest that one of the impurities present is a most powerful catalyst, whose action is very much increased when carbonate is added. In this case the preservative power of carbonate would indicate the absence of this impurity.

The other point concerns the titration of the mixture, first with phenolphthalein, and then with methyl orange. I found the method to work well when the carbonate was in small quantity, but when the amount is large it gives trouble. The methyl orange, no matter how little of it is present, does not change colour suddenly, as it should. Dilution of the solution may correct the defect.

In conclusion, may I respectfully call your attention to the words "to speedily take," on p. 759?—I am, yours very sincerely,

Harold Jeffreys.

16, Chapel Court, St. John's College, Cambridge.
October 17, 1911.

### THE P.P.A.

To the Editors.

Gentlemen,—It was decided at a special meeting of the P.P.A., held on the 13th inst., to change the date of the annual general meeting from the second Friday of March to one day during the Congress week, should a Congress be held. This last clause is merely a safeguard in case any year the Council found it inexpedient to hold a Congress.

It is the intention of the Council to promote a Congress every year, if possible, but it would not be advisable to make this a hard-and-fast rule, as they might find it impossible to do so some year, through various causes, financial or otherwise.

I can assure the members of the P.P.A. that there is no intention on the part of the Council to do away with the Congress; they are fully alive to its benefits.—I am, etc.,

Frank P. Moffat.

### RAPID *V.* SLOW DEVELOPMENT.

To the Editors.

Gentlemen,—Now that the question of tank or stand development is being widely discussed, not only in your columns but before many of the photographic societies, I should like to call the attention of experts, experimenters, and others more capable than myself, to what I believe to be a curious fact, namely, that the speed of development influences the printing value of a negative, even though to the eye there may be no difference between one slowly developed and one very quickly developed. The matter is, I think, one which might be further investigated.

I was led to make some very primitive experiments after finding that tank-developed negatives gave brighter and more plucky prints than negatives developed in a normal manner, although the same developing agent was used for both, and those by both systems appeared to the eye to be of the same colour and density. The difference, in my opinion, lies in the character of the reduced silver of which the image is composed.

Some may at once give a scientific and at the same time a satisfactory explanation of the fact. In any case, some may be interested to know that even one photographer has found that slowly developed negatives when fully and properly developed give brighter prints than those developed quickly. The difference, of course, is not great, it is not great enough to show in a half-tone reproduction, but it may be distinctly seen upon a gelatino-chloride print. In conclusion, I would like to say that I am not an advocate for tank or dilute development for general or studio work. All I wish to do is to state that I have found slowly developed negatives to give brighter and better prints than negatives developed more quickly, a fact I do not remember having seen mentioned. It would be interesting to know if this is borne out by theory, and, if so, the real reason.—Yours faithfully,

Amateur Experimentalist.

### A PROPOSED UNION FOR PHOTOGRAPHIC ASSISTANTS.

To the Editors.

Gentlemen,—I have no option but to express my sincere regret that I should have been among those who misconstrued Mr. Goodyer's letter, and to tender that gentleman my apologies for having attributed to him the action, which he did not commit, of attending the meeting. My thanks are also due to him for the "example" he gives of how he thinks a debate should be carried on.

To Mr. Hearn I should like to say that my letter was not the result of "temper" towards a "hated capitalist," or any childish nonsense of that kind. For a very long time I have been so placed that I have had no opportunity of discussing matters with fellow assistants, and I had looked forward to the meetings as a chance of doing so. It would seem, however, that it would not be safe to indulge in free and candid criticism on subjects concerning our special interests, for fear that some of my utterances might be published broadcast, and possibly distorted, by some employers who happened to have a friend at the meetings.

It would be just as absurd for me to suggest that *all* my grievances are due to employers as it is for Mr. Hearn to suggest that there are no just grievances. While I have never been one to grumble at working overtime, I do think it "a bit thick" that when one has worked, not an occasional hour, but several hours a day overtime for weeks on end without payment, and cheerfully, that a little time off should be refused or deducted for on Saturday. That is the sort of experience I have had with some masters. Possibly Mr. Hearn does not know of some West End firms of commercial photographers whose normal working hours are over sixty per week, and who consider 35s. an *outside price* for a skilled operator.

With regard to the advice given by several correspondents that to earn more one must be worth more, that is quite obvious, but it does not follow that one can always get one's value. I myself was turned out many years ago by a world-renowned firm after three years' apprenticeship as a very mediocre workman, because no training worthy of the name was given. How I worked myself up to be a skilled man would be a long story; suffice it to say that the doing of it entailed the sacrifice of all the luxuries and comforts (and at times even of some of the necessities) of life over a long period of years. I can give ample proof that my work is of a very high standard indeed in those branches in which I have specialised, and that I am frequently called upon to undertake difficult work in which others have utterly failed. My testimonials would show that I am anything but a careless or shirking workman, but I have not come across that "crying need" that Mr. Hearn mentions. On two occasions this year I have advertised for a berth. The first was a series of six weeks, with a result of three replies, all from "slotographers." The second lot of advertisements cost me about 9s., with no result whatever. That does not look as though employers were on the look-out for good men. As a matter of fact, I find it much more difficult to get a proper situation at 30s. or 35s., with my unquestionable abilities and references, than it was to get a job at a pound or so when I was admittedly an incompetent.

I have carefully compared the conditions of various trades among acquaintances, such as joinery, bookbinding, etc., etc., together with the amount of intelligence required, resource in cases of difficult work, need of appearance and education, tact, etc., and while photography is very exacting in those respects in the more advanced branches, the conditions of the workers are very unsatisfactory as a general rule.

While I do not know what may be the ideas of others with regard to satisfactory conditions, I have very clear notions on the subject myself. In addition to desiring properly ventilated dark-rooms and similar necessities for producing good work, I want to be able to live in comfort, to enjoy occasional luxuries, to help support my ageing parents, and, if I should marry, to offer my wife something more refined than the life of the average working man's wife with whom I have lodged in different towns. None of these things is, I think, very ambitious, but none of them is possible while there is the ever-haunting fear that next week or so I have to start on "short commons" for an indefinite period, until another situation is found.

Reverting to the subject of the meetings, while the Press, as represented by yourselves, knows how to exercise a wise discretion as to publishing details of discussions, etc., I wish I could feel confident that fellow assistants would, in that respect,

Play Fair.

To the Editors.

Gentlemen,—On reading the report of the meeting held at Manchester with respect to the National Society of Photographic Assistants, I was sorry to see one thing, that is, it appears to me that the Manchester branch intends to become a part of the Trade Union and Labour Party. In this I foresee many evils. Among other objections, there will be, firstly, a stirring up of class hatred; secondly, there will be endless trouble until the members of the N.S.P.A. are officially recognised by employers, then comes tyranny over non-members: and thirdly, to copy the trade union, members will be expected to follow the leader—who may simply be an agitator—like a flock of sheep.

Again, I regret to see the Manchester branch fly at once to a Labour M.P. to address the "smoker." Why do they not ask a prominent photographer of long standing, and a large employer of assistants, to address the meeting? A man with his experience of employees could give more sound advice in one speech than twenty speeches from Labour M.P.s.

My whole point is that the N.S.P.A. should be managed entirely by the members of that trade. To be perfectly independent of the trade union will be better for everyone concerned.—Faithfully yours,

FLANAGAN.

October 16, 1911.

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To the Editors.

Gentlemen,—As an employer who has not forgotten that he was at one time an employee, may I add a few remarks to the discussion? The P.P.A. has been found useful to the employers, and there is every reason to suppose that a P.A.A. would be equally useful to the assistants. I have noted the abortive attempts made from time to time during the last few years to raise a little enthusiasm on the subject, and thought what a poor lot London assistants must be not to take the lead in forming a P.A.A. If only eleven turned up the other night, that only shows the want of spirit in the Londoners; but if the saying still holds good that "What Manchester thinks to-day London thinks to-morrow," then very possibly subsequent meetings will be better attended. Anyhow, Mr. Hearn's cheap sneers about Mr. Jarrett's expenses read rather caddish.

I know quite well the deficiencies of many of the assistants, but one has only to read down the "Answers to Correspondents" column pretty regularly to conclude that in many cases the technical instruction they receive from the masters leaves a good deal to be desired. As far as natural ability goes, if we want to attract a better type of assistant we must offer more tempting conditions than we do at present. The weak point of the examination scheme introduced by the P.P.A. was that no pecuniary inducements were held out to induce assistants to take up certificates. If a good, strong union should be formed, there might in time be some sort of bargain made with the P.P.A. that evidence of a certain degree of proficiency should be the passport to a certain minimum wage, the exceptional man of genius being free to obtain as much more as he could. A strong assistants' union could do much in the way of restricting, or at any rate discouraging, the undue influx of apprentices, but Government action is not so easily brought about as some of your correspondents seem to imagine.

Photography differs from most other industries in that there is a continual movement from the employee to the employer position, but this only applies to the operator section. "Non-Unionist" makes too sweeping a generalisation in saying that the assistants of to-day will be masters in the future. What of the assistant operators, printers, receptionists, retouchers, spotters, and the more recent additions, the machine minders? These outnumber by far the operators, and their position must always be that of employee. They, it seems to me, are the people who would benefit most by an assistants' association, and to whom the "wage and hour question" is too important to be waved aside in the airy fashion "Non-Unionist" suggests, their position being intermediate between that of the shop assistant and the factory hand.

Whether, in view of the likely passing of the Insurance Bill, it is worth while attempting to arrange sick benefit or not, I cannot say; I should have thought affiliation to the Shop Assistants' Union, if permissible, would have been better than trying to run a benefit society alone, but whatever is done, it should be done by the assistants themselves, and membership confined to them. Employers who look favourably on the scheme might help by letting their employees know that they would be free to join or take office without risk of disfavour. Press photographers, if working on their own account for newspapers, should not be admissible, their place is in the P.P.A. If regularly engaged and paid wages then they should be eligible.—Yours truly,

AN EMPLOYER.

# Answers to Correspondents.

- *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, *24, Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*
- *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*
- *Communications relating to Advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD *& Co., 24, Wellington Street, Strand, London, W.C.*
- *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**PHOTOGRAPHS REGISTERED:**

H. T. Kidd, 3, Bank Plain, Norwich. *Photograph of the Norwich City Football Club.*

H. Pickering, 59½, High Cross Street, Leicester. *Photograph of the Interior of St George's Church, Leicester.*

LIGHT AND OTHERS.—In our next.

ADDRESS WANTED.—The correct address of Misch and Co., or Misch and Stock, art publishers, London.

1 and 3, Cripplegate Street, Golden Lane, E.C.

ANXIOUS.—We can only conjecture, since you do not tell us how prints were toned. If by the sulphide method, it is difficult to find a reason for the blue marks on mounting. If you can tell us more we will try and help you.

ALUMINIUM METAL.—Your note on aluminium in to-day's "Journal." Where can I get pure aluminium in thin sheets? The stuff you usually get is so adulterated.—E. G.

The Metallic Compositions Co., 333, Gray's Inn Road, London, W.C.

BOOK ON LENSES.—Could you name any good work dealing with the principles of photographic lenses. Most books seem to be a description in detail of some particular maker's lenses.—S. A. C.

For the principles of photographic optics, get "The First Book of the Lens," by C. Welborne Piper (Hazell, Watson and Viney, Ltd., 2s. 6d.), or "The Lens," by G. E. Brown and T. Bolas (George Routledge and Co., 2s. 6d.).

U.S.A. DUTY.—Is there any duty, if any how much, to pay on photographic camera when landing in America, not new one? I am taking one half-plate, one copying, and one enlarging camera, besides dishes and a few small utensils. Or would it be cheaper to buy up these when I get out there?—TREACLE.

Personal belongings and apparatus, not new, and for owner's own use, are not subject to duty.

SPOTS ON PRINT.—Would you kindly say in your next issue's "Answers" what is the cause of small spots on enclosed? Is it rust when drying, or iron from washing water? and oblige, yours faithfully,—U. T.

The spots, being brown in colour, are probably due either to iron in the water, or to chemical dust in the room. If the former, they will turn blue in a solution of potassium ferricyanide. The way to avoid iron spots is to put a filter or flannel bag over the tap nozzle, but if they are not iron spots, and simply due to chemical dust, you must clean out the room and avoid dust in the future.

PATENT.—Having experienced the need of an article similar to ——, which appears to be patented, I made some experiments and hit upon a satisfactory composition. I have not the least idea how the patented article is made or what it contains. Can you tell me if the protection would embrace general use, or where can I find out if my article is an infringement, with a view to offering it for sale.—X.

We gave an abstract of the patent in our issue of October 5, 1906. Better consult the complete specification at the Patent Office Library, 25, Southampton Buildings, Chancery Lane, E.C., in order to form an idea of possible infringement.

Hardener and Fly-Killer.—I have been told that formaldehyde is a good thing for drying negatives quickly. I see it has been advertised as a "fly killer." Do you know if it is all right for hardening negatives, so that they can be dried quickly. At present I am using methylated spirit, but have been told formaldehyde is quicker and cheaper.—Quick Drying.

We should say it is cheaper, though we doubt if it is quicker for an odd negative or two. In quantities it probably is cheaper. Use formaline, as purchased, 1oz., water 15oz., allow negatives to remain in this for five or ten minutes, rinse, blot off water, and put in quite warm place to dry, e.g., in front of a fire or in rack above a gas stove.

Acid Fixing-Bath.—Could you give me a formula for an acid fixing-bath with chrome alum? I made up one as follows :—

| | |
|---|---|
| Hypo | 4 oz. |
| Metabisulphite potash | 150 gr. |
| Chrome alum | 150 gr. |
| Water | 20 oz. |

and it was of a green colour. Is this right? I should prefer a formula with citric acid, also exact method of making it up. I have learned a great deal from the "Journal," which I have only lately started to read.—V. F. Farr.

The bath should be green in colour. It is none the worse for this. We should not recommend citric acid, but if you want something cheaper than metabisulphite, try the formula given on p. 739 of the "Almanac."

Photographing Furniture.—I have some bureaux (mahogany inlaid) to photograph. They are stained dark; the tops are sloped. I take them outdoors, the top light falls on lid. I cannot get the inlay to show, as you will see by enclosed proof—the front of drawers and tops are inlaid. My customer showed me photograph of same; the inlay shows beautifully, just as if they had been photographed only stained and oiled. I have lost many an order over same thing. I am using Clement and Gilmer lens, wide angle, 1-1 plate on half-plate camera, and Gem Meteor plates, with pyro-ammonia developer. I am an old reader of the "British Journal," and would be thankful for information.—J. Holloway.

For work of this sort you must use panchromatic plates and a strong filter. We should recommend you to study "The Photography of Coloured Objects," published by Messrs. Wratten and Wainwright, which deals with this kind of work in detail.

Lantern Slides.—Would you kindly give me your opinion of enclosed slides, made from diagram illustrations of a book. I have a number of them to make, but having no experience of work of this kind would like to know if they are suitable before making them all. If you would please say whether they are dense enough, also contrasty enough. The illustrations are a little grey, and not very much contrast. I developed fully and then reduced the slides.—Lantern Slide.

The slides of the tabernacle are passable, but the plans are too weak in the lines and veiled in the ground. Use "Process" plates for the negatives, develop with hydroquinone, and get the lines clear, with the ground as dense as you can. But you must not have the lines veiled for the slides; for these also develop with hydroquinone, and, if necessary, go on until image blackens over, and then, after fixing, bring down density with Farmer's reducer applied strong with a tuft of cotton wool.

Hypo Alum Toning.—Having made the hypo-alum bath, and desiring to tone, say, fifty bromide P.C.s, will you kindly state, in your "Answers to Correspondents" column, the method of procedure? If I put P.C.s into the hypo-alum, gradually bringing it up to the proper temperature, am I to keep turning them over to prevent them sticking together? I am afraid if I handle them in the hot solution they will show finger-marks, etc. This is a real difficulty to me. I will be grateful for your advice.—Walter S. Passey.

There is no need to handle the prints, you can move them with a glass rod or with forceps. Use a large, deep dish, so as to have plenty of room for the prints. The bath can be brought up to the proper temperature before putting in the prints. This greatly hastens the process, which at the best is a slow one. Owing to the slowness of the action, you need not keep the bath continually in motion, for as long as the prints do not actually stick together, no harm will be done. Watch it from time to time and stir up the prints.

Lantern Slides.—I have some lantern slides to make from thin, veiled negatives. I want the slides to be of a plucky nature. Will you kindly give me a formula for a developer that will give very hard results. I have tried those in the "Year Book," hydroquinone, and others, but cannot get the density that I should like. Do you know of any make of plate that would be suitable. I have over-developed and reduced with ferricyanide, but still it is not satisfactory.—J. Butler.

If you had sent slides and negatives we would have been better able to advise you. You should be able to get all the pluck necessary in a lantern slide with Thomas' hydroquinone developer, but if the negatives are exceptionally bad you cannot expect really plucky results. Short of intensification with mercury and ammonia, which is a bad lantern-slide method, we do not know a better procedure than minimum exposure, over-development with strong hydroquinone developer, and after-reduction with Farmer's solution. This really will work wonders in the way of contrast. If it does not suffice you might try using a slow process plate instead of a lantern emulsion.

Artificial Light.—We are using for electric light work four Morgan's, of Aberdeen, open arc lamps. The lamps are made to run at 220 to 230 volts, continuous current, which is the same that is laid on here. The lamps are in perfect order in every respect. We use one cored and one plain carbon for the burning of the lamps, which I might say we run in series. The results we obtain are quite satisfactory, but exposure is so long, being about 5 seconds, with stop *f*/6, which we require to get negatives sharp all over figure. We use the lamps on the reflected light system, in a very large screen in various positions. What we wish to complain of is the noise these lamps make, fizzing and spitting out pieces of live carbon, therefore causing sitters to jump. We have seen on several occasions in the "Journal," by the Westminster Arc Co., that they recommend using two plain carbons for lamps run in series such as ours. Do you think this would avoid the noise and give us a more actinic light, as we wish to prevent this noise and shorten the exposures down to about a half second to enable us to photograph children? Kindly state where we could obtain carbons most suitable? We enclose a piece of each of those we are now using. —F. H.

We cannot help you much without fuller details as to position of lamps, distance of same from sitter, nature of reflector, and whether a diffuser is used, and, if so, of what material? With four lamps you should certainly be able to get shorter exposures than you mention. With one Jandus or Westminster we have got fairly well-exposed negatives of children in a half second. We do not know whether the sizes of carbon you use are those recommended by the makers of the lamp; they appear to be rather disproportionate, the positive carbon being very thin compared with the negative. This may account for the noise. Keep your carbons in a perfectly dry place, or put them in the oven before fitting in the lamp. We would recommend you to purchase your carbons from a local electrician, telling him what lamp they are to be used in. We have not found any great advantage in using cored carbons except in lantern work, where the position and size of the crater is important.

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THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2686. Vol. LVIII. FRIDAY, OCTOBER 27, 1911. Price Twopence.

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## SUMMARY.

A description of the remarkable economy in space effected by Mr. Pirie Macdonald in a city studio, and of the means taken by Mr. Macdonald to run two businesses individually, is contributed by Mr. H. Snowden Ward in an article on page 816.

A point of importance in selecting and using backgrounds in artificial-light work with an arc-lamp is mentioned on page 814.

Some notes on the common causes of fogged, or veiled, negatives—causes which are often overlooked—are the subject of a short article on page 815.

We take the view that a photographer, as one who has something to sell, has no occasion to shrink from advertising. Whether this, or some other cause, is accountable for the scarcity of his announcements in the general press we are not prepared to say. (P. 814.)

The advantage which may be taken, by way of advertisement, of a beauty competition amongst children is instanced in a note on page 815.

The taste that should be exercised in choosing mounts, and the good which may result from departing from a standard size, are pointed out in a paragraph on page 815.

Photographers should not neglect the opportunities for sending out odd prints in the most pleasing form of mounting which are afforded by the dry-mounting method. (P. 814.)

Some practical hints on retouching were given by Mr. W. Bell at the Blackburn Camera Club. (P. 828.)

The awards to photographic firms in the British section of the Turin Exhibition are given on page 829.

Two interesting one-man shows are now open, that of Mr. Charles Job at the R.P.S., and one of Dr. E. G. Boon at the office of the "Amateur Photographer." (P. 825.)

A link with the past is severed by the death of Mrs. John M'Ghie (Jean Warneuke), an early pioneer in the photographic business who retired in 1872. (P. 824.)

An arc-light for daylight effect, dark-room lamps, and film-carriers figure under "Patents of the Week." (P. 826.)

The conclusion of the excellent article from the "Photo-Era" on the organisation and management of a photographic society appears on page 818.

A practical point in using a reducer—thoroughly to soak the negative beforehand—is the subject of a note on page 813.

The text of the recent interesting paper by Mr. John Sterry on periodic reversal will be found on pages 820 to 823.

## EX CATHEDRA.

**Testing Sodium Sulphite.** In a letter by Mr. Harold Jeffries which appeared in our issue of October 20 reference is made to a feature in the testing of sodium sulphite to which we ought to have drawn more attention in our recent leaders on the subject. The method, involving titration first with acid and phenolpthalein, then with acid and methyl orange, does not work very satisfactorily, as Mr. Jeffries points out, when the carbonate is present in large quantities. The method only gives quite accurate results when the carbonate is small in quantity, and therefore, excellent as the system is when testing ordinary sulphite containing only five per cent. or so of carbonate, it is not quite perfect when a large excess of carbonate has been intentionally added. We did not recommend the method for such solutions; still, it will give a sufficiently accurate result to enable us to ascertain the general course that the decomposition of the mixed solution is taking. In all cases, whether the solution is strong or weak in carbonate, dilution is necessary. The strength should never exceed $\frac{N}{20}$ even when the carbonate is at a minimum, and it may be much weaker with advantage. A point that we failed to refer to in our articles was the fact that a knowledge of the true percentage of sulphite present in any sample enables us to make up a solution containing the full amount we require. Thus, if we have been in the habit of using a 90 per cent. sample and are compelled to replace it by another containing perhaps only 60 per cent., we can easily weigh out half as much again of the crystals and so secure the same amount of true sulphite. Of course, by so doing we increase the impurities, such as sulphate, etc., in the same proportion, but the effect of these on development appears to be negligible. There is therefore a very practical advantage in being able to test the strength of the sulphite, and for this purpose simple titration with iodine, using a starch indicator, is quite sufficient. The only appliances necessary in addition to the ordinary scales and weights will be a burette and a pipette, and, of course, a stock of iodine solution.

* * *

**Thin Veiled Negatives.** A correspondent recently asked us how to produce plucky lantern slides from thin veiled negatives, a question to which it is almost impossible to give a satisfactory reply. There is, in truth, nothing more hopeless for printing purposes than a thin veiled negative, and the only satisfactory procedure is not to attempt dodging methods in printing but to tackle the negative itself. The remedy, of course, is to first clear the fog with Farmer's reducer and then intensify. Risky though such operations may appear to be, there is really less to fear than in attempting various printing dodges, the success of which can never be more than very small. The main secret of safe reduction is to soak the negative very thoroughly before applying the reducer. An hour's soaking is not too much, and half-an-hour should be looked upon as the minimum permissible. If the soaking is imperfect, or if the reducer is applied to the dry negative, uneven action will surely result. Similar trouble will be met with if the film surface is at all greasy; therefore it should be carefully wiped with a pad of wool and every precaution should be taken to ensure perfect cleanliness. After a thorough washing, the reduced and cleared negative may be intensified by any of the ordinary processes without any special risk. Very often the intensification may be followed by a second clearing with marked advantage. The trouble of thin, foggy negatives is a very prevalent one, and we have little doubt that it is owing very largely to the modern habit of dispensing with bromide in the developer. Given a quite ideal exposure probably a developer without bromide may produce a perfectly clean negative; but the fear of under-exposure induces most workers to err slightly in the opposite direction, with the result that a little bromide is nearly always necessary.

* * *

**Special Mounts** We think that the majority of photographers hardly realise the power of making special mounts which the dry-mounting processes have placed in their hands. With a few plain boards and an assortment of "art" or "nature" papers at hand, there is little excuse for sending out a photograph on an unsuitable mount, even by those who object to the loose-leaf style of "multiple" mounting. To begin with, a special board is quickly made from a piece of suitable facing paper and a plain card. This may be mounted and plate marked in the usual way, but not necessarily in the usual sizes. Dies of special shapes and sizes may be cut out of hard cardboard, and will be found to answer almost as well as metal plates. Tints may be laid down before or after plate marking, and the photographer's imprint added either at the moment of mounting or as a separate operation. This note was suggested by a recent conversation with a photographer, who said that he had wasted many hours trying to match some mounts for a client who wished his pictures mounted to correspond with those of his wife taken elsewhere. When the idea occurred to make the mounts at home, the trouble was over in half an hour. We may be forgiven for repeating some of the elementary rules for mounting when it is desired to modify the appearance of the print by its surroundings. If it be desired to make a print look warmer in tone a cold or bluish-grey mount should be chosen. Conversely a warm-toned mount, such as brown or buff, will make the same print look colder in tone. A hard print is best mounted upon a mount with strongly contrasted tints, say, a pale grey with a nearly black paste down, while a rather flat, delicate print is strengthened by placing it upon a mount composed of two or three tints very slightly differing in tint. A little study and practice in the art of mount designing should have a marked effect upon the appearance of the showcase.

* * *

**Backgrounds for Electric Light Work.** When selecting backgrounds which have to be used entirely or occasionally for electric light pictures, it is advisable to choose those painted in brown or other warm tones. The slaty grey which answers so well for daylight pictures "lights up" with totally different tone values under the electric arc, becoming, as a rule, much harder in its masses and outlines. As a rule, the electric light is allowed to fall more directly upon the background than daylight is. Wherever possible, the background should be shaded by means of a screen or side-slip, so that no direct light falls upon the side nearest the lamp. From recent observation we are inclined to think that as a rule both the background and the lamp are placed too near the sitter. Greater control of lighting and more atmospheric effect are obtained if light, sitter, and background are not crowded into a depth of five or six feet, an arrangement some photographers seem to think necessary to get short exposures.

* * *

**Newspaper Advertising.** In these days of universal publicity it would seem that the portraitist might well turn his attention to the question of newspaper advertising as a means of retaining, if not increasing, his clientèle. For some reason the professional photographer has chosen to consider any direct form of advertising as derogatory to his standing as an artist, and has voluntarily placed himself under a disability similar to that endured by doctors and dentists without enjoying the protection which their various qualifications and diplomas confer upon the latter. If we take up any of the higher class

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## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

The fifty-first annual issue of The British Journal Photographic Almanac will be published on December 1.

Among other new features in the forthcoming Almanac are articles as follows:—

### Lantern-slide Making. By the Editor.

A complete practical guide to the making of lantern-transparencies by reduction and contact, illustrated with special drawings of apparatus; processes of development for black and warm tones; warm tones by after-toning, and other methods of producing the best results.

### At Home Portraiture. By C. H. Hewitt, F.R.P.S.

Precise directions for indoor and outdoor portraiture without a studio. Illustrated with diagrams and art supplement plates, showing effects of good and bad lighting.

### Hints in Pictures.

A section entitled "How to Do It," helping the beginner to perform such operations as stripping negative films, mounting prints, etc. One hundred and twenty illustrations.

As in recent issues, the systematic review of the practical work of the year under the title "Epitome of Progress" will be a strong feature of the volume.

The lines followed in the previous editions of the Almanac will be maintained in general, but in a number of particulars the arrangement of the volume for 1912 will be modified to make it more than ever the book of universal photographic reference.

### To Advertisers and Agents.

Supplied insets require to be delivered for inclusion in the forthcoming Almanac not later than Tuesday next, October 31. Contracts with their binders make it impossible for the Publishers to guarantee insertion of sheets which arrive later than the scheduled time.

Dealers, booksellers, and distributing agents are asked to note that a large part of the edition is already booked, and that orders for copies should be placed as far in advance as possible of the day of publication, December 1. The Publishers will despatch parcels for simultaneous distribution throughout the United Kingdom.

weeklies, especially those devoted to the feminine section of society, we find that nearly all the advertisements are directed to that class with which the photographer wishes to get into touch. We find the announcement of the milliner, the costumière, the plumassier, the bootmaker, and particularly the beauty doctor or complexion specialist; but the photographer, the man who can record and perpetuate the triumphs of all these, is conspicuous by his absence. Why, it is difficult to say, whether from an idea of dignity, from a fear of wasting money, or merely from nothing but sheer indifference, but the fact remains. The matter is one which must be approached with caution, for it is easier to lose money in advertising than in almost any other way except backing horses. We will not go into the stock arguments in favour of advertising in a general way. One thing to be avoided is desultory advertising. If your name is seen regularly in one newspaper it will bring trade, while sporadic announcements are overlooked or forgotten.

* * *

**Pretty Children as Advertisements.** We occasionally are asked by provincial photographers for particulars of the "conditions" for a beauty competition among the children of their customers, and while we have had to say that no hard and fast rules can be laid down for such means of bringing business to the studio, yet there are certain general lines of policy which we think should be observed. It is, in our opinion, the greatest mistake to offer to take portraits free in connection with such a competition. Far better to persuade the fond mammas to pay the studio ordinary prices as a kind of entrance fee for the competition and to provide the inducement to compete in some handsome form of the portraits which secure the first places in the awards. In the press report of what was evidently a successful competition of this kind in a London suburb we see that two first prizes of the value of ten guineas were awarded in the shape of either a picture finished in water-colours, or a miniature on ivory, one to the boy and one to the girl who, in the opinion of the judges, were the most beautiful. Some sort of entry-form should be provided for the competition, and on this should be stated that the photographer is granted permission to have the winning, or other, prints reproduced in the press. In 99 out of 100 cases this will be hailed with satisfaction by the proud parents, and a goodly display of half-tone reproductions of the little sitters in the local press forms a feature which the latter is by no means averse to having, whilst it cannot fail greatly to benefit the photographer.

* * *

**Appropriate Mounts.** Judging from most photographers' show-cases or windows, it would appear that as soon as a new style of mount is adopted, the artist has a miscellaneous selection of prints made by various processes and mounted up in the new style, without any reference to colour or surface. We have lately seen purple-toned P.O.P. prints mounted upon the roughest brown flexible mounts. This is not only bad taste, but bad business, for the public is now sufficiently acquainted with the various styles of printing to recognise the print at its true value, and to place a far smaller value upon the mount than the photographer is in the habit of doing. Considerable judgment should be exercised over the selection of a new style of mount, and, if possible, a fresh mount should be reserved for one particular style of print. Now that dry-mounting is so generally employed, it is surprising how few photographers make special mounts to suit special subjects. It is easy to do this with the selection of thin boards and mounting papers now available. Yet the British photographer is still a slave to the cutting shape, and his pictures often suffer from the want of the drastic pruning which is resorted to by many American and Continental artists. This was forcibly illustrated to us the other day by a professional friend, who, from a rather unpleasing full length, had cut an excellent three-quarter figure, mounting it on a large board, and thus making one of the most successful poses in the set. Most men would have thrown it aside because it was not suitable for cutting to the cabinet size for which it was originally taken.

* * *

**Developing Warm Tone Bromides.** The production of warm tones on lantern slides by long exposure and restrained development has been worked out by the plate-makers in such detail that definite tones can be obtained with certainty. Similar methods can be used with bromide papers, but for some reason or other no one seems to have troubled to work out the details with the care that has been given to plates, hence few workers attempt toning in this way. It will be found that most bromide papers yield a different shade of black, with differing degrees of dilution of the developer, considerable dilution generally giving what may be described as a warmish black. The tone is not brown, only just not quite black. This applies more especially to the use of metol hydroquinone developer; dilution has not the same effect with amidol, but generally gives only a greyer tone. If we increase exposure slightly, and add bromide, the effect is not usually satisfactory, some papers giving only an unpleasant greenish black with bromide; but, on the other hand, if we add not simple ten-per-cent. bromide, but use a solution containing ten per cent. of ammonium carbonate as well as bromide, a distinctly warmer tone is given. The effect varies with different papers and different developers, but the method is a very simple one, and well worth careful trial. It does not appear possible to obtain the range of tones that similar methods give with lantern slides, for if we attempt to get anything more than a warmish black the result is generally unpleasant. If warmer colours are desired the best method seems to be to first produce a black-toned print, then bleach it with a chlorising solution, such as bichromate and hydrochloric acid, and, after washing, redevelop with a developer containing ammonium carbonate. This method was described a long time ago in our pages, and is capable of giving very good results, but it is a rather lengthy one compared with the other, which, we suggest, is one worth further experiment with the view of reducing it to a system.

◆

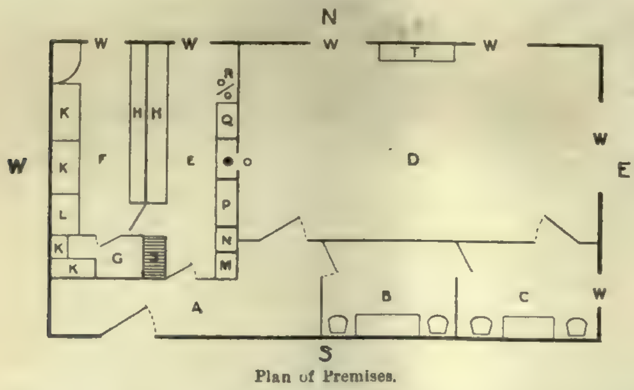
## FOGGY NEGATIVES.

From time to time we receive complaints and enquiries respecting the occurrence of fog upon negatives taken with either electric or daylight, and these probably represent only a small proportion of the case in which this trouble exists. To detect the cause a little systematic investigation is necessary, and this, although apparently out of fashion just now, should not present any difficulty to the operator of ordinary skill. In the first place it is advisable to test the plates in use by immersing one in the normal developer for five minutes and fixing in the ordinary way, in absolute darkness. If the result is practically clear glass the dark-room lamp or window must next be tested, and the old method of exposing the plate to the red light while in the developing dish with a coin or two laid upon it for two or three minutes is as good a test as is needed. Comparatively few dark-room lights will not cause a slight fog under these circumstances, but in practice the developer protects the plate to a certain extent while the sensitiveness is reduced by wetting. Supposing that no fog has appeared so far, the camera comes under suspicion, and it should be remembered that because it was light-tight six months ago there is no reason for assuming that the same state of things still exists. Frames begin to warp, bellows to crack, and fronts to leak at some time or other, and the past season has been a particularly trying one for photographic wood work.

Fog caused by unnecessary light entering the lens is the most common and the most troublesome of its kind, and it is surprising that with the increase of rapidity in plates there has been a decrease in the precautions taken against it. Many studio cameras are innocent of any hood or canopy to shield the lens, while the old deep cone or funnel-shaped hood is as out-of-date as the crinoline. Wet collodion workers fitted velvet-covered diaphragms in the bellows of the camera to keep light from striking the sides and being reflected upon the plate, the present day photographer with plates fifty times as sensitive trusts to luck or accepts fog as inevitable. Not a few cases of fog are caused by dirty lenses, particularly in large towns. It is not enough to wipe the front lens with the focussing cloth occasionally to move the loose dust. All the surfaces become coated with a film of smoke and require cleaning at least once a week with pure alcohol and a soft cloth. Try wiping one half of the lens to see how much smoke there is on the lens. The result will probably surprise you. Real, actual fog or haze in the studio can readily be seen in bad cases, but there is often quite enough present to give very flat pictures before it is discernible to the eye. A fairly warm temperature and good ventilation are the best palliatives, while a short focus lens allows as little as possible to exist between plate and sitter. Fog caused by chemical means is not very common, but at the present season an over-warm developer or an excess of alkali tend to give flat and foggy results, and should therefore be employed with caution.

# A MULTUM-IN-PARVO STUDIO: THE WONDERFUL WORKSHOP OF PIRIE MACDONALD.

Pirie MacDonald, of New York, with his searching eyes and his soft hand that grips so strongly, is an anomaly –a successful anomaly. He is unique; so are his business methods and his studios. He photographs men only, yet does all his advertising in magazines read by women, for he very wisely remarks that the women send the men to be photographed. He had a down-town studio at the top of a great office-building, sixteen storeys above the ground, in order to find good daylight all the time, and when a taller neighbouring building arose to take some of his light, he came down to the fourth floor, where the light was blocked entirely, took a lease on bargain terms because the place was too dark to let for offices, and continued his business with mercury-vapour light only. This down-town place has some very interesting features, but the up-town business is even more remarkable.



Plan of Premises.

### The Feat of Boyle Roche's Bird.

Practically, Mr. MacDonald is in two places at once, up town on Fifth Avenue, and down town on Broadway, for, with a little system and tact on the part of his two receptionists, he can appear to be available at any time at either place. It is the business of the reception-ladies to persuade sitters that they wish to sit in the early morning or late afternoon at Fifth Avenue, and during the mid-day hours on Broadway, and they keep the time-tables so well that Mr. MacDonald's movements from one place to the other are almost like clockwork.

### The Biggest Little Studio in the World.

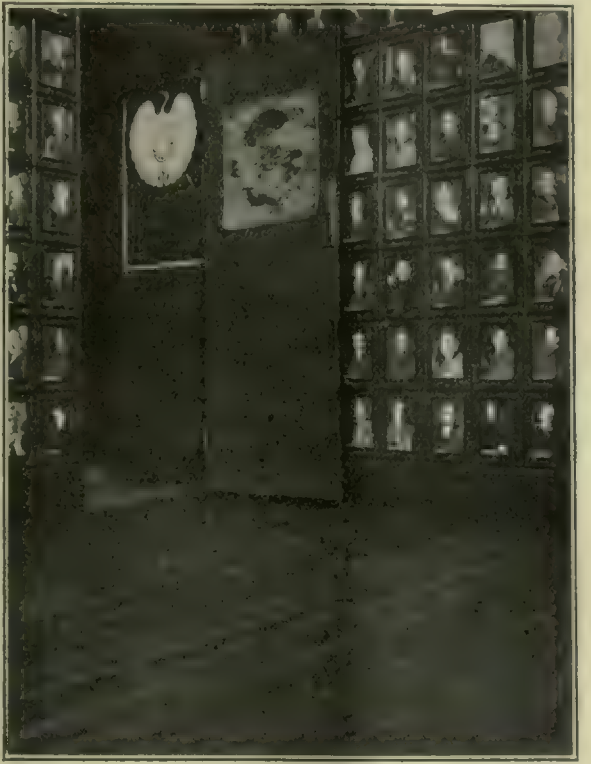
Mr. MacDonald claims to hold the world's record for large amount of convenience in small amount of space, with his Fifth Avenue studio, and he is probably right. The only places that ever competed with him were a few of the best studio living-wagons of the peripatetic camera-men of old days. The whole MacDonald establishment is part of a floor in a tall office-building. It is eight or ten storeys above the ground, and has clear light to the horizon in the E. and N. directions. The floor-space is 40ft. x 22ft., and the height of the room is 12ft. Its disposition can be gathered from the sketch plan, in which A represents the entrance-hall, B the reception room, C the office, D the studio, E the finishing room, F the printing room, and G the dark-room. Not an inch is wasted. As we shall see shortly, most of the workroom space is converted into two floors, each only six feet high, yet each well lighted and ventilated—a triumph of arrangement. Moreover, the corridor, reception room, office and studio are all made into effective exhibition rooms, each striking a distinctive note. The corridor has only a very few frames, intended to decorate, and to make a good first impression rather than to rivet the attention. The reception room, just 7ft. 6in. x 6ft., takes its light from the doorway of the office and

Studio.

from the electric light. It has two plain chairs, a rush-bottomed stool, and a small print-cabinet which contains the larger specimens, while small ones hang on the walls. The office has its walls hung with trophies and offerings from various artists and cartoonists who claim MacDonald's friendship, and who have sketched and painted and etched and caricatured him to their hearts' content.

The studio, like the corridor and the two rooms just mentioned, has its walls covered with a dark, rough burlap to within about two feet of the ceiling, and carries upon them five hundred framed portraits of men. The top row all around is of larger size than the rest, and below this all are uniform in size and in simple framing. Irritating though one might expect such an arrangement to be, it really gives a monotonous, rather restful suggestion, very much like the effect made by old oak panelling.

The studio has no top-light, but the three large windows, running to 11ft. 6in. above the floor, give great variety of light-effects, while the six-tube mercury-vapour installation seen on the right of the view of the studio, and shown at T on the plan, gives efficient light for night work.

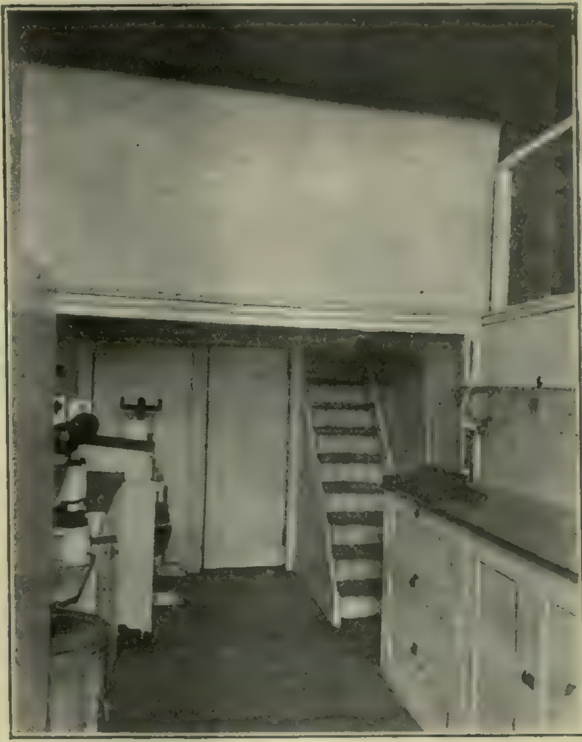


Corner of Studio.

There are only two backgrounds, but as each is in the form of a tall three-fold screen, covered on one side with light, and on the other with dark fabric, they are very adaptable, and one can be used as a reflector whenever necessary. By changing the positions of the screens in reference to the principal lighting, almost any tone-effect can be secured.

In the studio Mr. MacDonald works entirely alone. His plate-holders and lenses are in a cupboard (0.0 on the plan), which is shown with its doors open in the general view of the studio. This has a shelf for holders with unexposed plates and one for those which have been exposed. Doors to the upper shelves open into the work-room E, and there is an electric signal system that warns the assistant when plates are ready for development.

The two work-rooms are marvels of arrangement. A mezzanine goes over F, G and part of E, and is used as store-room for negatives and stock, while the front part, over F and near the window, accommodates two retouchers. This is reached by the ladder-stair S, in the corner of room E. In the mezzanine over E is the dry-mounting outfit and an electric arc printing apparatus for proofs. Entering room E, on the floor level we find a great press (M); then a record safe (N) filled entirely with card-file drawers containing the record of every customer and every negative since the business commenced. The top of the safe forms a desk. P is a print-embossing press with cupboard beneath. O is the double-opening cupboard before mentioned, Q is a table, with drawers beneath, and R a couple of compressed-air tanks to work two air-brushes, with easels between these tanks and the window. HH are glass-topped tables, with drawers and fitted shelves beneath them. Even the two tins for paper-trimmings and waste paper are rectangular, and fit exactly into spaces below the tables. Above these tables run shelves, with electric incandescent lamps hanging below them, but the lamps are on stands, so that they can be instantly unhooked and stood upon the shelves when sensitive paper is handled. The shelves make a shadow that renders the handling of development papers safe without putting the room into darkness.



Printing-room.

The fittings of the printing-room (F) and the dark-room (G) are much the same as in many studios, but their sizes and shapes were carefully planned to avoid waste of inches. KK are porcelain sinks, with shelves and racks above and below; and L is the electric printer on which all the regular work of the studio is done.

While the first intention in arranging the premises was to save space, it was thought even more important to save time, and this result has been secured very completely. Few businesses work their orders through with such regularity; and probably no single-man portrait business has a larger turnover per foot of floor-space.

H. Snowden Ward.

# THE ORGANISATION AND MANAGEMENT OF A CAMERA CLUB.

## II.

We now come to the management of a camera club. It is an important department of the club-life and one upon which the success of the club depends. No matter how strong may be the enthusiasm among the members, if the club is poorly managed, if matters important for its welfare are left to arrange themselves, the whole body will become involved in disputes and factional fights. The most important thing is to have an orderly and harmonious system of government. This system must be simple yet thoroughly effective.

A group of amateur photographers having the common idea of forming a club should arrange to meet at one of the leaders' houses. The choosing of a head officer or president together with an advisory board provides for about all the machinery needed. Most of the clubs now have this form of management and it has proved satisfactory. The Providence Camera Club, which is the second oldest camera club in the country, has an admirable system of officers. An outline of its methods may not be amiss here. The club-members annually elect a president, vice-president, secretary, treasurer, and four members of an executive committee. The committeemen serve for two years. There are twelve members on this committee, and by the method of election eight experienced members are left each year to initiate the newly-elected four. The president is a member of the committee, as are also the other general officers. It will be seen that by this method the personnel of the head committee is constantly changing and that all the members have opportunity to serve. In this club there are no caucuses for election. All members have the privilege of open nomination from the floor. A majority vote elects and the choice of the whole club is obtained. Several sub-committees are necessary to carry out the work of the club. This list must vary according to the needs of the individual club. The more important ones will suggest themselves. There should be a room-committee whose duty it is to look out for the general care of the club property and see that things are kept in repair and in order. An entertainment-committee also is to be desired. To this body may be entrusted the matter of suggestions for keeping the club animated, to provide for various lectures, discussions, or other forms of diversion which the club may enter into. A publicity-committee must not be forgotten in the list, if the club is to receive its share in the columns of the press. This committee must see to it that all outings of the club are written up for the photographic publications and that all the publicity obtainable is credited to the organisation. Upon the efforts of this committee depend in a large measure the standing of the club in the community. Keep everlastingly at it, seeing that the doings of the club get into print, that people may appreciate that there is enterprise and life in their local camera club. Only in this way will the general public know what is being done.

A new-members committee has work to do, too. New members keep the club alive. There are constantly changes of occupation which draw good members away. New-member work should be going on all the time. Resignations are to be expected and should be provided against. Card-catalogues should be kept of prospective members. In the Providence club the new-members committee does this. In some instances this committee goes to the stockhouses and studios of "desirables." When the committeemen are about the club-room, particularly at exhibition-times, the work of getting desirable new members is in progress. There are endless ways to get additions to club-membership. If a member is at work with a camera and sees a brother-worker he can often interest him in his club, bring him there for an inspection, and perhaps get him to join. Many photographers never realise how much they missed until they joined a live club of amateur photographers.

Co-operation is essential to growth and progress in a camera club. The officers should take the responsibility of keeping in touch with the individual members and encourage each to become a factor in club-work. The one-man idea should not be allowed to dominate in the doings of the organisation. Many clubs are ruined when they really have a bright future before them by the existence of cliques which sap the co-operative spirit and make for discord. At the times of general exhibitions, each member, no matter how humble, should be urged to put in his or her work, and the same should be accorded as prominent a place as that of the most presumptuous.

Meetings should never be held in secret, for this gives the impression that the subject under discussion is not for the benefit of all. Although members not on committees may not enter into discussion at committee-meetings, they should be asked, when present, to sit and listen. Often a word from one such will help in solving real problems of the club's welfare.

There are times when a general meeting of all the members should be called to get the desires of the club as a whole. I know of one club where such meetings are held often, and the members sit round in a circle and in turn are obliged to say something for the good of the club. No limit is put to this talk. Both complaints and praise are welcome, and it is wonderful what a wealth of well-meaning criticism comes to hand. These meetings do real good, and the club benefits and knows that it is pleasing all.

The question whether to allow women to belong is sometimes raised. A camera club composed of both sexes is highly advisable. Women-photographers are painstaking workers, in the first place, and they contribute largely of their time in carrying out their club-duties, in the second place. They not only add tone to a club, but they are also keen competitors and interested factors in advancement of club-matters. They also take a large share in the entertainment-side of the club's life.

The social aspect of the camera club must also be considered. You all know the old adage about all work and no play. This applies here. Even so pleasant a pastime as photography becomes monotonous at times, if robbed of diversion. Troubles come in photography, as all well know who may have tried some new process for the first time. The kind of diversion proper in a camera club is worth some few words here. This matter comes within the scope of the entertainment-committee, but the subject has so many sides that it will bear discussion apart. "Smokers" are a pleasant form of diversion in the long winter evenings. It is a pretty good plan to have it generally understood that on certain nights of the month there will be something stirring at the rooms. A Saturday night is a good time. The men are usually down street and will drop in for a chat or for a little luncheon if it is provided. This habit will soon become fixed, and will strengthen the life of the club. Members should be provided with a place to play a game of whist if they see fit. Let the table be in some corner where it will not interfere with those who may want to read. Two good house-rules are never to allow (1) games of chance or (2) intoxicants in the club-rooms.

A final word as to management. Cleanliness is most important. Keep the club-rooms bright and clean. See that waste papers are thrown into a suitable receptacle. The first impression received by a stranger on coming into your club-rooms may be the means of securing him as a member. Generally, those who are interested in photography are persons of refinement, and naturally a slovenly club-room will not enhance the club in their estimation. Lights and water are two essential cares of a camera club. Both cost money and they should be conserved. If the member who happens to be the last to leave the rooms sees to it that all the lights are out and all water turned off, the problem is solved. Wasteful use is another matter for care and constant discretion.

The money-problem in a camera club is probably the hardest factor to handle of any. In most clubs this matter is constantly before the executive branch of the club. Rent is coming due, the dues of the individual members are in arrears, and what is to be done? There is no safe rule for handling the finances in this sort of a club. It must be threshed out by each. The seriousness should, however, not be allowed to deter its obligation. Properly managed, all will come out right. The assets of a camera club may be, generally speaking, derived from three sources, viz., fees, dues, and locker-rents. There may be, at odd times, means to increase the capital of the club-treasury, but only these three may be relied upon. Excessive rent should not be paid. The club, to start with, may not be in the most expensive location, for that would be folly. Some of the older structures where rent is cheaper will serve, and the few inconveniences may be put up with for a while until the club gets on its feet. A club must start humbly and grow. To begin with, a good light room at fifteen dollars a month will do nicely. Twenty members as a nucleus, each one promising ten dollars a year, will pay expenses. Of course, this will not furnish the rooms, but where there is enterprise and a will, various individual members can attend to that feature by moving in some of their personal photographic utilities. The co-operation of the lady-members will help make the place attractive. Rugs and carpets are not needed and a library will come later. The lack of facilities need not impair enthusiasm, as the cameras of the members and pictures are the main assets.

Lockers will let at a yearly rate of one dollar and a half, and may be made very simply at first. Later, if capital allows, the portable ones now manufactured may be added. Once paid for, these are a source of constant income and cost nothing to maintain. Dues should be payable as often as quarterly so that there may be few arrears. A new camera club can have little credit to offer to its members. If an entrance fee of two or three dollars extra is asked this will prove a good source of revenue. In the Providence club the dues are eight dollars a year and an admission-fee of five dollars is charged, including the dues for the first quarter. Other sources of income may perhaps be found. Some member may have a stereopticon which he will allow the club to rent. A view-camera of large size offers opportunities at a dollar a day. Churches and schools are all the time looking for lectures. These may be given under the auspices of the club or provided for others at nominal cost, and the slides obtained from New York. There must be generosity towards the new club if it is to thrive.

Certainly a newly-formed club can pay no salaries for the services of its officers, and the practice is not good even in a larger organisation, except where the duties involve the whole time of a person. If the club grows and becomes firmly established a janitor may be hired to clean and care for the rooms. The treasurer should take special care to guard against a deficit during the summer months, because at this season interest wanes. The rent must be paid at this time, just as in winter when the club-rooms are populated. Members are away on their vacations and need their money for a good time. Dues of a camera club are not on their minds. As the dues are payable in advance (or ought to be), if a good balance is found at the beginning of summer there will be no trouble to get along until fall.

In all the lists of ardent amateur photographers there surely ought to be enough to form a camera club in every city and town where other conditions are equal. There is no need of money at first. Get together just the same and have meetings; the club will grow afterwards. Club-rooms will come in time.

The work and the results accomplished are the final matters of consideration, and various methods of club-activity will be spoken of that may serve as a guide to those who may contemplate forming themselves into a camera club. Here, again, no definite plan can be outlined to meet various parts of the country. Such plans must be studied with reference to the locality. There are, however, a few salient features applicable to all. One of the strongest essentials of a camera club is to have something doing all the time. Exhibitions are the indicators of a club's occupation. It is through display of this sort that outsiders are brought into contact with work of a club, and, many times, induced to join its ranks. Every club should have at least one annual exhibition, and this occasion can be made the means of drawing together persons interested in photographic work.

The annual exhibition of the Providence Camera Club has been for years an event in the art-world of that Rhode Island city. It annually elicits favourable comment in the press and is attended by over a thousand people. The annual shows of the Boston Camera Club and the New York Camera Club are attractions which the lovers of pictures annually look forward to. The Chicago club and the Baltimore club, too, and most of the others have yearly shows of their work, which are attended by people generally. This shows that there is interest in the work of these organisations, that the public wants to see what is being done in photography and will patronise them liberally. It is fair to assume that any young club will, in proportion, be met more than half way by the local public.

The annual exhibition is also important because it offers opportunity for the publication of a catalogue from which may be earned money for the club treasury. Such a publication also will give another means of circulating the good work of the club to the people of the community. Advertising by the tradespeople will more than pay for the book, and it may be made a work of art as well as of reference. Such a book may contain a roster of the club, a list of the committees and any special notices which the club may desire. Properly managed, such a book may yield at least fifty dollars annually.

If there is room on the walls of the club it is a good plan always to have a collection of prints hung. These may be changed from time to time as new ones are made. This will give the visitor a good impression of the club, and afford healthy matter for comment among members.

Another form of picture-study which is now being carried on among the various camera clubs is the print-interchange. Some fourteen clubs are enlisted at the present time. Each club has a collection of prints and they go the round of all the clubs for inspection and comment. Charges are only nominal for membership in this circuit, and no end of good is attained by each. This circuit will be followed up the coming winter, and information on the subject may be had from the Buffalo Camera Club. A series of this kind allows each club to see what its neighbour is doing, and to profit by the example if found worthy. At one time a lantern-slide exchange was carried on, and, if found profitable, this is pleasing means of study.

Club-meetings are worth consideration. These should be held by officers of the club often enough to keep affairs running smoothly. The annual meeting will, of course, be held at the time stated in the by-laws, but the executive committee should meet at least once a month and hear the reports of the sub-committees. Repairs, the auditing of bills, and the election and discussion of new members all come properly before this committee. Lectures should be given often. Men from out of town who have something to say should be induced to visit the club and talk on subjects akin to photographic work. Travel-series may be obtained. Club-outings form no small part of the year's occupation. On holidays or on Sundays the club may take excursions into pleasant fields where pictures abound, and the day thus be made enjoyable and profitable. Some clubs hold an annual outing and make it an event in the club-year. These and many others are some of the things which a club may do to keep up interest and stimulate the work.

The publicity-feature must not be underestimated. It is only through this channel that the club may hope to grow and flourish. A young club particularly should get all the reading-notices possible in the daily press. Carefully-prepared articles will be kindly received by the editors of any paper. A Sunday editor will always be glad to get the doings of a local club for the art-column. Now and then a paper will use a group-picture of the club on an outing. Notices telling of proposed trips will be inserted, too, if the club-secretary is willing to write them and see that they are sent in. The photographic magazines of the country gladly receive and print monthly accounts of each club's doings. All this keeps the club in the lime-light. Club-members all over the country like to read what another club is doing, and, many times, pleasing correspondence results therefrom.

Members of a photographic club should take an interest in and enter competitions, particularly with other photographic organisations. It is a good idea to have prize-competitions within the club, for it helps the less ambitious.

Some clubs hold monthly meetings for the discussion of photographic topics. Different members take a subject in turn at these meetings, and, much in the same manner as at a literary society, discuss it to the advantage of all present. Informality should prevail at such a meeting.

It is now felt that this article has dealt pretty thoroughly with the scope of a camera club. Many of the paragraphs have gone into the matter with some completeness. It is to be hoped that those who are amateur photographers will think over the pleasing possibilities and be urged to get together and form new clubs. The great pleasure to be gained by organisation of this sort more than balances the weight of responsibility. Never before was the opportunity so advantageous, and the great photographic fraternity stands at the door of beautiful accomplishment and beckons you in.

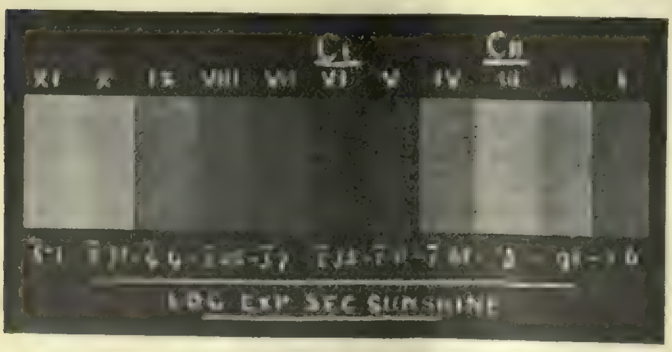
H. Ladd Walford.

# REVERSAL AND RE-REVERSAL: AND THE ACTION OF LIGHT AND DEVELOPMENT.

[The following are the text of two papers by Mr. John Sterry, recently read before the Royal Photographic Society, and printed in the current issue of the Society's "Journal." Mr. Sterry, it will be noticed, draws the conclusion that re-reversal is not a direct periodic change due to the action of light, but involves secondary actions as the result of which the point at which it occurs can be shifted by various means. In the second paper the author dealt with the effect of different or differently constituted developers upon the speed-values obtained in sensitometric tests of plates, and discussed these facts in their bearings on a theory of a primary and secondary latent image. —Eds., "B.J."]

The study of the effects of excessive exposures, greatly in excess of those required for ordinary negative work, gives but little promise so far as practical work is concerned, but nevertheless is of great interest from a theoretical standpoint, and may certainly be expected to throw considerable light upon the nature of the latent image.

The illustration given has been arranged so as to cover the whole ground to be considered, from the normal negative image to the period of re-reversal.



The results due to excessive exposures vary so much with different plates and papers, the strength of the developer and duration of development, that it is absolutely necessary in each case fully to state the conditions.

The relative exposures required were obtained by means of a negative built up of celluloid film, developed to a density closely averaging .926. The paper used was Ilford plat. matt. The printing factor in sunshine for this negative and paper was found to be .7, so that the effective density of each thickness of film was .648, and opacity 4.45.

The exposure given was 40 seconds sunshine, and the developer was 1 part rodinal in 100 water.

From the lowest exposure (xi) there is a constant increase of density up to C 1 (vi) the *first critical point*, and represents the period of correct and over-exposure in ordinary negative work.

From C 1 to C 2 (iii) the *second critical point*, is the period of reversal giving a positive, whilst from C 2 to the greatest exposure (i) a second negative is obtained, and is the period of re-reversal, first noticed by the late Professor Janssen.

It has been shown by M. Préobajensky ("Phot. Journ.," 1907, p. 335) that by using old or very weak and greatly restrained developers, which he calls "*révélateurs de limite*," that the critical points C 1 and C2 are *fixed points of light action*, and are quite independent of the developer used. It is, however, found that it is not necessary to use bromide, provided the developer is either greatly diluted or made up with a minimum of the accelerator. As little as one part of rodinal in 500 water has given good results with bromide paper, but for most plates a stronger developer is advisable.

The exposure given to obtain C 2 was approximately ninety times as much as that required for C 1. This example is typical of the results found with bromide plates and papers generally, but is exceptional (for paper) in the clearness of the second critical point.

Before entering into the details of the two periods of reversal and re-reversal, we may note what took place during development. Upon examining the paper after exposure and before development, a distinct but very weak print-out image was found from 1 to 6. Fixed without development only 1 to 3 could be distinguished, and very faint, so that approximately C 1 coincides with the exposure which gives the first visible reduction, and C 2 with that just visible after fixing.

When placed in the developer, the first action was slightly to intensify the print-out image, and gradually to extend the scale to about 8 or 9. Then suddenly 6 appeared to stand out from the others, and development continued to increase in both directions, 5, 4, and 3 soon becoming one even tone, and by which time 10 was just visible. Later, 5 became much stronger than 4, which also became slightly stronger than 3 (C 2).

Development with a stronger developer tends to the complete obliteration of both C 1 and C 2 with practically an even tone over the whole of the higher exposures. With the use of normal developers any re-reversal that may exist is almost instantly lost, and consequently is rarely noticed.

Similarly, results are found with rapid plates, but it is advisable to use a stronger negative with an opacity of about 8 for each thickness of film. Slow plates are not satisfactory as the second critical point C 2 is not nearly so clear as with a rapid plate.

### RE-REVERSAL.

This may consist solely of the print-out image, or it may itself be slightly developable.

An instance of the first was illustrated in "Photography Annual," 1894, p. 290, with densities as under :—

| Exp. Min. Sunshine. | 1 | 2 | 4 | 8 | 16 | 32 | 64 | 128 |
|---|---|---|---|---|---|---|---|---|
| Total reduction ... ... ... | ·25 | ·25 | ·26 | ·27 | ·29 | .31 | ·33 | ·34 |
| Silver reduced by light alone ... | ·08 | ·11 | ·14 | ·17 | ·21 | ·24 | ·27 | ·29 |
| Difference being reduction by developer ... ... ... | ·17 | ·14 | ·12 | ·10 | ·08 | ·07 | ·06 | ·05 |

Decreasing throughout.

One in which the re-reversal was due partly to the print-out image and partly to a true development of that image was given in "Phot. Journ.," 1895, p. 126. In this case the exposures were 1, 2, 4 to 64 days in north light. That this difference is due probably to the emulsion rather than the different light intensity is shown by the following recent experiment, when a similar result was obtained in sixteen minutes' sunshine, as against 64 days' diffused light :—

| Exp. Min. Sunshine. | ¼ | ½ | 1 | 2 | 4 | 8 | 16 |
|---|---|---|---|---|---|---|---|
| Total reduction .. | ·882 | ·655 | ·578 | ·605 | ·662 | ·736 | ·832 |
| Silver reduced by light alone | ·214 | ·221 | ·239 | ·261 | ·293 | ·309 | ·382 |
| Difference being reduction by development... ... | ·668 | ·434 | ·339 | ·344 | ·369 | ·427 | ·450 |

Decreasing. Increasing.

It is not unlikely that when the print-out image itself is developable, it may be due to the presence of chloride in very small quantity.

### REVERSAL.

It has already been stated that the point of reversal C 1 has a definite light value for any given plate or paper and source of light, and is also definitely related to that of C 2 provided excessively weak developers are used. When, however, normal developers are used, with most plates C 1 will only appear in the same position with an exceedingly brief development. With longer time it gradually travels in the opposite direction to that in which C 2 appears to move at first, that is to less instead of greater exposures.

The density eventually becomes so great that its exact position cannot be ascertained. It is also shifted in other ways. Sir W. Abney found that it was altered by the presence of bromide absorbents in the film. The position also is not the same for a dry and moist film ("Phot. Journ.," Jan., 1895, p. 122). Chemical treatment of the plate between exposure and development also shifts it very greatly.

The action of bromide has been given ("Phot. Journ.," 1898, p. 270), and shows a similar effect in shifting the reversal point, both in the development of the ordinary plate, and in that which has been fixed before development.

The similar effect due to a variety of oxidising agents (especially chromic acid) has been given ("Phot. Journ.," February, 1904).

It would seem, therefore, that reversal cannot be considered to be a simple periodic change due to the action of light, but rather as due to secondary actions, and though a fixed point under similar conditions, is readily shifted in many ways.

Re-reversal, so far as that which cannot be developed is concerned, appears to be due to the direct action of light giving a visible image without development.

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THE reduction of silver obtained by the development of various exposures, whilst in the first place due to the action of light, does not of necessity indicate the relative amounts of light action upon the silver compound.

When Messrs. Hurter and Driffield introduced their method of speed determination nearly twenty years since, so little difference was found due to the different developers of the day, that for all practical purposes the reduction might be taken (and seems to have been so by Hurter and Driffield) to be a fairly accurate measurement of the action of the light.

With the advent of the developers, eikonogen, paramidophenol, metol, amidol, etc., it was soon seen that the developer used influenced the results, which must therefore be considered to be due to the combined action of light and development.

As methods of measurement have been improved, other variations have become more apparent ("Phot. Journ," 1910, p. 157), "Some difficulties in the accurate determination of plate speeds," Ilford Research Laboratory, also "Various Latent Images," H. J. Channon, "Phot. Journ.," 1909, p. 375, and make the need of further investigation the greater.

To obtain a true measurement of the action of light alone, it is evident that similar or proportional results should be obtained with any developing agent. Up to the present, only three points in the characteristic curve of light and development action can be said in any wise to fulfil this condition, and to be approximately true measurements of the action of light alone. These are : the point of first appearance of reduction (Lumière and Seyewitz, "Brit. Journ. Phot.," 1909, p. 627), and the first and second critical points of reversal and re-reversal. (Préobajensky, "Phot. Journ.," August, 1907, p. 335.)

Variations in the speed value (Inertia i) and in the highest contrasts obtainable ($\gamma_\infty$) due to the composition and dilution of developers and duration of development.

As a result of a number of experiments it was found that the greatest variations were obtained thus :—

| A. | B. | C. |
|---|---|---|
| Normal developer as used for negative work, but without bromide. | Alkali reduced to a minimum, or 10 per cent. sulphite used instead. | Normal developer diluted 1 to 8 or 16 with water, or specially in the case of amidol with 2·5 per cent. sodium sulphite. |

Table 1 and Diagram 1 give the densities and curves found with an ordinary plate developed with A. Normal paramidophenol, B, ½ per cent. paramidophenol in 10 per cent. sodium sulphite and C. Normal diluted 1 to 8.

Taking the normal for comparison, reduction of the accelerator to a minimum tends to lower speed ($i$ increased) and greater contrasts ($\gamma_\infty$ increased), whilst dilution is the opposite, both $i$ and $\gamma_\infty$ decreased. We may therefore conclude—

First.—That the highest possible reduction of silver will be found by the use of developers but faintly alkaline, and for which purpose sodium sulphite is often sufficient. Second.—That the greatest speed the plate can show will be found by using as little developing agent as possible, and as much alkali as the plate will stand without fogging, combined with considerable dilution, but which for practical purposes is limited by the tendency to reduction of the density limit.

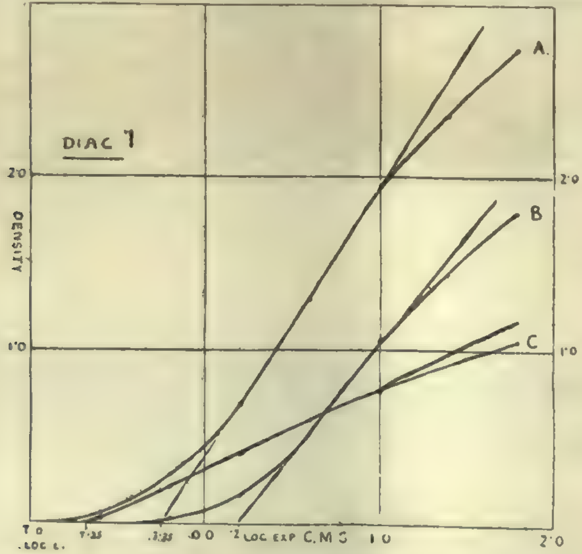
The two actions represented by the curves B and C (Diagram 1) are not perfectly separated, but at all times tend to run into one another.

The fall of $\gamma_\infty$ by dilution might be attributed to exhaustion of so dilute a developer, were it not for the very small additional reduction found when placed in fresh weak developer, at half the total time of development, and on the other hand that density is still obtainable by development with a stronger developer. This permits of the differences due to the composition of the developer being shown in a different and more simple way, thus—(Table 2, Diagram 2).

TABLE I.

| Exposure. | Density. | | |
|---|---|---|---|
| Log. Exp. C.M.S | A. Normal. | B. Sulphite. | C. Normal diluted. |
| 1·806 | 2 762 | 1 808 | 1·072 |
| 1·406 | 2·351 | 1·426 | ·887 |
| 1·006 | 1·904 | 1· 62 | ·777 |
| ·606 | 1·277 | ·535 | ·600 |
| ·206 | ·698 | ·165 | ·407 |
| $\bar{1}$·806 | ·281 | ·036 | ·213 |
| $\bar{1}$·406 | ·060 | — | ·057 |
| Log. Inertia. | $\bar{1}$·75 | ·2 | 1·35 |
| $\gamma_\infty$ | 5·3 | Very high.* | ·6 |

Amidol, as might be expected, acts differently to the others which require alkali for normal development. With one-eighth normal sulphite it is more like the dilute, giving lower $\gamma_\infty$ than the normal. It is by far the most powerful in great dilution, but tends to fog.



With a slow chloro-bromide plate there is clearly a double action, the curve with dilute amidol giving two distinct inertia readings, thus, $\bar{1}$.6 and .9.

In two previous papers ("Phot. Journ.," 1904, p. 50, and 1907, p. 170), dealing with the action of oxidisers upon the development of the latent image, it was shown that there were indications that the action of light produced three different results.

A. A product which is untouched by weak oxidising agents and answers to the molecular theory of the latent image.

B. A product which is prevented from being developed by oxidising agents and answers to the sub-haloid theory.

C. A distinct reduction which is not removed by the fixing-bath.

In the discussion following the last paper Dr. Mees suggested that the results shown appear to indicate that two latent images are formed, and the extreme method of devolopment just described shows that these products may at any rate be partially separated by development alone, without chemical treatment, thus:—

With the dilute developer, the reduction appears to be mainly from the primary latent image, whilst with the rich but slightly alkaline developer, it consists mainly of the secondary latent image (Diagram 1, C. Primary and B. Secondary).

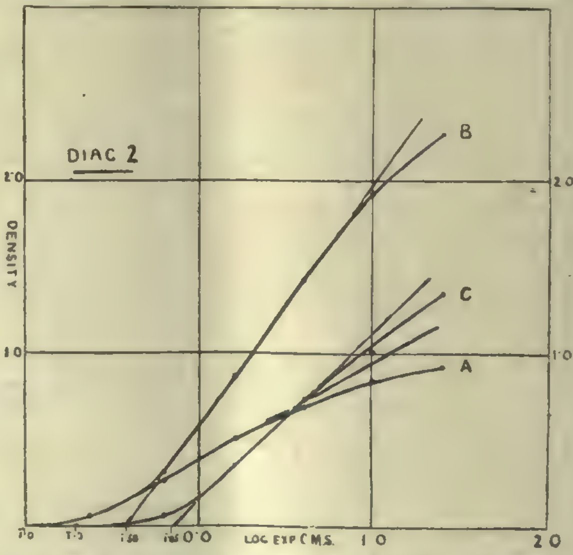
TABLE 2

| Exposure. | A. | B. | C. |
|---|---|---|---|
| Log. Exp. C.M.S. | Diluted Developer only. | A. followed by Normal. | B – A = Adde by Normal. |
| 1·406 | ·926 | 2 274 | 1·348 |
| 1 006 | ·849 | 1·925 | 1·076 |
| ·606 | ·683 | 1·423 | ·740 |
| ·206 | ·512 | ·868 | ·356 |
| $\bar{1}$·806 | ·255 | ·325 | ·070 |
| $\bar{1}$·406 | ·065 | ·065 | ·000 |
| $\bar{1}$ 006 | ·033 | ·033 | ·000 |
| Log. Inertia. | $\bar{1}$ 3 | $\bar{1}$ 58 | $\bar{1}$·85 |

If this hypothesis be correct, the secondary must be formed from the primary and the visible reduction or print-out image from the secondary.

The only portion that can therefore be pure primary must be the early and very small exposures before the secondary commences and the residue in the film which has not been altered to secondary.

It should therefore show a higher speed value (inertia lower) than the normal, and being only a part, also a lower $\gamma_\infty$, which has been shown by the results given.



The secondary should show a lower speed (inertia higher) as it is formed later, and probably a higher $\gamma_\infty$, as it must continue to be formed to the point of reversal, both of which are shown by the experiments to be so.

Dealing now with the reversal period, it will be seen from "Photographic Journal," 1898, p. 270, that bromine applied in very weak solution between exposure and development scarcely touches the small exposures (primary latent image), but greatly

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* When sulphite only is used, it is often difficult to obtain $\gamma_\infty$ by Sheppard and Mees method ("Phot. Journ.," 1903, p. 199), because development commences slowly and afterwards increases in speed, so that $\gamma_2$ is often from two to three times as great as $\gamma_1$.

The following examples show that t .e action is pract cally similar with different plates and developers :—

TABLE 3.

| Plate. | A. Normal. | | | B. Min. accelerator. | | | C. Normal diluted. | | |
|---|---|---|---|---|---|---|---|---|---|
| | Developer. | Log. *i*. | $\gamma_\infty$ | Developer. | Log. *i*. | $\gamma_\infty$ | Developer. | Log. *i*. | $\gamma_\infty$ |
| Ordinary... ... | Pyro ... ... | $\bar{1}$·65 | 5·7 | Pyro ... ... | 1·7 | 7·1 | Pyro ... ... | $\bar{1}$ 55 | ·93 |
| " ... ... | Amidol ... .. | $\bar{1}$·50 | 4·2 | Amidol ... ... | $\bar{1}$·75 | 3·9 | Amidol ... ... | $\bar{1}$ 25 | ·78 |
| " ... ... | Eikonogen ... | 1·50 | 8·0 | Eikonogen ... | $\bar{1}$·65 | — | — | — | — |
| " Front ... | Rodinal $\gamma=2·0$ ... | $\bar{1}$ 75 | Developed 4 mins. | — | — | — | Rodinal $\gamma=·85$ ... | $\bar{1}$·6 | 10 mins. |
| " Back ... | " $\gamma=1·55$ | $\bar{1}$·75 | | — | — | — | " $\gamma=·35$ ... | $\bar{1}$ 5 | |
| " ... ... | " ... .. | $\bar{1}$·60 | 2 5 | Rodinal ... ... | 0·0 | — | " ... ... | $\bar{1}$·3 | ·41 |
| Rapid ... ... | " ... ... | 1·10 | 3·2 | " ... ... | $\bar{1}$·2 | — | " ... ... | $\bar{2}$ 7 | ·20 |
| Panchromatic ... | " 1–25 ... | $\bar{2}$·20 | 2 ·5 | Paramidophenol | 2 9 | 2 4 | " 1–100 ... | $\bar{2}$·15 | 1 2 |
| Chloro-Brom. ... | Pyro ... ... | ·2 | 16 0 | Pyro ... .. | ·4 | — | Amidol ... | $\bar{1}$·6<br>·3 | ·2<br>·3 |

prevents the development of the greater ones (secondary latent image) as far as the reversal period, from which it seems that reversal is caused by the action of liberated bromine upon the secondary image. That it does not occur earlier when the secondary is first formed may be due to absorption of the liberated bromine by the gelatine, and it has been shown ("Photographic Journal," 1911, p. 249 "Reversal and Re-reversal") that about the reversal point a visible reduction image is formed, which doubtless would greatly increase the amount of bromine liberated.

Though the primary is scarcely touched by the bromine, bromide of potassium greatly hinders its development, from which it follows that when the whole of the secondary is prevented from being developed, the primary should re-appear in the reversal period, which also has been shown to be the case ("Photographic Journal," 1898, p. 271).

As oxidisers also prevent the development of the secondary image, similar results should also be found, and those shown (1904, p. 50, and 1907, p. 170) are thus accounted for. A number of difficulties may be accounted for by the hypothesis of primary and secondary latent images.

Inertia Variations.—With normal developers a balance between two different speeds is obtained and must vary under different conditions of development; for instance, the higher inertia often found when a plate is very fully developed may be accounted for by the primary having reached its maximum before the development of the secondary was completed, so the average speed is reduced.

Developers.—Short factor developers, such as hydroquinone, glycin, etc., and developers generally containing free bromide appear to develop the secondary image more easily than the primary, giving as a result less speed than the long factor developers such as metol, amidol, rodinal, etc., which flash out much of the primary image first and then build up density from the secondary.

Failure of the Reciprocity Law.—This appears to be associated with the secondary image ("Photographic Journal," 1904, p. 54, Diagram 4), but needs further investigation.

When comparing lights of different intensity ("Photographic Journal," 1895, p. 126), it was found necessary that exposures should be of equal duration to obtain satisfactory results, which points to the same conclusion that the proportion of secondary to primary may vary with differences in the light intensity.

Development after Fixing.—This also seems to be associated with the secondary image as the inertia is always greater than for the same plate with normal development ("Photographic Journal," 1898, p. 267, Table 2).

Development of the Reversal Period.—It has been shown that development always commences with the highest exposure and travels towards the lesser exposures, but when once the reversal point is clearly shown, increase of density travels in opposite directions from that point. It would seem that the small amount of primary image develops first, but when it has reached its maximum is augmented by the development of the secondary image.

Variation in the shape of characteristic curve at different stages of development.—It has long been known that with very brief development the curve is very flat and latitude great. This also seems due to the primary being largely developed first, and the secondary, being added, gradually rounds off the general shape of the curve.

The general results may be thus tabulated :—

| | 1. Primary Latent Image. | 2. Secondary Latent Image. | 3. Print-out Image. |
|---|---|---|---|
| Action of light. | Probably molecular change only. | Reduction from 1. Possibly sub-haloid. | Reduction product from 2. |
| Sodium thiosulphate | Dissolves completely. | Dissolves partially. | Insoluble. |
| Develops ... ... | Readily with diluted normal developers. | Readily with rich developers with minimum accelerator. | Occasionally slightly developable. |
| Inertia ... ... ... | Low. | Higher than primary. | Very high. |
| $\gamma_\infty$ ... ... ... | Very low. | Very high. | Very low. |
| Latitude ... ... | Often very great. | Considerable. | Very small. |
| Action of weak oxidisers. | Very slight effect. | Made undevelopable and soluble in sodium thiosulphate. | |
| Physical development after fixing | Nil. | Good results. | |
| Best methods of obtaining. | 1. By oxidation of secondary followed by development.<br>2. Developed with 0 5 p.c. amidol in 2·5 p.c. sodium sulphite or one part rodinal in 100 to 200 water. | 1. Development with most developers with minimum alkali.<br>2. By deduction of primary from results of normal development. | Simple fixing. |

JOHN STERRY.

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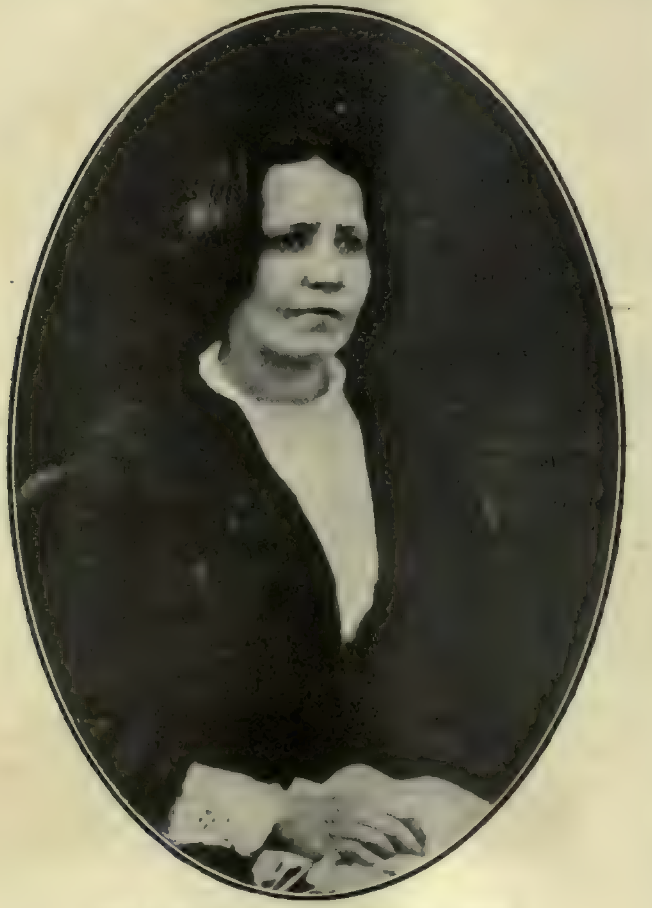
AT THE HACKNEY EXHIBITION there will be a fine display of Autochromes, some 200 having been entered for competition. The exhibition will be held at the King's Hall, Hackney, November 1 to 4.

THE NORTH MIDDLESEX PHOTOGRAPHIC SOCIETY is this week holding its twenty-third annual exhibition in the Hanley Hall, Sparsholt Road, Stroud Green, and an interesting programme for the three evenings has been arranged by the committee. The exhibition opened at 7.30 last evening (Thursday) with a conversazione, including music, lantern views, and light refreshments. This evening (Friday), at 8.30, Mr. W. L. F. Wastell will deliver a lantern lecture entitled "A Loon in London," and to-morrow (Saturday), at 8 o'clock, Mrs. W. Plomer-Young will give a lantern lecture on "The Abbey and Cathedral Church of St. Albans." The exhibition will be open to-day (Friday), from 7 to 10 p.m., and to-morrow from 3 to 10, when the president, Mr. Louis Dick, invites visitors during the afternoon to take tea with him. The charge for admission both days is 6d. The hall where the exhibition is held is within five minutes' walk of Stroud Green Station (G.N.R.), and also from the terminus of a service of motor omnibuses from Putney, Tottenham Court Road, and Euston.

## DEATH OF MRS. JOHN M'GHIE (JEAN WARNEUKE).

By the death at Hamilton, on 14th inst., of Mrs. John M'Ghie (Jean Warneuke) in her ninety-second year, there has been snapped one of the few remaining links between the art of photography to-day and the great discovery of Fox Talbot. Amongst the first few of those early workers who resolved to make photography a profession was the deceased lady. After much experimental work, in which she had to make her own apparatus, etc., she started business in her native town of Hamilton. After a few years there she and her husband went to Edinburgh, where they built a studio in Lothian Road in the year 1854. Here they carried on a successful business for a number of years, when she returned to Hamilton, where she was established till she retired from the business in 1872. Retaining all her faculties and strong personality to the end, she died peacefully after a useful and busy life. Amongst the many tokens of respect sent to her funeral were wreaths from the Royal Photographic Society, the Edinburgh Photographic Society, and the Editor of the "British Journal of Photography." The condolences of many personal friends will be extended to the son of the deceased lady, Mr. W. M. Warneuke, of Glasgow.


The Late Mrs. John M'Ghie (Jean Warneuke).

**Verotype Rapid Gaslight Paper.**—Mr. C. A. Rudowsky, 89, Chiswell Street, London, E.C., advises us of a reduction in the prices of this excellent paper, the results on which, as our readers know, are an extremely close approach to collodio-chloride in gradation and colour. Mr. Rudowsky offers to send a specimen print to those applying for the revised price list.

**The R.P.S. Dinner.**—The Council of the Royal Photographic Society have decided to hold the Society's dinner early in 1912. The arrangements have been placed in the hands of a committee consisting of Messrs. A. W. W. Bartlett, Furley Lewis and F. C. Tilney.

# Photo-Mechanical Notes.

### The Question of Costing.

Price-cutting will never be defeated by a frontal attack, consisting of mere abuse of the cutters, but a flank movement persuading them accurately to gauge their costs will be certain to prevent cutting to such an extent that the product is sold below cost. This has been the attitude of the present president of the Process Engravers' Association (Mr. Arthur Cox), and his vigorous propaganda for many years past, lately reinforced by the independent support of Mr. Walmisley, is now beginning to tell; in fact, schemes of costing have been drawn up, and are being considered by the trade. But it must not be imagined that an accurate knowledge of costs will necessarily lead to a general rise in prices. Its first effect will probably be to open the eyes of the firms as to which sort of their work is the most profitable, and may actually lead to the lowering of prices on that. If different firms find that their most profitable work is that of different kinds, the result may have the unexpected effect of a lowering of prices all round, and greater specialisation by the various firms. If this should happen, then both the firms and the public would be satisfied, though it is difficult to suppose anything short of a general rise in prices will persuade some photo-engravers that they are not the victims of a wicked conspiracy on the part of the others who sell cheaper than they do, in spite of the fact that the latter appear to be doing pretty well, and are entirely regardless of anything else except getting as much more work as possible at the same prices. And Mr. Arthur Cox has always been sane enough to declare that, provided work is not sold below cost, which is, so to speak, "hitting below the belt," lowering the price is a legitimate form of competition, as it means either that the firm is content with a smaller rate of profit, or, what is more likely, has worked out more efficient means of production, the benefit of which it is prepared to share with the customer in order to secure his patronage. In any case, one thing must not be forgotten, and that is, that even the most perfectly devised costing plan will be absolutely misleading unless it is thoroughly systematically carried out under the most efficient and continuous control, with constant checking. The expense and trouble of a costing system that is to be really accurate, and so not worse than useless, is something that is frequently overlooked, with the consequence that there is considerable disappointment and an unjust condemnation of an item in business management that is essential, if modern competitive methods are to be met with success, especially in the photo-engraving industry.

### For Users of Illustration.

The current number of "Swain's Quarterly" is intended for those advertisers who use illustration, and perhaps more particularly for those who do not, but ought to! If they will only read the persuasive articles here they will certainly want to begin or to increase their illustration, and they will be enabled to do it in a way giving the best return from the many useful hints afforded. Messrs. Swain also circulate a specimen book of their stock tints, of which there are no less than 116 varieties, these comprising, in addition to the usual stipple, line, grain, and machine tints, many special designs drawn by Japanese artists. Some of these are used to border the sample tints, and very effective they look.

Messrs. Penrose are selling for the Arthur Cox Illustrating Company a chart that enables the proportionate reduction of any piece of copy to be seen at a glance, and underneath it a ready reckoner is provided, which gives the number of square inches in any block. The price is 2s. 6d.

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**Rajar Monthly Competition.**—The prizes offered by Messrs. Rajar, Ltd., Mobberley, Cheshire, for the best prints on paper or postcard of their manufacture submitted for the competition for the month of September, have been awarded as follows:—Class 1 (Open Competition), to Mr. Bletcher, 14, Worthington Street, Old Trafford, Manchester, for print "By Wood and River," on paper purchased from Messrs. J. T. Chapman, Ltd., 7, Albert Spuare, Manchester. Class 2, for those who have never previously won a prize in any class of competition, to Mr. W. G. Plucknett, 36, Regent Street, King's Wood, Bristol, for print on paper purchased from Messrs. Hodders, Ltd., Wine Street, Bristol. Remittances for the prizes have been posted to the respective winners.

# Exhibitions.

## CHARLES JOB AND DR. E. C. BOON.

Two of the oldest pictorial workers, and certainly two of the most accomplished, are enjoying the distinction of public exhibition at this moment. Mr. Job's works constitute a house show at the rooms of the Royal Photographic Society, and the exhibition ranks highly among recent displays of the same kind. It is work of a quiet, unassuming sort, but on that account, perhaps, it bears more thorough scrutiny and wears better than that of many another worker whose star has arisen and almost set again whilst Mr. Job's has been steadily if less showily shining. There is not a picture amongst these forty-eight works to which fair criticism could raise objections, though obviously they cannot all be equally good. For one thing, they are technically above reproach, and it is only here and there that one is conscious of treatment and retouching instead of being absorbed by the effect such treatment secures. And these very blemishes are, after all, mostly inherent in the photographic conditions. For example, an evening sky taken over a landscape with figures usually results in broader contrast of tones than the eye registers in nature, and a resulting print may give too low and flat a tone on foreground and figures. Then the highly commendable correctives take place by hand. Light edges are given to objects as though the sun were glinting upon them, producing the effect that a cloud shows as it floats before the sun. Of course, no such effect could occur upon a figure on the ground in a mere evening effect. But such little insincerities are so common to photographic pictures that to mention them sounds like carping. After all, effect is Mr. Job's strong point, and it is the pictorial quality most lacking in photographic pictures. Not that we do not get too much of it of a sort; but Mr. Job never "screams" or travesties Nature in these matters. "Against Wind and Tide" (35) is quite remarkable for its effect. It is a dramatic composition, with a sky of bold lines. The peaceful "Evening Calm" (25) likewise owes all its beauty to the sensuous charm of its effect, although it is difficult to believe that Mr. Job's eye actually saw it thus when at the spot—the sails against the brightness of the sky appear to be too forcibly modelled for that. Another highly successful effect is shown in "Morning Mist on the South-downs" (16), where sheep, whose later reputation gains so much from their present locality, graze upon the steep slopes of a mist-laden valley, the whole scene being made luminous and soft by the rays of the sun. In "An Approaching Storm" (14) we have the dramatic sky again, and in "Drifting" (18) the elements of fine picture-making of the most artistic order. Here, the massive breadth of the group of boats built up by the square sail, proves the artist in possession of the subtlest artistic feelings. The same subject would have been a commonplace in many photographic hands. Nevertheless, we beg Mr. Job to trim away or otherwise suppress the empty and aggressive space, about an inch at the edge of the print, to the right of the noble group. There are some delightful wooded pieces full of the lacey charms of leafage. In these subjects proper care has been taken to preserve the mingling of lights and darks, and not to let the forms deteriorate into general flatness. Especially is this noticeable in "On the Banks of the Arun" (13); the beautiful birch subject, "A Woodland Path" (31), a thing of fine quality; and "A Sussex Lane—Autumn" (42), which shows a fine selection of subject. Very occasionally Mr. Job is caught tripping, as, for example, in "Snow and Sunshine" (22), where the road is enormous in scale and the picture suffers from want of a middle distance; or, again, in its neighbour "Summer Haze" (21), where a finer arrangement could have been made by getting the figure to make one mass, with the posts at the edge of the water, instead of letting both these items bid for interest.

The exhibition remains open until December 2, and should be well attended by pictorial workers.

Dr. Boon's work is to be seen at the "A.P." Little Gallery, 52, Long Acre. It consists largely of figure subjects, conceived in the spirit that makes for things that are light, pretty, and of domestic interest. An interior, a doorway, a settee, even a piece of bare wall or an open window, is setting enough for the sunny and bright effects with which Dr. Boon in these days concerns himself. His figures are usually young girls clothed in white or light dresses, affording ample play of direct and reflected light, and he does not overload these figures with the literary interest, but lets them bear their artistic message as charming objects attractively presented. This slightness of theme is, no doubt, highly advantageous from Dr. Boon's point of view. It gives his work better footing as exercises in artistry; but it is a direction fraught with the danger of banality as less talented workers might prove. One of the most taking of the more distinctly genre subjects is that of a child in bed. It is called "Convalescent," and is about the most unhappily hung picture in the room. There are a few landscapes and portraits also, and of the former the best is perhaps "A Street in Sunlight," a very effective view of one of those arcaded ways characteristic of Chioggia.

This exhibition will remain open until the end of November.

## ROTHERHAM PHOTOGRAPHIC SOCIETY.

The Rotherham Photographic Society held its twenty-second annual exhibition on October 18-21, in the Drill Hall, Rotherham, under encouraging auspices. This is one of the very few organisations which does not exact entry fees from competitors, a policy which is worthy of imitation. Fortunate in the support of the townspeople, who give liberal patronage, the experience of several previous years has been repeated, and there is the probability of a small balance on the right side. The opening ceremony was a most interesting function, and was largely attended. Mr. C. H. Moss, J.P. (president), who is this year greave of the Feoffees of the Common Lands, presided, and the formal declaration was made by Miss Mary Egerton, of York, formerly a member of the society, in a very practical speech. The hon. sec. (Mr. Hemmingway), after the vote of thanks, asked the lady's acceptance of one of the society's plaques as a memento of the occasion. Mr. Alex. Keighley acted as judge of the work sent in, and also lent a number of pictures of his own. The champion class produced eight competitors. In the open section there were 73 landscapes, seascapes, etc., 56 portraits and figure studies, 17 architecture, 31 flowers, fruit and miscellaneous, 40 sets (of four) lantern slides. As showing the quality of the photographs, the judge conferred quite a number of hon. mentions in addition to the silver and bronze plaques at his disposal. The one subject which was deemed weak, and consequently unworthy of recognition beyond hon. mentions, was architecture, both open and members' sections. Members' work was distinctly better. Mr. H. A. Hill had not much difficulty in gaining the president's silver cup, and Mr. F. G. Blackshaw, in a strong landscape class, was awarded two firsts. Mr. Briggs, with a dainty portrait study, scored in the next class, while Mr. Blackshaw was again successful in flowers and fruit and also with lantern slides. The maximum awards he can hold is, however, two only. Mr. Briggs was adjudged to have the best board. The list of awards is appended:—

### Open Section.

Champion Class (any photograph previously medalled in open competition)—Silver plaque, "The Breeze," C. C. Borup.

Landscape, Seascape and River Scenery.—Bronze plaque: "Piccadilly Circus," Montague Wickham, London; Hon. mention: "Wind and Rain, October," O. C. Wilmot, Sunderland; "Through the Bridge" and "The Haunt of the Water Lily," J. Tateson, Sheffield; "Boston," S. E. Ward, New Cleethorpes; "Sun and Shadow," Thos. U. Simonson, Sheffield.

Portraiture and Figure Studies.—Silver plaque: "A Passing Glance," O. C. Wilmot, Sunderland; Bronze plaque: "Dr. J. Waterson, J.P.," R. Chalmers, Sunderland; Hon. mention: "A Jolly Old Monk," R. Chalmers, Sunderland; "The Image," John Perrin, Halifax; "Portrait," Colin N. Bennett, Penzance; "Early Morning Gossip," F. A. Tinker, Sheffield; "Portrait of a Lady," O. C. Wilmot.

Architecture.—Hon. mention: "The Last Creeping Beam," F. W. P. Simpson, Loughborough; "Coventry—Palace Yard," Hugh G. Paterson, Sheffield.

Flowers, Fruit, Still Life, and Miscellaneous.—Bronze plaque: "Fruit Study," Saml. Manners, London; Hon. mention: "Virginia Creeper," K. F. Bishop, Warrington; "Hollyhocks," Saml. Manners, London; "Early Spring," A. J. Leeson, Barnt Green, Birmingham.

Lantern Slides.—Bronze plaques: W. Hill, Leek, and John B.

Martin, Paisley; Hon. mention: J. Smith, Liverpool; A. Frost, Newton-le-Willows; Montague Wickham, London; Stanley Crook, Scarborough; John Chapman, Manchester; A. E. Morton, London.

### Members' Section.

Landscape, Seascape, and River Scenery.—Bronze plaque: "That wreathes its old fantastic roots so high," F. G. Blackshaw; ditto (withheld), "Hour of Rest," F. G. Blackshaw; Hon. mention: "Industry," M. Creswick; "Sunset on the Avon," F. A. Jordan.

Portraiture and Figure Studies: Bronze plaque: "Portrait Study," W. C. Briggs; Hon. mention: "Dare I Venture," S. G. Liversidge; "The Sum," S. B. Townsend.

Architecture.—Hon. mention: "Wells Cathedral," H. C. Hemmingway.

Flowers, Fruit, Still Life, and Miscellaneous.—Bronze plaque: "Decorative Study," F. G. Blackshaw; Hon. mention: "Fatal Attraction," W. C. Briggs.

Lantern Slides.—Bronze plaque (withheld): F. G. Blackshaw; Hon. mention: H. C. Hemmingway and A. S. Pye.

Boards.—Bronze plaque: W. C. Briggs; Hon. mention: F. A. Jordan.—President's Special (silver cup, held for 12 months) and bronze plaque: "Autumn twilight, sad but sweet," "Child Study," "Fruit Study," H. A. Hill.

After the opening the visitors were entertained to afternoon tea by the Ladies' Council. Each evening there were lantern slide and cinematograph displays and orchestral music.

Mr. Keighley, in his report, states "that both open and members' sections are well up to the average of provincial exhibitions in standard of work shown, and that the conditions under which the pictures are hung—lighting and arrangement—are quite superior."

## FORTHCOMING EXHIBITIONS.

November 1 to 4.—Hackney Photographic Society. Sec., W. Selfe, 24, Pembury Road, Clapton, London, N.E.

November 6 to 11.—Southampton Camera Club. Entries close November 1. Sec., C. M. Cooper, 203, Shirley Road, Southampton.

November 7 to 11.—Norwich Photographic Society. Sec., J. T. Tanner, The Lodge, Bowthorpe Road, Norwich.

November 15 to 18.—Cambridge and District Photographic Club. Sec., T. J. Sowdon, Sunny Side, Guest Road, Cambridge.

November 15 to 22.—Portsmouth Camera Club. Entries close November 7. Sec., J. C. Thompson, 23, Elm Grove, Southsea.

November 27 to 30.—City of London and Cripplegate Photographic Society. Sec., F. W. Gardner, 135, Vaughan Road, Harrow.

1912.

March 12 to 16.—Sheffield Photographic Society. Sec., James W Wright, 30, Oakhill Road, Sheffield.

May 3 to 11.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between October 9 and 14:—

Cameras.—No. 22,385. Folding photographic cameras. Magnus Niell.

Plate Holders.—No. 22,533. Plate holders for photographic cameras. Theodor Bänder.

Printing.—No. 22,707. Photographic printing apparatus. Walter Reginald Mickelwright.

Cinematograph.—No. 22,526. Cinematograph shutters. Thomas Percy Middleton.

Cinematograph.—No. 22,679. Production of moving-picture effects. Oscar Peixoto.

Cinematographs.—No. 22,681. Means or apparatus connected with phonographs, gramophones, cinematographs, and cinematograph cameras for reproducing theatrical productions. Harry King.

Cinematographs.—No. 22,704. Cinematographs. Thomas Percy Middleton.

Colour Cinematography.—No. 22,178. Photographing and projecting animated pictures and the like in natural colours. Arthur Robert Beard and William Smith.

Cinematograph-Phonograph.—No. 22,458. Apparatus for establishing synchronism between cinematographic projection apparatus and talking machines. Jose Salvador Ropers.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Daylight-effect Electric Light.—No. 4,401, 1911 (February 21, 1911). This invention relates to daylight lamps, that is to say, lamps which enable colours to be matched by artificial light.

Lamps of this description have hitherto consisted of arc electric lamps, provided with light-filters coloured with sulphate of copper. These lamps have considerable drawbacks. In the first place, the quality of the light given out by the electric arc varies according to the length of the arc between a comparatively white light and a violet light, so that the effect is not constant. Further, these lamps consume a large amount of current, and are expensive to manufacture. Filters coloured with sulphate of copper are only effective for arc lights. If used with any other form of light they have to be so dense to prevent the passage of the red rays that practically no light can pass through them. Further, they do not allow for the passage of green rays which are present in normal daylight.

By the present invention the above drawbacks are overcome by using, as the light-giving component of the lamp, a metallic-filament incandescent electric lamp, such as those sold under the name of "Osram" and "Tantalum," or an incandescent gas or petroleum lamp, and by forming the light-filter of a combination of two glasses, one a blue and the other a green. The actual blue which is found to be effective is a royal blue, and one which is known in the trade as "Coburg blue," or, again, as "Bleriot blue," while the actual colour of the green glass which is found to be most effective is known in the trade as nickel green. The actual relative proportions or grades of the green and blue glass vary slightly with the different forms of lamps. With the "Osram" lamp one blue glass with two green glasses is found best, while in the case of the "Tantalum" one blue glass can be combined with only one green glass. In all cases the glass is preferably muffled, that is to say, arranged so as to diffuse the light from the lamp over the whole of the surface of the filter.

By the foregoing means a lamp is obtained which is very cheap to run, as the amount of current absorbed is small; it is cheap to manufacture, as the form of the lamp, apart from the globe and filters, can be of any desired construction and very simple, and the light given off is constant and not variable.

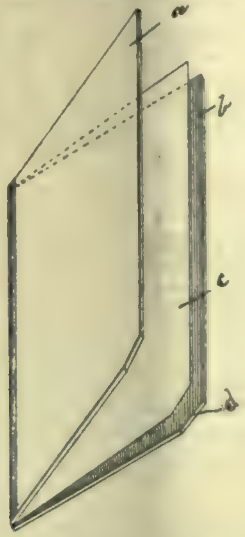
As will be seen, the different kinds of incandescent lights require slight modifications in the filter, and it will be necessary to test each kind of lamp, so as to get the proper proportions of the blue and green glasses. Max Weertz, 39, Queen's Road, Bradford.

Film Carriers.—No. 29,823, 1910 (December 22, 1910). The invention relates to a film-carrier for films, plates, papers. The film-carrier consists of a cover one half of which is made of cardboard, whilst the other half is of a glass plate.

The carrier is of special utility in colour photography, in those cases in which it has been hitherto necessary to place a colour screen over the lens when effecting an exposure. In the present case it is only necessary to uncover the lens, as the second half or glass plate of the carrier may be formed as the colour screen. As the film must not be subjected to light, the loading of the film carrier must be done in absolute darkness, and in order to ensure the correct position of the film in the film carrier, both film and film-carrier are clipped at one corner.

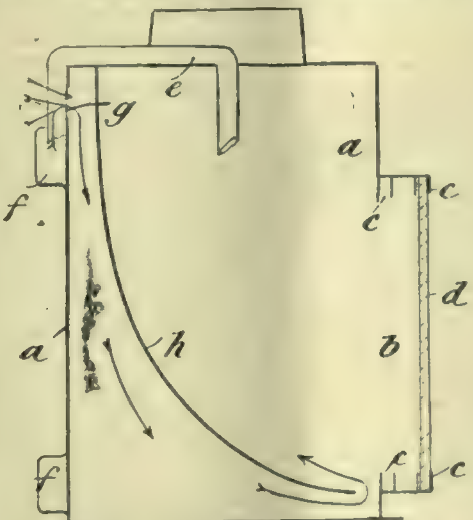
The film-carrier consists of two parts, *a* and *b*, clipped at one corner *d*, so that even in the dark the film or insertion *c* may be placed in the carrier. The insertion is clipped at one corner, in the same manner as the carrier.

One half *a* of the carrier is of cardboard, and the other, *b*, consists of a glass plate, which may be a yellow plate or like colour screen, when the carrier is to be used for films and plates for colour photography. The film or the like is placed in the carrier in the dark, and the whole is then charged into dark slides or the like, in the same manner as films alone. Ernst Brinkmann, 32, Albrechtstrasse, Steglitz, Berlin.



**Dark-room Lamps.**—No. 3,350, 1911 (February 9, 1911). The invention consists of a dark-room lamp having an air-admission at the back and near the top thereof, and a curved shield fixed at the top of the casing and brought down within a given distance of the front of the casing.

In the drawing, *a* indicates the body of the lamp, the front of which is provided with an open extension *b*, having grooves *c* for the reception of one or more glasses *d*. The upper end of the lamp is provided with means for the connection thereto of the usual chimney, having light baffles therein. The chimney is omitted from the drawing. *e* indicates the gas supply tube and *f*, Fig. 1, are the usual bosses or studs.



Arranged at the back and at the upper end of the lamp are holes *g*, through which air passes into the lamp, and which air upon its entry passes into and through the space formed between the back of the lamp and the curved plate *h*. The plate *h* extends the full width of the inside of the lamp, and terminates at a point clear of both the bottom and front of the lamp, so that there is provided at this point an opening *i* through which the air may pass into the lamp. The passage of the air through the air space at the back of the plate and into the lamp is indicated by arrows. James Hazell, 111, Constantine Road, Hampstead, London, N.W.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901 :—

**Cinematography.**—No. 19,644. Method of an apparatus for printing cinematograph films by projection. Kucharski.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Trimming Prints.

In a note on this subject in "Photography and Focus" for October 24, Mr. P. Perkins, of Watford, writes, *re* the use of cardboard or old newspapers on which to cut, as follows :—"It may interest your readers to know that a piece of cork carpet makes an excellent board. Any good upholsterer should be able to supply a piece of his waste for a few pence. Failing this, members of a club could buy a couple of square yards from such people as Catesby's or Maple's, and cut it to suit themselves. I may say I have used a piece now for over a year, and have trimmed hundreds of prints on it. To the ordinary observer it shows no signs of cuts, but on a careful scrutiny hundreds can be seen; but they have no effect upon the knife when trimming."

### A Remedy for Curling Prints.

On this subject a writer in the "Amateur Photographer and Photographic News" for October 23, gives the following hint :—"Having been troubled by the extra tendency of collodion postcards to curl, I tried putting them under a good weight without effect. Pulling them under the edge of a ruler not only gave them extra curls in all ways, but frequently made lines on the face and damaged the corners, so that was no use. I now use a cardboard cylinder about four inches diameter (a printing paper packing tube) and a number of long strips of newspaper cut an inch wider than the cards. To use, I take a turn of the paper round the tube, and then place the cards with the convex sides next to the tube nearly touching each other, and roll them up tightly; and when all are done stick the end of the newspaper down with two bits of stamp edging, then leave them for a few hours. When unrolled they have a bend in the opposite direction to that they first had, but a short time under pressure makes them nice and flat, and they keep so. This method can, of course, be applied equally well to postcards or prints by other processes."

# New Materials, &c.

**Scaloid Gaslight Developer Tablets.**—A developer for use with the general run of commercial gaslight papers has just been put on the market by Messrs. Johnson and Sons, 23, Cross Street, Finsbury, London, E.C., both in the form of compressed tablets and in their popular series of 2d. packets. The developer in our hands has yielded excellent rich black tones, and has shown its ability to retain its active properties whilst developing a large number of prints. With some papers we found it advisable to add a drop or two of 10 per cent. potass. bromide solution, but with the exception of this modification it is evidently well adapted for use with any gaslight paper. The price of the tablets to make 30oz. of working solution is 1s.

**Azol Developer.**—Recognising the importance of well stoppering a concentrated single solution developer, such as Azol, Messrs. Johnson and Sons now supply this widely used preparation with a rubber-covered cork, which makes a perfect seal for solutions of an alkaline nature, whilst it is free from the drawback of readily flying out of the bottle which attaches to an ordinary rubber cork. Azol developer will in future be sent out thus stoppered, and Messrs. Johnson inform us that they are now prepared to supply the stoppers, which they have patented, to any photographers anxious to use them for other working solutions.

## CATALOGUES AND TRADE NOTICES

Challenge Christmas Postcards.—A proof-sheet of the designs of these cards, issued with the Challenge emulsions of all grades, reaches our table, together with the latest price list of the Challenge papers.

Second-Hand Apparatus, largely in the way of lenses and field cameras, as well as numerous varieties of hand-camera, figure in the latest 16-page list issued by the Sloane Square branch (26-28, King's Road) of the City Sale and Exchange, which makes a special feature of requisites for professional photography.

Enlargement Frames.—A special price-list of frames for enlargements has just been issued by Messrs. J. Epstein and Co., Rupert Street, Bristol. The list includes the special lines of oak, Sheraton, antique and gilt, and other frames which have been found particularly popular, and all of which are issued at extremely moderate prices. For six penny stamps the list, together with specimens of the mouldings, will be sent to bonâ-fide professional readers of the "B.J."

Real Orthochromatism.—A new edition of this useful booklet has been issued by Messrs. Wratten and Wainwright, Croydon, and contains an immense amount of practical information on orthochromatic methods and plates. Much of the matter has been re-written and developing times for rodinal, azol, "tabloid," rytol, and other developers now figure in the pages for use with panchromatic plates. We can advise all those interested in improving their technical work in dealing with difficult subjects, to apply for a copy of this manual.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

Friday, October 27.

Cowlairs Co-operative Camera Club. General Meeting.
Hampshire House Photographic Society. "How to Make a Picture." A. Gardner.

Saturday, October 28.

Huddersfield Naturalist and Photographic Society. Discussion on Local Prehistoric and Roman Remains, Illustrated with Specimens, Lantern Slides, Plans and Photographs.

Sunday, October 29.

South London Photographic Society. Excursion to Northfleet.

Monday, October 30.

Leeds Camera Club. "Excursions in Switzerland." Percy Lund.
Dewsbury Photographic Society. "Negatives—Development, &c." F. Hoyle.
Bowes Park and District Photographic Society. "Colour Photography: What it is and How it is Done." F. Low.
Bradford Photographic Society. "Nature Hunting with a Camera." Carl Edwards.
Southampton Camera Club. "Another Ramble amongst Wild Flowers." H. Essenhigh Corke.
South London Photographic Society. "Through Belgium to Switzerland." H. G. Bailey.
Southport Photographic Society. R.P.S. 1911 Slides and Members' Slides.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Flower Photography." W. H. Atkinson.

Tuesday, October 31.

Royal Photographic Society of Great Britain. "A Glimpse of Spain." F. G. Newmarch.
Herefordshire Photographic Society. Autotype Carbon Demonstration.
Birmingham Photographic Society. Demonstration upon Tank Development. Demonstration of Sepia Toning of Bromide Prints.
Leeds Photographic Society. Carbon Demonstration. R. Stockdale, M.A.
Sheffield Photographic Society. "The Autochrome Process." Dr. H. G. Drake-Brockman.
Halifax Camera Club. "Famous Yorkshire Runs." J. Marston.

Wednesday, November 1

Sale Photographic Society. "Ancient and Modern Methods of Illustration." J. Pilkington.
North Middlesex Photographic Society. Lantern Slide and Print Competitions.
Huddersfield Naturalist and Photographic Society. "Some Tenets of Art applied to Photography." H. Barratt.
Doncaster Camera Club. "A Tour in Northern Africa." Walter Roberts.
Ealing Photographic Society. 2nd Print Competition.
Scottish Photo Pictorial Circle. "Photographic Experiences on the Continent." James McKissack.
Barrhead and District Amateur Art Club. 1911 Lantern Slides.
Edinburgh Photographic Society. Debate—Aff., R. C. Malcolm. Neg., J. Roberton Christie.
Partick Camera Club. Whist Drive
Coventry Photographic Club. "Enlarging on Bromide Paper." By Members.
Croydon Camera Club. "Making Lantern Slides by Reduction, including Masking and Binding." S. J. Taylor.
Borough Polytechnic Photographic Society. First Lantern Slide Competition.

Thursday, November 2.

Sutton Photographic Club. "A Trip in Algeria" "A few Hints on Lantern Slide Making." Andrew Pringle and D. B. James.
Liverpool Amateur Photographic Association. "Tales from Kent." F. Gregory Jones.
Chelsea and District Photographic Society. Portfolio Evening.
Photographic Society of Ireland. "Pictures in Northern Italy and the Tyrol." Professor M'Loughlin.
Folkestone and District Camera Club. Lantern Slide Competition.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Copying." Cliff. Bradley and S. Grimshaw.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, October 24, Rev. F. C. Lambert in the chair.

The house exhibition of photographs by Mr. Charles Job, F.R.P.S., having been declared open by the chairman, who also said a few words in appreciation of the pictures, Mr. J. C. Warburg read a paper entitled, "The Trend of Modern Pictorial Photography," which gave rise to some discussion among his hearers. Amongst those who took part in this discussion were Messrs. G. Lamley, A. H. Lisett, J. McIntosh, and Rev. F. C. Lambert. A hearty vote of thanks to Mr. Job for the loan of the photographs and to Mr. Warburg for his interesting paper brought the proceedings to a close.

Croydon Camera Club.—Mr. F. Martin Duncan gave his illustrated lantern lecture, "Forest Life," last week, an absorbingly interesting account of the New Forest, and the life and habits of its denizens; a lecture impossible to abbreviate satisfactorily, and unjust to quote from in fragmentary form. Quite apart from the subject, for some at least, it must have been refreshing to be so forcibly and pleasantly reminded that "photography" can be applied to a definite and valuable purpose, and fill a position in a way which no other method of graphic expression can hope to rival. Amidst much chatter, and circulatory "small talk" on pictorialism or procedure, an occasional justification for the *existence* of "photography," even if in only one of its many branches, cannot help to be other than beneficial, and is bound to give fresh zest to a pursuit which forms the excuse for existence of so many societies.

Blackburn Camera Club.—At the opening meeting last week Mr. W. Bell, of Heywood, gave a paper on "Retouching." As reported in the "Blackburn Times," Mr. Bell emphasised that retouching was a power in the hands of the amateur for improving his negatives. At the same time he advised that considerable care should be exercised, and that a portrait, for instance, should not be retouched until all the "character" disappeared from the face. Beginners were liable to do too much to a negative. That was a mistake that should be avoided. The materials required for the process were not numerous, but it was important that they should be suitable in all respects. Over his retouching desk he placed a black cloth, under which he worked, sitting, not in a crouching position, but fairly straight, so that he could look squarely at the negative. The pencils were very important. He used three—the first (H.B. Faber or Koh-i-noor) with a long, thin point, which was the first secret in retouching; the second (also H.B.), with a short, blunt point; and the third (B.B.B.), with a chisel point. Cheap pencils were gritty, and liable to scratch. As to his knives, one blade was shaped like a scraper, and another holder contained a blade with a nail point, and one with a wedge point. Another useful accessory was a penholder with a point shaped like a chisel, and bound with chamois leather. With a little methylated spirit, it was a wonderful tool for rubbing down negatives. As to mediums, he recommended Alfred Ellis's "Paragon" and Bruce's "Non-shifting" medium. He had used them for years, with complete satisfaction. The advantage of the long, thin pencil point, to which he had previously referred, was that with it they could see where a stroke was made, whereas with a blunt point they could not do so. The point was obtained by rubbing the lead on rough and smooth sandpaper, and then polishing it on a piece of blotting-paper. In retouching, a beginning was generally made with the knife to remove spots, the knife being held at right angles to the negative (which must be absolutely dry) and "dragged away" from it, thus getting a curved stroke. Heavy lines below the eyes could be reduced by rubbing the film with the chamois point dipped in methylated spirit. Medium should be applied not with the finger tip, but with silk on the finger. Care should be taken not to leave a circular rim; the medium should be clouded away to the edges of the plate. The best and easiest stroke for retouching was that which had its strength at the beginning and resembled a dash at an angle of 45 degrees. In cross-hatching, the same angle was adhered to. To cross-hatch at right angles was wrong. If the point of the pencil was broken in the operation it showed that the stroke was too strong, hence it followed that the stroke should be cultivated that would make a mark and keep the point. By adopting the 45 degrees stroke, ridges and veins were crossed and softened. For the ridge of the nose a straight, firm stroke should be used. On the cheek retouching must be away from the high light. The mouth was very important, as it was the seat of all expression. In grave expressions the main lines took a downward course, and in smiling faces an upward course. After the negative had been retouched the first time it would generally be found that it was patchy. This could be remedied by modelling with a very light semi-circular stroke. The great thing was not to over-do the modelling.

## Commercial & Legal Intelligence.

VOLUNTARY LIQUIDATION.—The firm of R. Keene, Ltd., is to be wound up voluntarily. Mr. William Campion, of Iron Gate, Derby, has been appointed liquidator. A meeting of the creditors of the company will be held at 25, Iron Gate, Derby, on November 1, at 3 p.m.

A LEEDS PHOTO-COMPANY.—The Registrar at the Otley County Court (Mr. C. J. F. Atkinson) had before him last week a case in which the Reliable Photo Enlargement Company, of 76, Portland Crescent, Leeds, claimed 5s. each from Miss Daisy Seeley and Miss G. Maller, of Crow Trees, Rawdon. On the case being called there was no appearance on behalf of the plaintiff company, and the Registrar allowed Mr. Harold Crust, who represented the defendants, to give his version of the affair.

Mr. Crust stated that two girls—who were agents of the company—called upon the defendants, and stated that the Reliable Photo-Enlargement Company were about to open a branch at Rawdon, and in order to advertise their goods they would give free enlargements to the first six customers. On this promise the defendants ordered photographs, and about a week later a man arrived from the company with the enlargements, and wanted the defendants to pay for a frame. When the defendants said they were unable to afford a frame, the man became very abusive, and as he created quite a disturbance the defendants gave him 2s. 6d. each to get rid of him. Later, when the photographs arrived, the defendants paid 5s. each for them.

The Registrar, in giving judgment for the defendants with costs, said he considered that the company had been acting in a very improper way by inducing people to buy what they did not want. He should mark his disapproval by allowing each of the defendants 5s., and by allowing the solicitor costs on the £5 scale in each case.

### NEW COMPANIES.

EXCELSIOR FILMS CO., LTD.—This company was registered with a capital of £10,000 (2,475 preference shares of £4 each and 2,000 deferred shares of 1s. each). Objects: To purchase the lease of the Chateau des Muriers, 16, Rue Vermouth, La Varenne, St. Hilaire, a suburb of Paris, with the factory for the printing of cinematograph films, erected on part therof, and the trade mark "Excelsior Films" (registered in France), etc., also to adopt an agreement with P. de Vienne, acting as Administrateur Délég é of the Société Auxiliare de Banque. Minimum cash subscription, 25 preference shares. First director, P. de Vienne (managing director). Registered by A. Saunders, 9, Fenchurch Buildings, E.C.

FILM MANUFACTURERS, LTD.—This company has been registered with a capital of £11,000 (10,000 preference shares of £1 each and 20,000 ordinary shares of 1s. each). Objects: To carry on the business of manufacturers of substances for cinematograph films and pictures, etc. Minimum cash subscription, 2,000 preference shares. First directors, W. H. Witherby, H. E. Andrews, E. J. Muddle, J. Findley, F. E. Freeth, P. M. Butlin, and E. D. Miller. Qualification (except managing director), 50 shares. Remuneration, £100 each per annum (£150 for chairman). Registered office, Walter House, Strand, W.C.

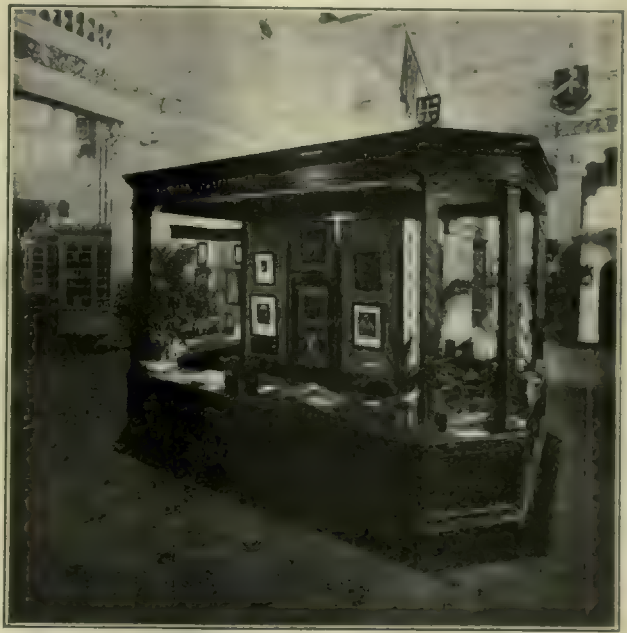
PRINTING CRAFT, LTD.—This company has been registered with a capital of £1,000, in £1 shares. Objects: To take over the business carried on at 1, Adelphi Terrace House as Printing Craft Company, and to carry on the business of photographers, etc. First directors, C. Weldon, S. Gould, J. H. Elder-Duncan, and F. Willman. Qualification, 10 shares. Registered office, 4-5, Adam Street, Adelphi, W.C. Private company.

## News and Notes.

ENSIGN COMPETITION.—Mr. W. Foster Brigham, 20, Esplanade, Scarboro., is the winner of the "Ensign" Roll Film Competition for October. Houghtons, Ltd., offer a four-guinea camera every month for the best negative on "Ensign" film. The entries close on the 3rd of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

THE DANGER OF CELLULOID GOODS IN WINDOWS.—A correspondent of the "Pharmaceutical Journal," Mr. D. L. McLure, Comrie, N.B., writes as follows:—"Perhaps my experience of the above may act as a warning to other pharmacists who show celluloid photographic trays, etc., in their windows. Last Sunday I was sent for in church, and informed that my shop was on fire. It took me the matter of a few minutes to be on the spot, but by that time one-half of my window was demolished. On examination I found that I had placed a few celluloid photographic trays not far from one of my carboys, and the sun, shining through the carboy, focussed its rays on to the trays and set them on fire; not a trace of them was left."

THE PLATINOTYPE CO. AT TURIN.—Almost simultaneously with the publication of the awards of merit at the Turin Exhibition, we are enabled to show the fine stand of the Platinotype Company, to whom, as will be noticed in the official memoranda published below, an award of special distinction has been made.



AWARDS AT THE TURIN EXHIBITION.—From the full official award list of the British section in the Turin Exhibition we reprint below the lists in the classes devoted to photographic apparatus, material and professional photography, to applied photography, and to process work. These are as follows:—Photographic Apparatus and Material and Professional Photography.—Grand Prix: J. Bacon John W. Beaufort, R. and J. Beck, Ltd., A. Boake, Roberts and Co., Ltd., Burroughs, Wellcome and Co., Frederick Hollyer, Houghtons, Ltd., Thos. Illingworth and Co., Ltd., W. A. Mansell and Co., The Platinotype Co., Thornton-Pickard Manufacturing Co., Ltd., Wellington and Ward, Wratten and Wainwright, Ltd. Diploma of Honour: Campbell-Gray, Ltd., Alfred Ellis and Walery, William Illingworth, Raines and Co., C. Vandyk. Gold Medal: Walton Adams and Sons, T. Chidley, John J. Griffin and Sons, Ltd., Edwin Hadley, Histed, Medrington's, Ltd., Reynolds and Branson, Ltd. Silver Medal: The Acme Art Association, Hyde and Co.. Bronze Medal: Lyons' Ink, Ltd. Diploma of Merit: Government of the British East Africa Protectorate. Class 17.—Applied Photography.—Grand Prix: Wratten and Wainwright, Ltd.; Diploma of Honour: W. A. Mansell and Co., Ltd.; Gold Medal: John W.

Beaufort, The Platinotype Co.; Silver Medal: Acme Art Association; Raines and Co. Class 18.—Process Work.—Grand Prix: The Autotype Company, Oxford University Press, the Platinotype Co., Mrs. G. F. Watts; Diploma of Honour: Wratten and Wainwright, Ltd.; Gold Medal: Thomas Illingworth and Co., Ltd., W. A. Mansell and Co., Raines and Co.; Silver Medal: A. Boake, Roberts and Co., Ltd.

Exhibits by photographic firms likewise figured in a number of other sections of the exhibition. The award in these latter are as follows:—Technical education.—Grand Prix: The Wellcome Chemical Research Laboratories and the Wellcome Physiological Research Laboratories. Physical instruments, etc.—Grand Prix: R. and J. Beck, Ltd., Adam Hilger, Ltd., and Reynolds and Branson. Gold Medal: John J. Griffin and Sons, Ltd. Surgical instruments, etc.—Grand Prix: Burroughs, Wellcome and Co., and Adam Hilger, Ltd. Electro chemistry.—Diploma of Honour: John J. Griffin and Sons, Ltd. Electric Measuring Instruments.—Gold medal: John J. Griffin and Sons, Ltd. Road Transport.—Grand Prix: Burroughs, Wellcome and Co. Railways and Tramways.—Silver Medal: Raines and Co. Sanitation, etc.—Diploma of Honour: Burroughs, Wellcome and Co. Gas Production, etc.—Gold Medal: Burroughs, Wellcome and Co. Mountaineering.—Gold Medal: Burroughs, Wellcome and Co. Theatrical Appliances.—Gold Medal: Burroughs, Wellcome and Co.; Silver medal: Butcher and Co. Forestry.—Diploma of Honour: Wellcome Chemical Research Laboratories. Hunting.—Grand Prix: Burroughs, Wellcome and Co. Farming.—Grand Prix: Burroughs, Wellcome and Co. Pharmaceutical Products.—Grand Prix: Burroughs, Wellcome and Co.; Wellcome Physiological Laboratories, and Wellcome Chemical Research Laboratories. Essential oils.—Silver medal: Burroughs, Wellcome and Co. Saddlery, etc.—Grand Prix: Burroughs, Wellcome and Co. Inks.—Gold Medal: Wratten and Wainwright, Ltd. Engraving and Process Blocks.—Gold Medal: Wratten and Wainwright Ltd. Publishing.—Grand Prix: The Platinotype Co. Public and Private Benevolence.—Grand Prix: Wellcome Physiological Laboratories; Diploma of Honour: Burroughs, Wellcome and Co. Army, Navy and Co-operative Associations: Grand Prix: Burroughs, Wellcome and Co. In making the awards, as mentioned in the above list, the international juries for the respective classes accompanied the award by a record of their special congratulations to the Platinotype Co. (Classes XV. and XVI.).

In the Belgian section, as we are informed by Messrs. Gevaert and Co., the Grand Prix was awarded to this firm for their exhibit of photographic papers.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## PHOTOGRAPHIC ASSISTANTS.

To the Editors.

Gentlemen,—Re the above, perhaps it may interest the members of the proposed Union to know that in Scotland at least there is a demand for good assistants. Some time ago I advertised in the "Journal" for operator-retoucher, with knowledge of finishing enlargements preferred, rail fare paid. Getting no replies, I wrote to several in the "Situations Wanted," and, getting one reply, I engaged him, paying his rail fare from Manchester, 20s.

His first week was taken up making negatives of one of the assistants "for practice," and working up a few enlargements which had to be finished over the following week. I thought it was time to send him back (again paying his fare) when the receptionist told me he wanted a few negatives home to try retouching, as he had not done any for some time. This, from one who advertised as "expert"! My latest was, after advertising in the Edinburgh and Glasgow papers for "Retoucher, lady, with knowledge of finishing preferred, £1 per week to begin." Getting no replies whatever, I again wrote a few in "Situations Wanted," offering rail fare. Getting only the one reply, I engaged her at 24s. per week, paying rail fare for about 400 miles—£1 12s. After waiting six weeks, she has now gone back to England, I suppose at some other photographer's expense. I may add she told the receptionist the first week she did not intend to settle anywhere till she got a place to her mind, but seemingly was prepared to travel any distance at the expense of photographers. I have asked a traveller from one of the largest dealers who calls on me if there are any good assistants idle hereabout, but he says he has had the same inquiry from other photographers. Apparently there are none, and this, in a town where perhaps prices are keen, but Sunday work is unknown. I may not be paying good enough wages (40s. to 45s. per week), or perhaps they would like a place round the corner from where they live.—Yours, etc., SCOT.

To the Editors.

Gentlemen,—For some weeks past I have noted with interest the revival in your columns of the "Assistants' Union" question. As you will remember, about this time last year I was very enthusiastic on the matter myself. I asked you to give the matter a hearing, and assured you of my support. Well, what happened? Nothing! What will happen this time? I venture to think—nothing again. The finest service, gentlemen, that anyone could render assistants to-day would be the supply of sufficient gunpowder to bring home to each assistant the fact that he is still alive. When assistants realise this fact they may possibly be prompted to do something for themselves.

Fancy an attendance of eleven out of the probable hundreds employed in London! I wonder Mr. Jarrett did not at once give up the idea of forming a P.A.U.

One more point. In common with "An Employer," I should like to know why employers are not satisfied with their own Union instead of wanting to join ours. How can an assistant be expected to speak his mind when over the heads of the "little eleven" he catches sight of the "boss"?—Yours faithfully, ALSO ADSUM.

## TANK DEVELOPMENT.

To the Editors.

Gentlemen,—Strange as it may seem to the hasty reader, I agree with the classification of photographers to whom the tank system of development appeals, as set forth in your note to my recent communication.

The studio worker, knowing his tools perfectly, and having all things under his control, and seeking one kind of negative, finds the tank convenient, because it occupies less space than a large tray. He does all his thinking, planning, and arranging before the shutter clicks; the rest is all routine work, which can be performed by any boy able to read time on a clock.

The tank system also suits the raw amateur, because it enables him to get *some sort* of a negative without any thought, reason, or mental effort whatever. He gets *something*, and he is delighted to get *anything* at all. He puts into his tank a heterogeneous lot of plates; some fast, some slow, some medium speed; some are exposed to great contrasts, some to slight contrasts, some to medium contrasts; some are under-exposed, some are over-exposed, some are correctly exposed; some are in focus and some are out of focus, and some are blanks. That is the way an amateur's work will run, attempting all sorts of work, indoors and outdoors, portraits, landscapes, marines, and copying. Assuming that he uses a certain American well-advertised tank, he employs a certain rigid formula which fits a certain class of work. Speaking of those results, my countryman, Mr. Claudy, a notorious American tank boomer, says, as quoted from an American magazine, in my previous article: "You will get better and more truthful negatives than you could possibly get by hand development."

I have pondered on that expression, "*you will get*," for some time, and I think I have solved it. To use an American slang phrase, it contains a "nigger in the woodpile," or, as a legislator would say, there is a "joker" in it. It depends on a loose usage of the English language; we say "*you will get*" when we do not mean any person in particular. The French say, "*on trouve*," the Germans say "*man findet*," the Spanish say "*se encuentra*," and the English and Americans say "*you get*." The gist of the matter lies in the ambiguous use of the word "*you*." If by *you* is meant the dullest, most stupid, most unambitious, least enterprising amateur—the man who, photographically, does not know a hawk from a handsaw—the statement is correct. But that class of snap-shotters do not read magazines dealing with photography. Hence the incongruity of addressing such remarks to a class of students who have presumably graduated from the kindergarten class in photography.

Let us try a little logic to this matter of tank development. Let us proceed as a scientist or a trained lawyer would. There are tanks and tanks, but let me, an American, exemplify on a typical American tank, well advertised here and abroad, and offered on the British market. I refrain from discussing British tanks, for the simple reason that I do not know them; I know the American tanks. They are generally of two kinds—horizontal and vertical, provided with a lid in both cases.

Now the tank I am contemplating *per se* is not even a machine; it has no mechanism inside it, like an adding machine or a cash register. It is simply a hollow box, which any good tinsmith could make in half an hour. It is simply a container for the liquid developer. It has no more to do with the development of the plate than the bottle that contains the doctor's medicine has to do with the cure of the patient. The tin box does not do the work; it is what is inside the box that develops the negative.

Inside the tin box is a developer. The formula of this developer has been published, I believe, and is accessible to the general public. The same developer, if used in a covered dishpan, a soup plate, a horse trough, or a wash tub, would produce identically the same results as in a tin upright box called a tank.

Now this particular developer is, according to scientific experts, neither better nor worse than other generally used developers on the market. There is nothing miraculous nor marvellous about it. Anyone can compound it from the formula.

So far, good. But now comes the miraculous feature of the situation. According to the boomers of a particular tank system, if you (pardon me, I should say, if one) use this developer in this particular tank for twenty minutes at a temperature of 65, you get (one gets) better negatives than could be got by individual development at the hands of an expert. And that is where reasoning stops. *Omne ignotum pro mirabili!* When one asks how this miraculous transmogrification takes place, one is met with simple bald assertion, endlessly repeated—at so much per square inch in the advertising section.

Well, there is only one rational conclusion to come to, and that is that the tank system is like a patent medicine, which is advertised to cure rheumatism, diphtheria, sour stomach, lumbago, pains in the back, scarlet fever, constipation, tuberculosis, and in-growing toenails, and can also be used for axle grease, hair oil, and polishing boots, impartially. And yet I do not remember of any patent medicine manufacturer that has had the effrontery to stand up and make such claims before a respectable body of practitioners.

It would seem as if a slight suspicion of the incongruity of assuming enough intelligence on the part of the tank operator to allow variations in time and developer for particular cases, and subjects, and plates, had haunted the minds of Messrs. Claudy, Riley and others, and I am glad to notice that you (the Editors of the "B.J.") are unable to follow them in their suggested remedies. I confess my own inability in the same direction.

"*You* will get better negatives by using our one rigid formula in our tank for all classes of plates, subjects, and exposures than *you* could get by intelligent individual development by hand," may be charitably assumed to apply to ignoramuses, who, *a priori*, know nothing, and are capable of nothing; but it does not seem to me to be true when applied to the class of photographers who habitually read such papers as, for instance, the "British Journal of Photography."

E. L. C. Morse.

Chicago Camera Club.

October 14, 1911.

[Our correspondent is so excessively vigorous in his onslaught that it certainly is something of a surprise to learn of his agreement with the note (appended to his letter of September 29), in which we endeavoured to state facts without prejudice. Mr. Morse, it seems to us, now writes as though certain positive advantages of tank development were non-existent—its economy of space, its shielding of plates from non-safe dark-room light, its obviating of accidental damage. All these are distinct gains, which have nothing to do with the developing solution.—Eds. "B.J."]

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

Photographs Registered:

J. Worsnop, "Riverdale," Rothbury, Northumberland. *Photograph of the Right Honourable Earl Percy and Lieutenant-General Sir Robert Baden-Powell.*

R. T. Cookson, 15, Palace Street, Carnarvon. *Photograph of Ellis Griffiths, M.P.; photograph of Right Honourable Lloyd George, M.P.; photograph of group consisting of Ellis Griffiths, Lloyd George, Vaughan Nash, Miss A. Lloyd George, Megan Lloyd George, and two dogs. Photograph entitled "A Peep Through the Post."*

T. Hammond, Great Totham, Witham, Essex. *Photograph, Interior View of St. Mary's Church, Tollesbury.*

Mora, Ltd., 127, Western Road, Brighton. *Photograph of a group of five kittens.*

Canada.—We should say there will be no restriction whatever in the case of a second-hand instrument.

R. W. J.—Apply to Reinemann and Co., New Zealand Avenue, Barbican, E.C., or to Metallic Compositions Co., 333, Gray's Inn Road, London, W.C.

Tolidol.—In correspondence of your next issue will you please tell me the formula to make up (and its developing factor) for "Tolidol" for plates and papers? Is it on sale now at photo. shops?—D. G.

We do not know this developer. Probably it is a secret preparation, the formula for which is a trade secret. You had better make inquiries at one of the large dealers'.

American "B.J."—Can you oblige me with the names of any photographic papers published in America or Canada similar to *your* paper? I should be greatly obliged if you could give me this information.—Eva Barrett.

Wilson's "Photographic Magazine" (monthly), of 289, Fourth Avenue, New York, and "Camera Craft" (also monthly), 713-715, Call Building, San Francisco, are the two papers most akin perhaps to the "B.J." in the States.

Stereoscopic Prints.—Is it possible to see a stereoscopic negative or a non-transposed print from same in true stereoscopic relief?—A friend of mine says he can do so. Is he right?—C. F. E. Refens.

Non-transposed prints can be combined to show stereoscopic relief by squinting so that the right eye sees the left-hand print and the left eye the right-hand print. Special stereoscopes have been devised for this purpose, but, of course, an ordinary stereoscope is useless. We do not advise you to try the squinting method of combining the prints, as the effect is not very good, and the strain very bad for the eyesight.

T. and Co.—You can get all requisites for medallion, or what is usually called "Button" photographs, from Mr. J. Fallowfield, 146, Charing Cross Road, London. This firm lists appliances for pictures up to 70 lign size, but we believe can supply in larger sizes. 2. Ceramic miniatures are photographs or paintings burned in upon a porcelain or enamel surface. You will find full particulars of the photographic method in "Photo Ceramics," by Ethelbert Henry, and published by George Routledge and Co., price 1s. 6d. The necessary materials can be obtained from the Vanguard Company, Maidenhead, England.

Addresses Wanted.—Some time ago I saw the names and addresses of two firms in your journal, but cannot come across them now, and should be greatly obliged if you would kindly publish same in your "Answers to Correspondents" column. The firm that makes putty that won't crack, and another, in either Birmingham or Nottingham I believe it was, that supplies permanent coloured miniatures in a new process.—A. B. C.

A putty that does not dry hard may be obtained from W. Carson and Sons, Grove Works, Battersea, London, S.W. The reference to a miniature firm is doubtless to Mr. J. W. Beaufort, The Studio, Easy Row, Birmingham.

Fogged Negative.—We are using a Jandus Lamp, enclosed arc, round with a large white sheet, but all our negatives come out so foggy. We have the lens screened off both sides. How do you account for this? Have about 3ft. of cloth extending over the lens. —LIGHT.

The fog may be due to mist in the studio, which is always more troublesome with artificial light, or possibly to a dirty lens. Try cleaning all the surfaces of the lens with absolute alcohol. Also see that direct light does not reach the lens, or even the inside of the hood; even with a 3ft. hood this is possible. Of course, you take care that no image of the reflector is formed upon the inside of the bellows, and that the inside of the bellows is dead black, and not dusty. Electric light often finds out weak spots not noticeable with diffused daylight.

BLUE STAINED MOUNTED PRINTS.—Re fuller particulars to "Anxious" in last week's "B.J." Yes; the prints were toned by the sulphide method, and were for five days in my possession waiting for my customer. Two days after, she brought them back with the blue markings on, after having them mounted and framed at a local picture framer's. I strongly suspect this picture-framer had an accident with them, as my customer said he looked uncomfortable when the markings were pointed out to him. Do you think using gum to mount the plates would make any such markings in such a short time?—ANXIOUS.

It is highly improbable that prints could develop the colour except by mounting upon a very impure board. You are absolutely in the right in maintaining to your customer that such toned prints are perfectly permanent. In fact, it can be seen that the prints have not gone at all; the stain is an addition, and one for which you cannot be responsible.

PRICE FOR PRINTS.—I shall be glad if you will give me your opinion on the following:—I photographed the local Coronation Committee to their order, each person in the group being entitled to a copy. Altogether there were forty-three copies supplied, size 10 by 8 on 16 by 12 P.S. mounts. I used Wellington bromide paper and best quality mounts, on which I had printed the name and date of event. I charged 2s. 6d. each for them, and now the officials say that I have made an exorbitant charge. Do you think so? They are to be paid for out of the surplus funds collected for the festivities, which were about £60. I inserted several of the committee afterwards in the group, for which I made no extra charge. —H. S. PURCELL.

Presuming that the work is thoroughly good we consider the price a moderate one. Since the nett cost of each print is close on a shilling, the balance is none too much for taking the group, making additions thereto, and printing inscription on the mounts.

STAINS ON VELOX.—Can you tell me how to avoid yellow stains on the margin of Velox gaslight paper? I use rodinal, and have tried varying strengths from 1 to 12 to 1 to 24, adding 3 drops 10 per cent. solution of bromide to 1 oz. of developer. The trouble disappears when I use a metol-quinol developer, but I should like to succeed with rodinal.—ALTRINCHAM.

Such stains are not peculiar to Velox; they can be produced on any gaslight paper if the prints are not carefully immersed in the fixing bath. Each print should be plunged right under the hypo, but must not be brought into immediate contact with the film side of another print. Therefore a deep fixing bath is essential, and too many prints must not be fixed in it at one time. The prints should also be put into the bath face down. The stains can be caused in two ways: by bringing a print full of developer into contact with another print, or by exposing such a print too long to the air. If the edges curl up out of the fixing bath they will almost inevitably show stains. If you take these ordinary precautions you will not get stains; it is not a question of the developer so long as the latter is of proper composition, and that, it is hardly necessary to say, rodinal is.

POSTCARD SUBJECTS.—I have a number of half-plate negatives of cattle studies (cows passing through gateways and along lanes, etc.). These are quite original, and have never been published in any way:—1. Could you give me the names and addresses of any firms who would be likely to buy them for postcards, etc.? I have tried the —— Co., but they said they were not requiring anything in this way at present. 2. What is the usual price given for negatives and all rights? 3. Could you tell me of any firms who would be likely to sell such subjects for me on commission? 4. If so, the usual commission they would require? I am enclosing one or two proofs, and would like your opinion of them. 5. Are they up to a saleable standard?—H. H. R. NORTHOVER.

1. The subjects are not very saleable as postcards, the trade in which is chiefly in views of places. You might try houses such as Raphael Tuck and Co., Moorfields, E.C., or Davidsons, Ltd., Golden Lane, but we cannot hold out much hope of their acceptance of your subjects. 2. About a guinea. 3. Press agents for photographs such as Messrs. Illustrations Bureau, Ltd., Whitefriars Street, might help you, but most postcard photographs are offered direct to the publishers. 4. Twenty-five to 33⅓ per cent. 5. While the subjects are technically good and pleasing, they are not all saleable to general postcard publishers.

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ANYTONE PAPER.—We must amend several literal errors which were left uncorrected in our review of this new development paper last week. The size of the cabinet paper should, of course, have been 6 x 4½, and the prices for Anytone opals are per dozen, not per 1,000, as stated. It should also be added that full packets and any standard size in proportion are sent post free at the standard prices.

FACES, ANCIENT AND MODERN.—The "Sketch," illustrated weekly, publishes in its issue of October 18 a series of extremely clever photographs by Mr. J. C. Strauss, of St. Louis, in regard to which the "Sketch" writes:—

"A new departure in photography has been introduced by Mr. J. C. Strauss, of St. Louis, one of the greatest photographers in the United States This is the taking of modern men in the garb of Old Masters. In doing this he employs no adventitious aid in the way of theatrical make-up, which would make the procedure quite easy. What he does is to select the type of man who falls in with the requirements of the particular picture. It is not his purpose to secure a perfect likeness in the head and face of the substitute for the picture, for that would be impossible. What he desires to show is that to-day, even among a limited number of men, it is possible to find representatives for those old heads which some modern painters pronounce extinct. Most of Mr. Strauss's sitters were selected at a photographers' convention, and are, like himself, professional photographers. One remarkable fact is that the men were posed without there being in evidence a photograph of the picture each was to represent—a circumstance which argues not merely a close knowledge of the pictures, but a memory capable of retaining each original picture in a most vivid manner. So closely are the characteristics retained that artists have examined some of the photographs without detecting that they were not photographic copies of the original pictures, although, as has been said, only the type of feature, and not a facial facsimile, was aimed at by the photographer, who has received for his work the highest artistic awards the world has to offer. The heads, it should be emphasised, have not been "faked" by elaborate touching up; the accessories are painted in in some cases."

Our readers should make a point of buying the "Sketch" of last week, in order to study these original works of Strauss. They have read of Strauss in our pages in vain if they do not recognise in these essays the tireless energy of a man who is not only an artist but possessed of a keen sense or what interests and attracts people and keeps the author constantly in the public eye.

*** **NOTICE TO ADVERTISERS.**—***Blocks and copy are received subject to the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.***

## The British Journal of Photography.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2687. Vol. LVIII. FRIDAY, NOVEMBER 3, 1911. Price Twopence.

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## SUMMARY.

Sir Cecil Hertslet has accepted the presidency of the Photographic Convention to be held next year at Amsterdam. (P. 833.)

Tank development, speed-markings of shutters, halation, and the conditions of assistants figure under "Correspondence of the Week." (P. 845.)

The Autotype Company has drafted a scheme for conducting a training school for carbon printers. Details of the conditions under which the sons or assistants of photographers may be admitted are given on page 838.

An American writer in the "Association Annual," the record of the proceedings of the Professional Photographers' Association of America, has dealt with the frequently neglected matter of style and taste in the photographer's stationery. (P. 835.)

The death is announced of Mr. W. W. Everitt, miniature painter, and for many years associated with Messrs. Elliott and Fry. (P. 838.)

A patented single-solution sulphide-toner is stated to be compounded of sodium sulphide and selenium metal. (P. 833.)

In view of the many misconceptions which appear to be entertained with regard to the speed and efficiency of focal-plane as compared with diaphragm shutters, we deal in a leading article with the elementary principles upon which these two classes of shutter work. (P. 834.)

Three Nature books by photographers whose work is well known in this branch of the art are the subjects of short reviews on page 842.

Description of an emulsion and methods of applying it to flexible and rigid surfaces is given in a specification of Mr. Otto Fulton. (P. 840.)

### "Colour Photography" Supplement.

In a further portion of the paper by M. A. Priléjaëff the author deals with formulæ of compensating light-filters for Autochrome plates. (P. 61.)

The new "Utocolor" bleach-out paper of Dr. J. H. Smith has been placed on the market, and is being demonstrated by Dr. Smith in a number of large towns in England and Scotland during the next fortnight. (P. 62.)

A correspondent, Mr. C. E. Franck, advises a re-developer free from alkali, or containing very little, for the avoidance of frilling in Autochromes. (P. 64.)

A Russian astronomer, M. Tikhoff, has taken colour photographs of Mars. (P. 64.)

## EX CATHEDRA.

**The 1912 Convention.** At a recent council meeting of the Photographic Convention it was decided to select Amsterdam as the headquarters of the Convention in paying a visit in July of next year to Holland. The choice of the Dutch seaport will no doubt appeal to many Conventioners, although for our own part we think that the smaller and cosier town of The Hague would have been preferable in many ways, and particularly in contributing to the social side of the Convention gatherings. But, however opinions may be divided on this point, there can be nothing but an enthusiastic consensus of satisfaction at the announcement that Sir Cecil Hertslet has consented again to accept the office of president. All those who took part in the Brussels Convention took away with them the liveliest feelings of gratitude to Sir Cecil Hertslet for the personal trouble which he took in connection with the Belgian visit and the infinite kindness which he showed in making the Brussels Convention the notable meeting of recent years. Holland, as a photographic playground, has much more to recommend it even than the picturesque Flemish cities in the neighbouring kingdom, and we may anticipate that the arrangements for the 1912 Convention will tax, but not exhaust, the resourcefulness of its honorary general secretary, Mr. F. A. Bridge, from whom, at Downshire House, 128, Barry Road, East Dulwich, S.E., particulars of the 1912 arrangements will shortly be forthcoming.

* * *

**Single Solution Sulphide Toning.** The "Chemiker Zeitung," in its current issue, gives particulars of a new preparation for sulphide toning, patented by the Rheinische Emulsion Paper Co., of Dresden. The preliminary bleaching bath is dispensed with, the toning bath consisting of a solution of an alkaline sulphide in which is dissolved metallic selenium. A typical bath is given as containing in a litre of water, 200gms. of soda sulphide and 20gms. metallic selenium. The print, after well fixing and washing, may be toned by brushing this solution over it, as it lies on a glass plate, or a number of prints may be toned together in a diluted bath. In either case the toning is followed by treatment with a solution of soda bisulphite solution to remove the yellowish tinting of the whites and to correct the tendency of the toner to soften the gelatine. The new method is stated to give a series of brown tones and the solutions are employed in the cold.

* * *

**Advertising Children's Portraits.** We referred last week to the opportunities which a competition of some kind or other for picturesque portraits of children affords photographers who make a specialty of this branch of work, and now in the current issue of "Harrington's Photographic Journal" we see reproduced a good example of composite photography used by an Adelaide professional, Mr. F. A. McNeill, in making himself known as—we quote from his printed mounts—"the slickest photographer of the children." Mr. McNeill has taken some hundred photographs of tiny children in all descriptions of position, and has built them up into one solid group around a photograph of himself, with still another of them on his shoulder. A photograph of this kind calls for an immense amount of patience and application, but when completed it is one which in the photographer's window or distributed in postcard form, excellently serves its avowed purpose of making known its maker's special appeal as a photographer of children.

◆

## THE FIRST PRINCIPLES GOVERNING EFFICIENCY AND SPEED IN SHUTTERS.

A correspondent in a contemporary has recently been holding forth on the subject of shutters, but, having based his arguments on the fallacious idea that the focal-plane shutter has an efficiency of one-hundred per cent., no time being occupied in opening or closing, his effusion is more amusing than instructive. We thought that this mythical hundred-per-cent. theory had been demolished long ago, but evidently this idea is a mistake; and, as the writer to whom we refer appears to pose as a scientist, it is to be feared that others who pretend to no scientific knowledge at all may be misled. Possibly, therefore, it may be useful if we endeavour to explain the first principles which govern the problems of speed and efficiency in shutters.

To simplify matters, we will disregard for the present the more modern types of lens shutters, which, opening from the centre, present various shaped openings to the light, and will consider only the old-fashioned blind shutter working at the lens, together with its prototype the focal-plane shutter, which is of almost the same design, but works behind the lens and close to the plate. Each of these shutters consists essentially of a flexible blind with an aperture in it, which aperture, passing through the various pencils of light which produce the image, allows light to reach the plate, and so makes the exposure. If such a shutter is fitted close to the plate, it is obvious that it must expose one end of the plate before the other, for, the blind being assumed to travel downwards, the aperture will pass through the light-pencils coming from foreground objects before it reaches those coming from the sky. If, however, the shutter is fixed at the diaphragm, then, as all light-pencils intersect at that place, the shutter aperture affects all simultaneously, and exposure takes place over the whole plate at once. This occurs at the diaphragm alone, and nowhere else. If the shutter is in front of the lens, as it often is, the sky is exposed before the foreground; if behind the lens, the foreground is exposed before the sky. The only effect of shifting the shutter right back to the plate is to emphasize the difference between the successive exposures of foreground and sky, and there is no other essential difference in the action of the shutter.

We now can consider the matters of speed and efficiency. When speaking of speed, we mean simply the total time during which light can act on the plate, and whether we are considering the diaphragm shutter or the focal-plane shutter, this definition holds good. A hundredth of a second speed or duration of exposure means exactly the same thing in either case—namely, that every point on the plate has been exposed for a total period of one-hundredth of a second, and in studying the conditions that govern speed and efficiency we need consider only one such point, for the conditions that apply in its case will apply equally well to any other part of the plate. As, however, each point of the image is formed by one light-pencil alone, the whole matter resolves itself into the consideration of the effect produced by the shutter aperture passing through one such pencil.

The light-pencil being assumed to be always circular in section, and the shutter aperture rectangular—that is, either of square form in the case of the lens shutter, or of slit form in that of the focal-plane shutter—it is obvious that the distance the shutter aperture must move to complete an exposure is equal to its own width *plus* the diameter of the pencil. Therefore, the speed of the shutter being uniform, the smaller its aperture, or the smaller the light-pencil, the shorter is the exposure. The light-pencil being conical in form, becomes narrower the nearer we get to the plate; therefore, other things being equal, the nearer the shutter is to the plate, the quicker is the exposure. This is the main point in which the focal-plane shutter scores over its rival at the lens.

As regards efficiency, it is clear that when the shutter aperture passes through the pencil, both being of definite diameter, a certain time is occupied in opening and closing,

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## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

The fifty-first annual issue of The British Journal Photographic Almanac will be published on December 1.

Among other new features in the forthcoming Almanac are articles as follows:—

### Lantern-slide Making. By the Editor.

A complete practical guide to the making of lantern-transparencies by reduction and contact, illustrated with special drawings of apparatus; processes of development for black and warm tones; warm tones by after-toning, and other methods of producing the best results.

### At Home Portraiture. By C. H. Hewitt, F.R.P.S.

Precise directions for indoor and outdoor portraiture without a studio. Illustrated with diagrams and art supplement plates, showing effects of good and bad lighting.

### Hints in Pictures.

A section entitled "How to Do It," helping the beginner to perform such operations as stripping negative films, mounting prints, etc. One hundred and twenty illustrations.

As in recent issues, the systematic review of the practical work of the year under the title "Epitome of Progress" will be a strong feature of the volume.

The lines followed in the previous editions of the Almanac will be maintained in general, but in a number of particulars the arrangement of the volume for 1912 will be modified to make it more than ever the book of universal photographic reference.

### To Selling Agents of Almanac.

Dealers, newsagents, etc., are advised that a substantial proportion of the edition is already ordered, and therefore those who wish to make certain of obtaining their supplies are requested to place their orders with Messrs. H. Greenwood and Co. without delay.

The Publishers will despatch parcels for simultaneous distribution throughout the United Kingdom.

just like a water-tap, which if opened slowly at first only lets a dribble of water through, and does not pass the full stream until it is full open, so the shutter at first only lets through a part of the light-pencil. Therefore, a duration of exposure of, say, one-tenth of a second is not equivalent to the action of the full light-pencil for one-tenth of a second. It, however, bears a direct relation to it, the ratio varying with the relative diameters of shutter, aperture, and light-pencil, and always being the same for diameters of the same relative sizes. If the diameters are equal the ratio is one-half, which means that a total duration of one-hundredth of a second is equivalent as regards light-effect on the plate to the full light-pencil acting for one two-hundredth of a second. This ratio is called the "efficiency," and the efficiency has always the same value so long as the shutter and pencil-diameters are in the same ratio. The formula is a very simple one. If $a$ is the shutter aperture and $b$ the width of the light-pencil then the efficiency is always equal to $\frac{a}{a+b}$, so that it can never equal unity, or be equal to one hundred per cent., excepting when $b = 0$, which can only be the case in the impossible event of the shutter being at the focus of the pencil or coinciding with the plate.

Suppose now we have a 5in. lens working at $f/5$. The lens-aperture, or the light-pencil at the lens, will be 1in. in diameter, while at a distance of half an inch from the plate the diameter of the pencil will be one-tenth of an inch. A shutter with an inch aperture working at the lens will then have precisely the same efficiency as a focal-plane shutter with a tenth-inch slit working half an inch from the plate—that is to say, the efficiency in each case will be one-half, or fifty per cent. While, however, one shutter has to travel two inches to complete the exposure, the other has only to travel one-fifth of an inch; therefore, the rate of movement being the same in each case, if the lens shutter gives a duration of one-thirtieth second—a usual speed for a shutter of the type—the focal-plane will give a duration of one three-hundredth. These exposures will be relatively equal as regards light-effect to one-sixtieth and one six-hundredth, owing to the fact that the efficiency is fifty per cent. in both cases.

Up to the present we have only compared the focal-plane shutter with an old type of lens shutter, which we have assumed to be working at its best. Such lens shutters have, however, now been replaced by others giving about ten times the speed and a higher efficiency, and it is quite apparent that such a lens shutter will beat the focal-plane that we have considered, which is quite a fair type of such shutters. Some focal-plane shutters have an efficiency of less than fifty per cent., owing to the width of the slit being less than that of the light-pencil. Such a result may be due to fixing the blind too far from the plate, or to using too narrow a slit, and in either case it is obvious that the focal-plane shutter must show to serious disadvantage against the best type of lens shutter.

The popular idea with regard to the high efficiency of the focal-plane shutter may perhaps be traced to the fact that it is really very efficient with relatively long exposures. Suppose, by altering the slit, we set the focal-plane shutter to give the same exposure as the lens blind shutter we have been considering—that is, one-thirtieth of a second. To do this we must increase the slit from one-tenth inch to one and nine-tenths of an inch. The efficiency is thus increased to ninety-five per cent., so that the duration of one-thirtieth of a second is equivalent to one thirty-second, about, while the lens shutter is still giving an equivalent or efficient exposure of only one-sixtieth. For equal speeds the advantage over the old blind shutter was thus very great, though modern lens shutters are now so very efficient at low speeds that the focal-plane does not show to such advantage. At very low speeds it has a disadvantage of its own, for the blind takes so long to cross the full width of the plate that it is difficult to hold the camera steady.

# THE CORRECT USE OF STATIONERY TO GAIN CHARACTER AND EXPRESS INDIVIDUALITY.

(A Paper in the "Association Annual.")

Consider for a moment! The photographer is engaged in a craft or profession that is eminently refined and dignified. His atelier is generally well appointed and frequently shows excellent taste. In fact, the photographic studio as an ensemble as like as not will give the patron or customer the outward impression that "here is the home of art." Even the receptionist has probably been chosen as much for her refinement and comparative elegance in taking care of prospective customers as for her ability to sell.

And yet the stationery and printed matter that leaves many first-class studios, and certainly the majority of the studios that cater to the great middle class, is often more in keeping with the corner grocery than with a place of refinement.

This is, indeed, very singular, when the photographer above all other lines of business should necessarily possess and use stationery with some semblance of character and originality, in keeping with the claim that is so often seen on that same stationery—Photographic Artist. This is the age of printer's ink and tasty, well-thought-out stationery gives the patron the impression that everything in the establishment is carried out in the right way, even to the minutest detail, and *it is just as important* as a pleasant smile and courtesy in handling the sitter or customer.

Neatness and taste in stationery is as much a factor in the make-up, character, and individuality of a business, as being well groomed, polite, and sincere with yourself and others is in the proprietor of the business. For bear in mind that when writing you are talking to the recipient, in cold type or hand writing, to *the best of your ability*, and you are frequently judged by that. The first impression to the reader at the letter's destination is the general ensemble of your stationery as it is removed from the envelope. Mainly the way the type or hand writing is spaced on the sheet, together with the quality and style of the paper and a refined letter-head, catches the first attention. Has it about it the air of "Read me, please; I am sure you will find it a pleasure"? The first impression counts for much, and is just as important as the first impression gained of yourself or receptionist.

Let us consider, then, a few letter-heads, with here and there a gentle criticism, and some suggestions applicable to what might be termed high-grade studios and to those which cater more particularly to the masses.

While there is no excuse for poor or overdone stationery at any time, it should be remembered that the photographer who caters to Mrs. High-Society in St. Louis or New York or elsewhere will naturally need a somewhat more exclusive letter-head and paper than the one who photographs the general public. To the first, the less the letter-head says, the better the impression (see Figs. 3, 5, 8, 10, and 11); to the latter, a suggestion as to the scope of the photographer's business is not out of the way, and even serves as an advertisement of the side lines of the studio (see Figs. 1, 2, 4, 6, and 7). Such suggestions as—Artistic Framing—Old Pictures Copied—Amateur Supplies—Commercial Work, etc., etc., are entirely in keeping.

Fig. 1 is an excellent example of a letter-head which fails to create a feeling of pleasure and which combines in itself most of the faults that are committed by photographers in their stationery. Note the type matter running helter-skelter over the top of the page, and so crudely arranged that the eye is led nowhere in particular. There is no symmetry of form in this arrangement, if arrangement it can be called. It is altogether too big and bold, giving the impression more of a poster than of a letter-head.

The three-quarter length illustration of a young girl on the right displays poor taste, and should be omitted. A line cut is *not* suggestive of photography. The script in the name and the scroll work are old-fashioned, years out of date, and give the immediate impression that the photographer using this letter-head is himself out of date, a decidedly negative form of advertising.

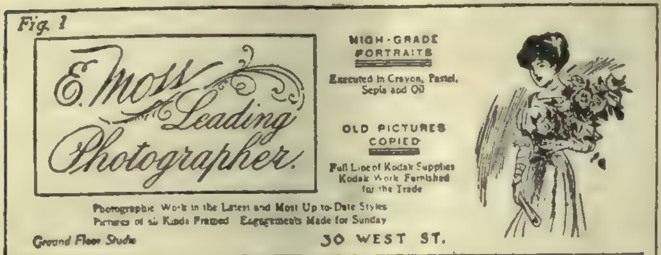


Fig. 1
E. Moss
A Leading
Photographer.
HIGH-GRADE
PORTRAITS
Executed in Crayon, Pastel, Sepia and Oil
OLD PICTURES
COPIED
Full Line of Kodak Supplies
Kodak Work Furnished for the Trade
Photographic Work in the Latest and Most Up-to-Date Styles
Pictures of all Kinds Framed Engagements Made for Sunday
Ground Floor Studio
30 WEST ST.

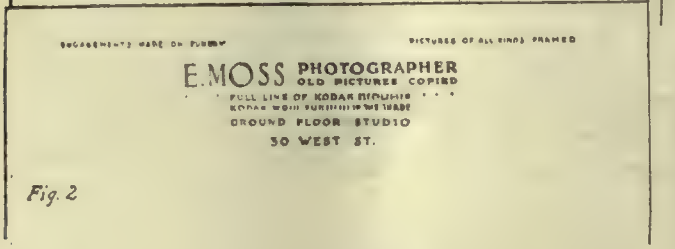


Fig. 2

In Fig. 2, the body of the display in letter-head No. 1, is revised into a smaller and neater design, with considerable white space from the top and two sides of the paper to the display. One cannot help but feel that a pleasing distribution of colour and form has now been gained, and it is far superior to Fig. 1. In other words, the display is now calculated to catch the eye at once at the top of the type matter leading down to the arrangement of reading matter without difficulty.

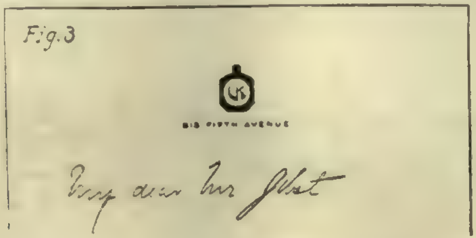


Fig. 3

Compare Fig. 1 with Fig. 3. In the latter, the design, one could say, is almost carried to extreme simplicity. There is no mention of the craft at all, yet it is very characteristic of the New York photographer whose mark it bears. She has incorporated her initials in an old Water-house diagram, making it truly symbolical of her art. This design is printed in one colour in a very rich dark green on white paper, 5¾ by 6¾ in size, double fold. This particular idea in stationery, however, is only adaptable to an artist who handles an exclusive clientèle like this Fifth Avenue photographer.

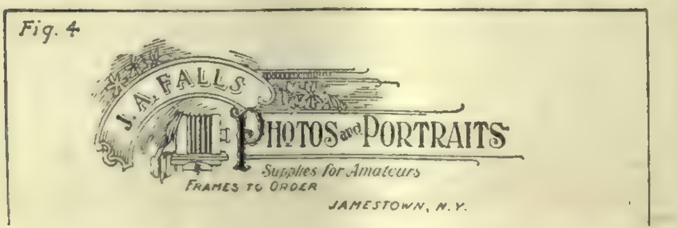


Fig. 4

Fig. 4 is a design which might be considered passé. While lithographed letter-heads with cloud backgrounds and embellishments are still somewhat in vogue, they are more in keeping with a manufacturing concern. Moreover, arched letters arranged like the name J. A. Falls are out of date. At present, straight lines in typography are in use. This design also has the same fault as Fig. 1, namely, it is too large for the paper.

Again, in comparison, note Fig. 5, which shows another style of tasty stationery of a high-class artist. It is in quite a different vein of refinement and character to Fig. 3. This letter-head is in two colours on white paper, the initials being in light green, the remainder in a deep, dull brown. The only slight criticism possible would be that the display is a trifle large for the size of paper it is on, which is 5¼ by 8½, single fold. The original in two colours, however, gives a far better effect than this diagram shown here. It is impossible to give the real effect of this design as well as some of the others on these pages.

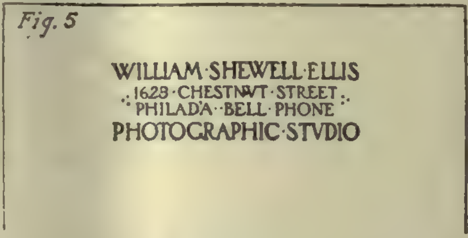


Fig. 5

Fig. 6 shows a letter-head of a well-known firm of good photographers who appeal to the masses. The names in Figs. 1, 4, 6, and 9 have been changed, but the letter-heads are otherwise identical with those being used. While the branches of work they undertake is well expressed and just about enough to put on a letter-head to be in keeping with a studio which caters to a general run of trade, the scroll, however, is entirely too ornate, and arrests the eye at the first glance, making the type matter, such as the firm's name, address, etc., entirely too subordinate, and one is inclined to associate this design with a fancy candy box label. How much better, too, the reading matter in the left lower corner, fenced in by a ruled line around it, would look if it were arranged across the top of the design in one or two lines. As it stands, it is structurally weak, causing the composition to be lop-sided.

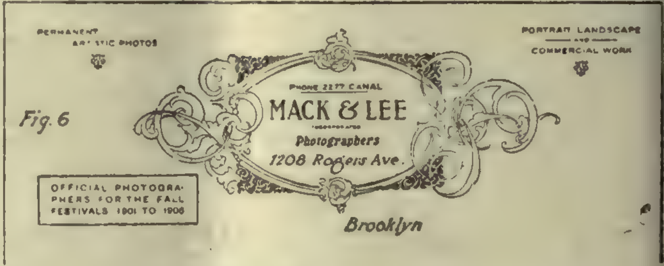


Fig. 6

Fig. 7 offers a much superior display of form than Fig. 6, 4, or 1, and is also the stationery of a photographer who caters to the masses. The display shown is possibly somewhat too simple, but yet entirely in good taste. The eye rests on the inverted pyramid form of lettering in the centre, reads through it without difficulty, and then glances to the right or left form or spot of colour on either side. There is no over-balance or lop-sided effect displayed, but, on the other hand, a very symmetrical design has been arranged. The natural course of the eye is from the top toward the bottom, instead of glancing in a zig-zag manner, winding its way across the top of the page like a river or brook, as in Figs. 1, 4, and so on.

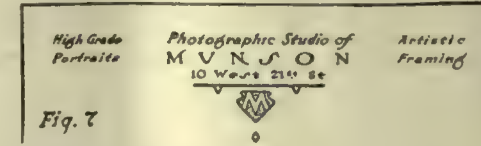


Fig. 7

The inverted pyramid display is also very well carried out in Fig. 8; the monogram at the top of the design is indeed a pleasing arrangement, and the display might be referred to as an easy reading one. The eye slides through it from the top, perusing without difficulty or confusion. It is in one colour on a single sheet 8½ by 11.

Ruled lines on stationery to guide the hand are often found. This is more especially true of the small town photographer, and reminds of the boyhood days when one had to write in the copybook for the teacher, with a scratching pen point and the tip of the holder all chewed off. Better let the hand run rampant on the sheet of stationery than to used printed ruled lines, which are decidedly antediluvian, and show lack of taste and refinement. A ruled-line sheet of this nature can be found in Fig. 9, which contains a letter-head very common among photographers in the provinces, namely, a large cut of a portrait extending way down the page, far beyond the type-form, causing an over-balance of effect. This picture might have been one-third the size. Better still, portraits and buildings on stationery, especially for art craftsmen, are in bad taste, and might just as well NOT be used for letter-head purposes. Just why the bracket is placed to the right of Muncie is hard to say. See Fig. 9. This possibly is a guide, showing the right place to write the month and date of the year. Should the writer desire to date his letter at that particular place, all well and good, but the bracket has no bearing on the recipient or reader, one way or the other, moreover it is in bad taste.

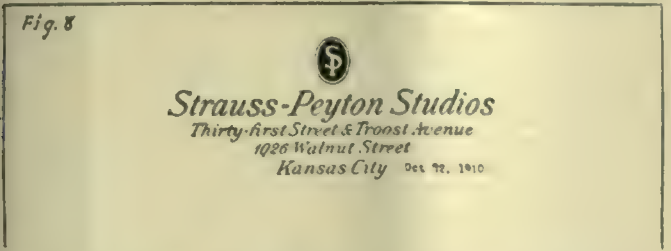


Fig. 8

Strauss-Peyton Studios
Thirty-first Street & Troost Avenue
1026 Walnut Street
Kansas City Oct 22, 1910

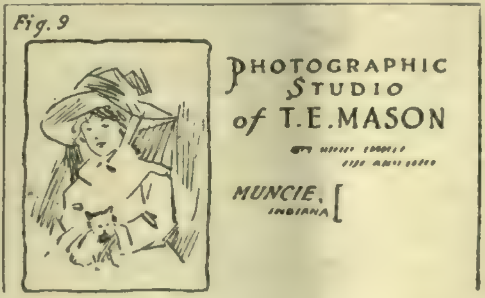


Fig. 9

PHOTOGRAPHIC
STUDIO
of T.E.MASON

MUNCIE,
INDIANA [

Fig. 10 is a design, which, in a way, shows as much character and individuality for a quality photographer as Figs. 5 and 3, and gives one an idea of the nature of the profession followed. The arrangement is very unique, being on a dull brown paper size 6¾ by 5¾, double fold, printed in a deep bronze green, with only the initial "J" in a dull oriental red. A very rich and artistic effect, indeed. The design is printed on the back sheet instead of the front, so that when reading the first page of the letter, the eye glances to the top of the page hinged to it without turning the page. In other words, the two front page letter is spread out before one, which is an English custom and a very good idea to use, especially for those following any kind of an artistic profession.

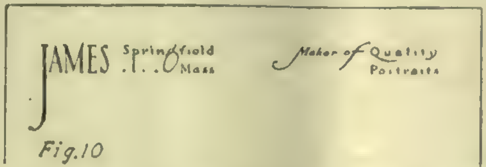

JAMES Springfield Mass
Maker of Quality Portraits

Fig. 10

Fig. 11 is another form of extreme simplicity, adapted to an exclusive studio. Such forms are always in good taste, and when combined with heavy bond paper and stamped or embossed or even plain printed, offer the impression that the sender is a man of discernment and refinement.

The photographer may naturally exclaim that ordering stationery is out of his line, largely because he does not get the experience, only buying a few hundred sheets of stationery every year or two, which does not give him enough training to cultivate any particular taste along these lines. This is undoubtedly true of the majority who have not enough to do with advertising literature to get the training or knowledge of up-to-date methods. For these, I would suggest a few rules and random ideas in regard to paper stocks, colour schemes and folds.

White paper is, of course, almost universally used, and necessarily carries with it dignity and refinement. Bond, laid linen, and numerous other stocks are all available, some with quite a character of their own, but beware of the ruled line, even if it be ever so faint. Should one prefer a design in a single colour, either a steel-stamped die, printed type or an engraving are always in good taste, and might be called standard, but a trifle commonplace. To take it away from the ordinary, however, it is advisable to have the initials in a different colour. A grey, or a quiet blue or green will help to give the letter-head individuality. If a single colour is used, print the entire display in grey, brown or DULL green. This takes it away from the usual and commonplace black and white. Tinted papers, i.e., buffs, greys, browns, are good, and sometimes one runs across an announcement paper or novelty stock which tends to give the tone or make-up to your stationery, offering a different effect. Tone your display in with the stock, by which is meant that the colour of the design should be the same as your tinted paper, only darker. For instance, if the paper is buff or dull brown, have the design printed in a deeper shade of the colour of your stock. However, there is no fixed rule. Opposite colours can be used to advantage, such as a dull green (olive, for instance) on yellow or buff stock, blue on grey, and so on. After all, it is the effect that counts, and good taste should always prevail.

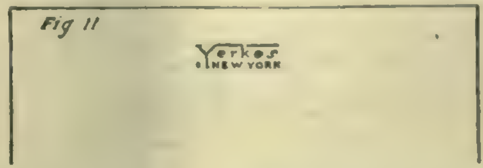


Fig 11

Yerkes
NEW YORK

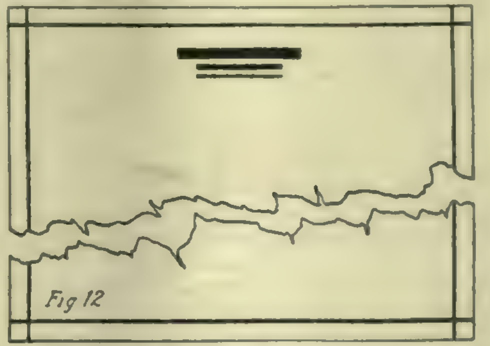


Fig 12

A two-point single or double line placed one-quarter or an inch in from the edge, running around the sheet, in a pale, dignified colour, often tends to hold the letter-head and written letter together, and is invariably a striking and unusual arrangement, Fig. 12. A double fold, sheet size 5 by 8, folded over once, will fit into a square envelope instead of the usual and very ordinary size, in which the paper has to be folded twice over. Many of the odd size papers, folded in such a way as to call for an odd, oblong-shaped envelope, will carry individuality with them, and they are good ideas for exclusive photographers to use.

For those who cater to the masses, a single sheet almost any size, not too large, however, is more preferable, but the double fold can be used as well.

As a final word, endeavour to CREATE an individuality, if you have not one by nature, even in your stationery. It is merely another form of advertising and making people talk of you. I knew the president of a well-known business firm who always had his stenographer type the words "His Signature" under his name. This, of course, would cause the recipient to look twice, and possibly mention the curious fact to Smith or Jones, which brings to my mind, by the way, a salesman friend of mine who called one day, mentioning the new line of work he had taken up. As he bade me adieu, I said if there was anything I could do for him it would be my pleasure. He turned to me and ejaculated, "Just drop a good word here and there to everybody when you can. The more people who have my name stamped on their mind, the better it advertises me," which was one of the ways he had of expressing his individuality. In the same way, make your stationery drop a good word here and there among as many people as you can, and let it stamp your name indelibly on their minds, and the neater, more refined, and more individual your letter-head, the easier this will be accomplished.

Eugene L. Fichtner.

## A TRAINING SCHOOL FOR CARBON PRINTERS

In these days of outcry against the conditions of the photographic assistant, it is also a fact—and one which many master photographers will immediately confirm—that when it comes to processes calling for experience and skill, there is a constant difficulty in securing satisfactory help. This is, perhaps, particularly noticeable in the case of printing processes, for the present tendency among photographic assistants is for many to enter the ranks as the result of knowledge which they have picked up on their own account, or in a small establishment, where they have not had the advantage of proper training. They know a little of everything, but nothing sufficiently well. Thus applicants far outnumber situations where general help in developing and printing is required, whereas, in such processes as carbon, platinum, or collodio-chloride, there is frequently a difficulty in obtaining really skilful and experienced printers.

It should, therefore, be a cause of satisfaction to many master photographers, and of encouragement to serious minded assistants, that a project has been set on foot by the Autotype Company to provide a course of training in carbon printing under conditions which have been carefully considered with a view to providing printers in this process capable of dealing with present-day requirements. As a result of correspondence and conversations between ourselves and Mr. Charles Sawyer, the director of the Autotype Company, we are enabled to publish a brief outline of this new project:—

The Autotype Company, in their works at Ealing, which are the oldest and best appointed establishment, not only for the manufacture of carbon tissues, but for their use, proposes to admit a small number of photographers (of the male sex) not younger than, say, 17 years of age, and selected from the sons of master photographers and from photographic assistants. Here they would be taught the practice of carbon printing in its various forms and applications on the lines of a syllabus, of which the following is a copy:—

"Sensitising and drying of Autotype carbon tissue: safe edging of the negatives: dodging of unsuitable negatives in order to obtain satisfactory results: actinometers, printing for single transfer by daylight and electric light, on rough or smooth surface papers: for double transfer: waxing Sawyer's flexible temporary support: waxing opal matt plates: treating glass for transparencies and lantern slides: mounting the pictures on single transfer—on temporary support—on glass for transparencies or lantern slides: developing the pictures. Modification possible by having hotter or cooler water—rendering the prints insoluble in alum—rinsing and mounting on final support, i.e., opal, ivory paper, glass, wood, leather, aluminium, etc., etc."

It will be noticed that the syllabus includes carbon printing by the single and double transfer methods, the use of electric light, the making of lantern and other transparencies, as well as the production of carbon prints on various supports. Also, the preparation of negatives before printing. In this work pupils will take their place in the regular printing department of the company, will receive their instruction from experts, and be under continuous supervision.

Candidates applying for this course of training will be required to supply a satisfactory personal reference, and those who are approved by the Autotype Company will be given a free course of training for any period from one to three months, the latter being the longest time which a pupil will be allowed to spend.

At the end of the period a certificate will be granted by the Autotype Company to those attaining satisfactory proficiency, and the company will use its position and influence among professional photographers to secure for such certificated pupils situations as carbon printers. We are informed that applications for carbon printers are constantly made to the Company, and it is hoped that the facilities which it is proposed to grant in the way of efficient training on the lines described above will be the means of supplying the demand for printers in this leading photographic process.

Such, in brief, are the details of a project which has our own good wishes for its success. We should mention that the decision of the Autotype Company as to the suitability or otherwise of a candidate is final. No premium is required to be paid by any candidate, nor is any salary paid by the Company; the scheme has been prepared on the basis that at the earlier stages of the course a candidate will cost the Company money in supervision and waste of material, whilst, on the other hand, during the last stage this outlay will perhaps be equalised by the work which the candidate is able to do. The opportunity of thus gaining a practice in carbon printing is one which we may hope many assistants will be able to embrace. The commencement of the training has been fixed for early in the new year. In the meantime, those who wish for further details than are given in the above notes, should communicate direct with the Autotype Company at 74, New Oxford Street, London, W.C.

## THE LATE WALTER WILLIAM EVERITT.

The art of miniature painting has lost one of its best modern representatives by the decease of Mr. Walter W. Everitt, who, we regret to announce, has passed away at a comparatively early age and in the zenith of his power as an artist. For many years interest in the miniatures at Burlington House has been enhanced by this artist's work, which always found a place of honour and prominence in the collection.

Photographers, whose attraction to the Water Colour Room is always strong, will remember in particular his fine portraits of the Lord Chief Justice, the Master of the Rolls, Lord Grenfell, the Bishop of London, Mark Hambourg. Mr. Walter Everitt was the son of Henry Everitt, who, first in "The London School of Photography," in Fenchurch Street, and then in Cheapside, in the firm of Turner and Everitt, made a great name in London when professional photography was in its infancy. The son's association with photographic circles remained close and intimate. He was a great friend of the late Mr. Ernest Elliott, and artist for many years to Messrs. Elliott and Fry. He married the eldest daughter of the late T. C. Turner, and leaves a widow and one son. Mr. Everitt was one of the few men born in a photographic set, who, while remaining in close sympathy with the best photographic aspirations, chose an independent artist's life. The tragedy of his life was the time and manner of his leaving it. For years he struggled on, to find the career of an artist difficult in spite of his extraordinary ability, and then, about ten years ago, success came with a rush. He never knew what it was to have a rejected picture at the Academy, and he became one of the first miniaturists in the country. A man of quiet, unassuming manners, enthusiastic to a degree over his art, and giving the whole of his leisure to experimenting in the studio, he was comparatively unknown socially, but among those he did associate with he became intensely admired and loved. The bolt from the blue fell about two or three years ago, when he suddenly developed a strange anæmia, which was diagnosed as "Hodgkins' disease," an absolutely fatal malady. The whole corpuscles of the blood die, and then it is a case of persistent wasting, with intense depression. Through all this he struggled on, painting as in a race with death itself. So with the last Academy, he just managed to struggle into his studio to paint his last and best, and then wait the end.

# Photo-Mechanical Notes.

### Half-tones from Rough Prints.

ROUGH-SURFACED originals, such as those printed on rough-surfaced bromide or platinotype paper, give a good deal of trouble to the operator in making the screen negative, because the roughness is always exaggerated if the negative is made in the usual way. And this, in spite of every possible precaution to avoid uneven lighting. The dot is irregular in shape, and if the negative is reduced at all, the spottiness becomes still more apparent. The prints may sometimes be improved by rubbing them over with encaustic paste before photographing; but this is not always permissible. The next best thing is to use an oval-shaped stop instead of the usual round or square one. This will give a much smoother result, though at the expense of some of the detail. If this fails, then the only thing to do is to make a careful continuous-tone negative of the original, and from this make a glossy bromide print, and use that as the original from which to make the half-tone.

### Further Newspaper Illustration Devices.

THE latest suggestion for production of newspaper illustrations is that the offset lithographic process should be used to produce the illustrations. This would need a double printing in the same way as does rotary photogravure. Although the offset process cannot hope to give the depth and brilliance of photogravure, it has certain advantages over it, chiefly the rapidity of preparation of the illustrative plate, and its durability. The German firm of Felix Böttcher have built such a newspaper offset press, and there is some account of its first performance in the October number of the "Zeitschrift für Reproductionstechnik."

### Half-tone and Line Electros.

MESSRS. GARRET AND ATKINSON, the Ealing photo-engravers, who have long specialised in electros for printers, have just circulated a set of charming designs for Christmas printing. These show the very great improvement that has lately taken place in the taste shown in the production of printers' ornaments.

# Exhibitions.

## NORTH MIDDLESEX PHOTOGRAPHIC SOCIETY.

THE judge of the exhibition of this society was Mr. S. E. Wall, one of its earliest members. His note upon the work was as follows: "It is extremely difficult for a society to raise the standard of excellence, but the North Middlesex Photographic Society has certainly maintained its high position as regards excellence." The first clause of this dictum needs no confirmation, but with regard to the latter, our own feeling was that the N.M.P.S. had done better in former years. It suffers this time from the absence of a few of its strongest men—Mr. Wall himself, for example, as well as Mr. Mummery and Mr. Stuart, to go no further. However good the rank and file of a society may be, it cannot afford to lose the work of its leading lights in an exhibition. The best things here do, however, reach a high standard. H. W. Fincham's picture of a bishop is a happy shot. He calls it "His Eminence" (4), and the charitable inference is that the bishop is a cardinal also, otherwise the title is a misnomer. The common-place girl in front, a rather fuzzy back-view, might better have been eliminated. A first-rate ozobrome is sent by A. G. Lawson, entitled "The Farrier" (6). It is remarkably rich and strong, and the action is well caught. The Thames and St. Paul's have furnished E. A. Morgan with a delightful subject in "Evening" (13). It has great feeling. H. W. Fincham is quite in his element with the fine majestic print representing the tomb of the Black Prince, to which he gives the title, "The Hero of Crecy" (16). In "A Sunlit Hall" (32) he has a fine study of sunlight amongst the columns of a crypt-like chamber, and a lively processional piece in "The Festival of St. Michael" (42). Douglas P. Fox also shows excellent work, his finest being a corner of what appears to be one of the porches of St. Paul's, amongst the columns and steps of which the "Sunshine After Rain" (19) darts its glorifying rays. The tones in this print are of great beauty. Another good picture of his shows a boat on a shore, under the title "When the Mist of Evening Gathers" (26). We think Louis Dick's "Cobbles" (30) has scarcely subject enough. It is, indeed, little more than a view of a pavement, and though light and shade plays a great part, it fails to give the thing pictorial charm. As a print the work is a good performance. His "Fortune Lane, Hampstead" (9), is a much finer composition, but the excellent "Portrait E. B." (154) is by far Mr. Dick's best thing this year. Here we have a finely treated head of an old gentleman, with strong character, and well placed on the paper. A. H. Lisett is very strong in portraiture, and J. L. Treadway has an effective panorama of the "Bull Ring, Lisbon" (164), mounted in the proper semicircular fashion. There is a scientific section and a show of good lantern slides, as well as a few Autochromes. The latter do not seem to develop towards anything more artistically satisfying wherever one sees them.

## HACKNEY PHOTOGRAPHIC SOCIETY.

The Mayor of Hackney opened this society's exhibition on Wednesday last at the Public Baths. It is, as usual, a show of high merit, and the programme of lectures and music on each of the four nights has proved attractive to the usual crowded gatherings. The excellent plan of hanging each member's work in a separate panel is again adopted. The first constitutes a liberal show by F. Raven Briggs, who errs on the side of over-contrast. Elliot Peel's best work is "A Sunny Corner" (20), a snow scene in the Alps, of excellent quality. Jas. Linley's pictures are also somewhat strong in contrast, though otherwise fine. In fact, Hackney is just now on the point of losing sight of the brightness and joyousness of nature. And this is the greater pity because all the work is so remarkably good in other respects. Even Wm. Rawlings is a little doleful, excepting perhaps in the vigorous and beautiful "Mountain and Flood" (39). His other works are fine enough to those who do not object to the low key and quiet tones. S. W. Shore's half-dozen portraits culminate in a splendid multiple gem of an elderly gentleman, "Portrait" (44), and the secretary, Walter Selfe, is at his very best in "Out of the Mist" (47), a tug on the river, giving movement, textures, atmosphere, and pictorial effect in full measure. E. T. Coombes shows some well-chosen Bavarian street scenes, and Geo. H. Capper a large variety of South of England town scenes, where the tones have fine quality in themselves. Both these gentlemen's work, however, would be even better for more general brilliancy and sparkle. Some unusually fine bromoils are exhibited by J. J. Beasley. In particular, "The Portals of St. John's" (82) stands out as one of the truly artistic things in the gallery. A. J. Linford, and others also, who have worked upon the Looe Harbour subjects, has secured the forceful effect that comes of foreground boats against the light distance of a sunny town, such as is seen in "Morning in the Harbour" (95). S. Woodhouse gets a similarly striking effect in his fine "Harbour of Looe" (105).

In the class reserved for members who have previously received not more than five awards there is some distinguished work. E. G. Price has an effective composition in "Leaving the Pastures" (129), where sheep are driven through a great archway, with strong sunshine; and A. Akerman's very unconventional mother and child in "A Ray of Sunshine" (139), deserves notice. Messrs. Gibard, Gilburt, Williams, Caudle, Linford, Hunt, Grice, Raynor, and Dr. Smith make up this section between them. E. J. Hunt has a good theme in his ships, called "Misty Morning" (161).

Another class is for pictures taken at the society's outings, and here one sees several promising ideas that could bear development. The scientific and technical class is not a large one, but the slides are numerous, and the colour transparencies, which is a class open to all, is unusually strong. Autochromes are exclusively patronised, and the selection includes examples by all the best-known workers in this branch. The local class admits non-members resident within six miles. Its standard is a high one, befitting the reputation of the Hackney Society. At the time of going to press we are unable to give a list of awards, the judging for which is in the hands of Mr. Furley Lewis.

## FORTHCOMING EXHIBITIONS.

November 1 to 4.—Hackney Photographic Society. Sec., W. Selfe, 24, Pembury Road, Clapton, London, N.E.

November 6 to 11.—Southampton Camera Club. Sec., C. M. Cooper, 203, Shirley Road, Southampton.

November 7 to 11.—Norwich Photographic Society. Sec., J. T. Tanner, The Lodge, Bowthorpe Road, Norwich.

November 15 to 18.—Cambridge and District Photographic Club. Sec., T. J. Sowdon, Sunny Side, Guest Road, Cambridge.

November 15 to 22.—Portsmouth Camera Club. Entries close November 7. Sec., J. C. Thompson, 23, Elm Grove, Southsea.

November 27 to 30.—City of London and Cripplegate Photographic Society. Sec., F. W. Gardner, 135, Vaughan Road, Harrow.

1912.

March 12 to 16.—Sheffield Photographic Society. Sec., James W Wright, 30, Oakhill Road, Sheffield.

May 3 to 11.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

* * *

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following application for patents have been received between October 16 and 21 :—

**Flash-Light.**—No. 23,016. Photographic flash lighting. Herbert Ernest Coston and Dover Street Studios, Ltd.

**Lantern-slides.**—No. 23,077. Slides for magic lantern or the like. John James Fleming and Clarence Mahood.

**Photographic Paint.**—No. 23,125. Paint for use in cinematograph and photographic screens and the like. Thomas John Main Crowther and Alfred William Walker.

**Printing.**—No. 22,931. Printing processes. George William Mascord.

**Cinematographs.**—No. 23,051. Cinematograph apparatus. Charles Joshua Lane and Thomas Macready Down.

**Cinematographs.**—No. 22,985. Cinematograph cameras. Ernest Francis Moy and Percy Henry Bastie.

**Cinematography.**—No. 22,841. Cinematograph and magic-lantern pictures. Richard John Wilcox Down.

**Cinematographs.**—No. 22,728. Means for operating the shutters of cinematograph enclosures. Charles Henry Jones.

**Colour Cinematography.**—No. 23,221. Coloured cinematograph films. Alfred James Waggett.

**Cinematographs.**—No. 23,079. Cinematographs and the like. Frederick Mathys.

**Cinematographs.**—No. 23,195. Cinematographic apparatus. Charles François Dessaud.

**Colour Cinematography.**—No. 22,842. Taking and projecting animated pictures in natural colours. William Frederick John Bannister and James Clifford Crawley.

**Stereo - Cinematograph.** — No. 22,910. Stereo-cinematograph. Emanuel Cervenka.

**X-Ray Illusion.**—No. 23,185. Imitation X-ray illusion. Arthur Coke.

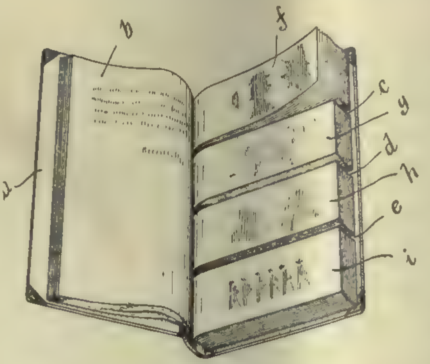
## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

**Cinematograph Picture Book.**—No. 10,265, 1911 (March 17, 1911). The specific claim is for a book with leaves divided into blocks of strips, the strips in the several blocks being joined together at the back of the book and bearing series of pictures, so that cinematograph pictures are obtained by rapidly turning the strips in the several blocks.

In the drawing, *a* represents the book-cover, which is not divided, and is of an ordinary rigid type. In this cover there is bound, in the usual manner, a series of pages *b* not divided into strips, these pages being used for text, with or without illustrations. The subsequent pages, also bound in the cover, are divided by gaps *c*, *d*, *e* into four blocks of strips *f*, *g*, *h*, *i*. Each of these blocks of strips bears a series of pictures, as already indicated, so that by bending back the whole block, and then releasing the strips in rapid succession, a cinematographic picture is exhibited.



The construction may be modified in regard to the manner of dividing the leaves into strips. There may, for example, be a vertical division or divisions, leaving a block or blocks of strips side by side with a bound margin for text, adjacent to the back of the book. The divisions need not be made uniformly throughout the book; there may be blocks of different thicknesses and of different widths. The cover may also be divided for example, if the book is a magazine or other journalistic publication. The stiff cover may also be dispensed with. The pictures may be on one side or both sides of the strips. Rudolf Schulze, 35, Arndtstrasse, Leipsic, Germany.

**Pigmented Emulsion.**—No. 22,426, 1910 (Sept. 27, 1910).—The invention relates to photographic sensitive surfaces, and consists essentially in the preparation of a sensitive emulsion (containing silver) capable of application as a paste pigmented with kaolin or preparation of kaolin, and in an improved device for use in the production of the print or positive. Substances such as sulphate of baryta, kiesulguhr, pumice have been proposed for use in emulsions with similar object, but kaolin has been found to yield a desirable body not obtainable with other pigmenting substances.

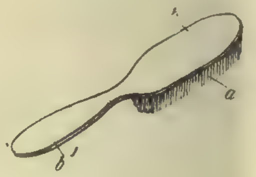


Fig. 1.

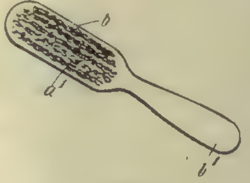


Fig. 2.

The pigmented photographic paste is capable of application either generally or locally to any surface, whether rigid or flexible, by means of a brush. The paste may be applied to paper, parchment, the human skin, leather, asbestos, wood, textile, etc. When dry and after exposure, the subsequent operations may be performed by baths in the way usual with photographers, or these after processes may be carried out by the use of the dabbers, whereby it is made practicable and easy to photograph on any part of the human body or on any animal or on a vegetable surface during growth, or on the margin of a bound book, or on a fixed article, a door or other panel, for example.

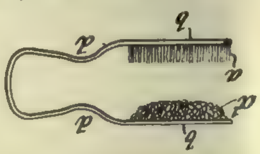


Fig. 3.

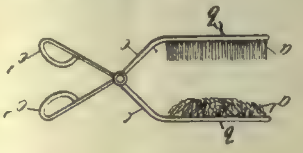


Fig 4.

The sensitive paste having been applied on one side, or on both sides, as may be required in the case of paper or the like, and time having been allowed for the coating to dry, and, if necessary, hardened, the negative is placed or held in position, when the exposure is made, a candle or oil lamp being convenient for the purpose if the paste is one suited for development, as distinguished from printing out. For printing out, an intense light as daylight or the arc electric light may be required.

The fluid to be used (whether developer, water, or fixing solution, or toning, preparations) is taken up by an absorbent wad or dabber which may be composed of hair, sponge, absorbent cotton, fibre, or the like, and the saturated wad is brought into contact with the sensitised and exposed surface. Drawings of absorbent wads or dabbers are shown. Figure 1 is a view of a convenient pad or wad, of which the absorbent mass *a* is assumed to be brush-like and composed of soft hairs; as shown in Fig. 2 the mass is composed of felted or interlaced fibres $a^1$. In each case the mass is mounted in a backing *b*, which is formed into a handle $b^1$. In the case of paper, textile or other thin porous base, two wads may be used; one on each side. As shown in Fig. 3 the two wads may be mounted on hinged levers or spring holders *c c*, and for use simultaneously on both sides of the paper. In Fig. 4 the pads are shown as carried by spring arms *d d*.

The preparation of the sensitised pigmented paste may be carried out in the following manner as an example :—

| | |
|---|---|
| A.—Salicylic acid | 2½ grs. |
| Bromide of potassium | 90 grs. |
| Water | 2½ ozs. fluid. |
| Gelatine | 30 grs. |
| Starch | 90 grs. |

Melt, with constant stirring, in a water bath, so as to soften the starch, and after cooling add, with constant stirring, the following preparation :—

| | |
|---|---|
| B.—Silver nitrate | 95 grs. |
| Water | 1½ ozs. fluid. |

The above is suitable for development.

Kaolin, or preparation of kaolin, is added to the paste as a thickener or neutral pigment; this addition being made to the finished paste or to preparation A. As an example of pigmenting, from 20 to 100 grains of kaolin may be added to the mixture A or to the resulting completed emulsion.

A paste adapted for "printing out" may be prepared as follows :—

| | |
|---|---|
| C.—Salicylic acid | 2½ grs. |
| Potassium bitartrate | 20 grs. |
| Sodium chloride | 10 grs. |
| Citric acid | 50 grs. |
| Water | 2½ ozs. fluid. |
| Gelatine | 30 grs. |
| Starch | 90 grs. |

Melt, with constant stirring, in a water bath, so as to soften the starch, and allow to cool; then add preparation B, with constant stirring. From 20 to 100 grains of kaolin or preparation of kaolin, are added to preparation C or to the finished emulsion.

Both boiled starch and gelatine being well known in connection with the preparation of emulsions for photographic purposes, no general claim is made in respect thereof. Similarly, no general claim is advanced in respect of agaragar as a substitute for gelatine.

For convenience, preparation B may generally be stored or preserved in a small bottle or a sealed glass tube, and A or C in a bottle; the quantities being proportioned to each other in the ratio given above.

By breaking off the sealed ends of the tube and allowing preparation B to flow slowly into A or C, with constant stirring, the sensitive paste is completed and made ready for use.

In order to ensure the good condition of the preparation when exported or kept for long periods under specially trying circumstances, the water or moisture is removed from the emulsoid paste, leaving the solids as film or sheet or ribbon, which are placed or inserted in an appropriate bottle or vessel. When the preparation is required for use, the bottle is filled (or partly filled) with water and submitted to heat so as to cause the solid material to dissolve. The water is removed from the emulsoid paste in any well-known manner, as for example, by spreading on a glass plate and drying, the drying being facilitated by soaking in alcohol. The method of drying may be that known as Kennett's, or the equally well-known alcohol method may be employed.—Otto Fulton, 5, Rupert Street, Leicester Square, London, W.

PORTABLE DARK-ROOM.—No. 27,995, 1910 (December 1, 1910). The invention consists of a collapsible box in which to develop plates, etc. The box is provided with sleeve holes and safe-light window. Wilhelm Macke, Bahnhofstrasse, Marienfelde, Berlin.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901 :—

CINEMATOGRAPH PHONOGRAPH.—No. 22,458. Apparatus for establishing synchronism between cinematographic projection apparatus and talking machines. Ropero.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

## Colours in Lantern-slides.

In the course of an article on this subject in "Photography and Focus," for October 31, Mr. W. S. Crocket gives the following useful hints :—"For contact printing I use the usual lantern-slide printing-frame as sold by all dealers, and for my illuminant that common article of every-day use—a wax vesta. The reason for my using this form of illuminant is that I find it is of less varying qualities than any other common form. My developer is made up as follows :—

Stock Solutions.

| | |
|---|---|
| A.—Pyrogallic acid | 60 grs. |
| Sodium sulphite | ½ oz. |
| Water | 10 ozs. |
| B.—Ammonium carbonate | 100 grs. |
| Potassium hydrate | 90 grs. |
| Ammonium bromide | 70 grs. |
| Water | 10 ozs. |

Now, supposing I am working with a negative such as I have mentioned, and want to produce a slide of a nice warm black colour, I give the plate an exposure of about 20 seconds, burning the wax vesta about five inches from the printing-frame, and being careful to keep the light moving up and down to ensure even illumination. Then I take two drams of A stock solution and 2 drams of B solution, and to the mixture of these I add half an ounce of water. The image begins to show in about one minute, development being complete in about five minutes.

"My next slide I may want to make of a warmer colour, just away from black and bordering on sepia. I give the plate an exposure of 30 seconds, and use the same equal quantities of developer, but add an ounce of water. By diluting the developer with water in this method, I get colours running through the various sepia tones right up to red chalk. The rule is, the longer the exposure and the more dilute the developer, the more red the image."

## Stand Development for Lantern-slides.

For slides of a sepia or cool brown tone (writes Mr. H. Bernard Ward in the "Amateur Photographer" for October 30), developed by the "stand" method, I have obtained very satisfactory results with the following two-solution formula :—

| | |
|---|---|
| A.—Pyro | 20 grs. |
| Potassium metabisulphite | 60 grs. |
| Potassium bromide | 20 grs. |
| Water to | 30 ozs. |
| B.—Ammonia (.880) | 1 dr. |
| Water to | 30 ozs. |

For normal development each of the above stock solutions, A and B, are made up with only 10 ozs. of water; diluted as above, the 60 ozs. of combined solution is sufficient to fill my tank and develop thirty slides. As regards exposure, using Paget slow lantern plate, three inches of magnesium ribbon burnt at a distance of four feet from the printing-frames will be found correct for average negatives, and the lantern-slides will have acquired sufficient density to leave a margin for final reduction after ten or twelve minutes in the tank. Care should be taken, however, not to overdo the reduction, or fine detail will be lost.

# New Books.

"Tales of the Untamed." By Douglas English. London: Eveleigh Nash. 5s. net.

Mr. English set himself a difficult task when he undertook to adapt Monsieur Louis Pergaud's "De Goupil à Margot, Histoires de Bêtes" to an English setting. But, still, he has succeeded in producing a series of six stories, written in a most imaginative and fantastic style. He brings to light the dramatic side of the animal world in his almost lurid descriptions of the death agonies undergone by various untamed animals in their combats with their fellow creatures or with their arch-enemy, mankind. On the whole, the tales are told in a fairly straightforward manner; but there are passages where the narrator lapses into such fantastical language that the reader is at a loss to grasp his meaning.

Mr. English has illustrated his book with a set of charming photographs, beautifully reproduced, and each of a kind which is admirably in keeping with the subject-matter and style of the text.

"The Adventures of Jack Rabbit." By Richard Kearton, F.Z.S London: Cassell. 6s. net.

Yet another example of Mr. Kearton's intimate knowledge of animal life is given us in the form of a clever and amusing story under the above title. Mr. Jack Rabbit, head of the rabbit household, relates his own life history in clear and simple language to his children. He tells how, in his wanderings from home, he is captured by two schoolboys and imprisoned in a wooden hutch. Here he is petted, fed, and made much of; but, in spite of all this, he prefers the free life of the field, and after many vain attempts he at length succeeds in regaining his liberty. All the adventures which subsequently befall him, and his many narrow escapes from death, he most graphically describes.

Jack Rabbit is the most observant of bunnies. He makes a point of studying the habits and customs of numbers of his field companions. He relates the most extraordinary stories of birds and beasts, which leave us amazed at the cleverness and human intuition which these animals display. We have the author's assurance that all the anecdotes are quite true.

The book is profusely illustrated by a series of extremely clever photographs and some good reproductions of Autochromes. None can fail to appreciate the infinite skill and patience which must have been needed to produce such excellent results. Although originally intended for children, "The Adventures of Jack Rabbit" can quite well be read by their elders with great interest and amusement. Mr. Kearton's latest production will make a valuable addition to the Nature-story books which have come so much into favour of late.

"The Romance of the Seasons." By F. Martin Duncan, F.R.M.S. London: Chapman and Hall, Ltd. 6s. net.

All lovers of Nature will welcome with pleasure Mr. Martin Duncan's latest work, "The Romance of the Seasons." Not only does the author dwell at length on the beauty of spring and summer flowers, but graphically describes the various functions of the latter, and those of many plants and trees. Mr. Duncan displays an intimate knowledge of the doings and habits of birds and insects, and devotes a clever and entertaining chapter to "Nests and Nest-building." Many amusing anecdotes are related, and a good word is spoken for "Nature's maligned children," the toad, the owl, the mole, and the bat. Most wonderful facts in nature are described in flowing and easy language, and the reader is not perplexed by strings of long and difficult names. The book is liberally illustrated by fifty-one useful photographs, and the text is full of interesting knowledge, the result of long observation, and conveyed in the author's most pleasing style.

* * *

Mr. D. R. Everest, of Southsea, who represented Messrs. Houghtons, Ltd., for many years, has joined the firm of Messrs. Bonds, Ltd., of New Bond Street, London, W., and is representing them (in the new Kinora motion photography) on the South and West of England ground.

# New Materials, &c.

**Christmas Card Mounts. Sold by Jonathan Fallowfield, 146, Charing Cross Road, London, W.C.**

Among the many varieties of Christmas card mounts, which the firm of Fallowfield describe and illustrate in their newly-issued 12-page list, there are two in particular which should specially appeal to the professional photographer by reason of their exceedingly tasteful design and suitability for practically every style of print now in vogue. These are the "Hepplewhite," a paste-on mount, and the "Argent," which is of the slip-in pattern. The "Hepplewhite" is a neat folder, issued both in ash-brown and pearl-grey, with an inner fly-leaf of figured transparent paper. The outside motto and inside and outside borders are in a neat design of somewhat darker

The Hepplewhite.

The Argent.

tone. The mount provides a space for the print of 2⅞ by 4⅜, suitable for both large and small C.D.V. sizes. The price is 1s. 8d. per dozen, 18s. per gross.

The "Argent" mount, which is issued only in the postcard size, may be obtained either with rectangular or oval opening. It also is supplied in two colours, a light grey and a medium brown, in each case with neat embossed motto on the front and border, round the opening for the photograph, of darker tint. The price is 1s. 9d. per dozen, 18s. per gross. Both these new designs are quite up to the modern high-class standard which photographers demand in their mounts, and both can be offered to a high-class circle of customers.

In a number of other styles and sizes, including a useful series of calendar mounts, Messrs. Fallowfield display a similar sense of modern requirements, but their selection also includes mounts with coloured decoration, suitable for midget and smaller prints, such as they have for many years past specialised in supplying.

Photographic Christmas Cards.—Messrs. Walter Pearce and Co., St. George's Press, Brentford, W., approach the professional photographer anxious to do a Christmas card trade from a somewhat different standpoint from that of the mount maker. They offer a large series of mounts of their own manufacture for the reception of photographs, and, at the same time, undertake the printing of a few words of greeting on the lines of the all-popular private Christmas card. A bulky specimen album of the cards and greetings shows that in making this offer they are paying full regard to the description of prints which are now general; the mounts include styles and tints fitting for the reception of both black-toned bromides and gaslights and warm-coloured platinums, carbons, or C.C.'s. The full range includes mounts to take both rectangular, oval, and circle prints, and we can imagine no more easy way for the photographer to deal with the Christmas-mount business than to display to his customers one of Messrs. Pearce's albums, the mounts in which, by their pleasing tones and textures, should make it easy to secure orders.

A Photographer's Christmas Booklet.—Under the name of "Friendship's Best Greeting," Messrs. Walter Pearce and Co., of Brentford, have just issued a booklet, containing within a pair of covers of art green paper, a well-printed leaflet on art paper, bringing before a photographer's customers the convenience of the photographic Christmas card, and illustrating several attractive styles of it. The whole production is very tastefully done, in a way with which a local printer could not readily compete, and is issued by Messrs. Pearce only to one photographer in a district. The booklet, which is supplied at a very moderate price, is one which photographers could use at very little trouble to themselves in bringing their studio before customers at a time of year when many people are easily induced to order photographs.

Rajar Christmas Sensitised Postcards.—Photographers issuing portrait postcards with a Christmas design on half of the fronts should write to Messrs. Rajar, Ltd., Mobberley, Cheshire, for a sheet of the eight designs in which the Rajar cards are issued. All varieties of card, P.O.P., bromide, etc., are supplied with these Christmas designs without addition to the ordinary prices.

◆

The well-known optical firm of C. P. Goerz has been awarded at the Turin Exhibition four Grands Prix and one Gold Medal.

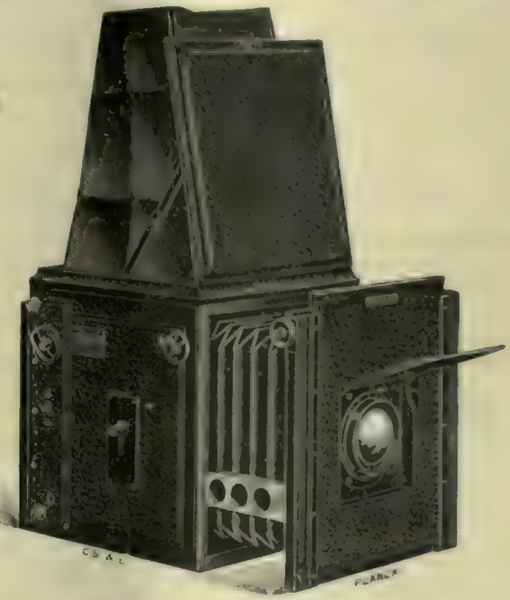
The Ealing Photographic Society is forming "classes" for the instruction of its members in the various branches of photography. The society's dark-room is peculiarly suitable for demonstration purposes, as well as being centrally placed in Ealing. It is in the Town Hall Buildings. Ladies or gentlemen interested should write for further particulars to the hon. sec., Mr. T. W. Bartlett, 6, Craven Avenue, Ealing, W.

The late Mr. W. H. Tuck.—We regret to announce the death, at his residence, Western Road, Cheltenham, of Mr. William Henry Tuck, for many years connected with the photographic trade. Mr. Tuck was representative to Messrs. Marion and Co., London and Paris, for nineteen years prior to inaugurating the firm of Norman May and Co. in conjunction with the late Mr. Norman May. He also established various other businesses throughout the country.

# New Apparatus, &c.

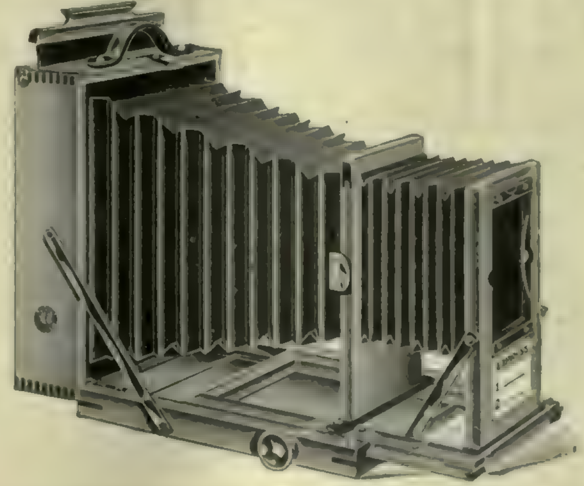
### The "Planex" Reflex Camera, No. 2. Sold by the City Sale and Exchange, 90-94, Fleet Street, London, E.C.

In this new model of reflex camera the price is lower than that of the "Planex" new model by a substantial amount, yet the camera is well fitted with the movements which are customary in a reflector instrument. The mirror is raised on pushing down the shutter release, and automatically falls after the exposure. A catch, holding it in the up position, is however provided for use when giving time exposures. The focal-plane shutter has outside adjustment of speed, the camera is fitted with rack-and-pinion rising front, spring lens-shade, rotating back, and hood which is quickly erected. The price, with three double slides, but without lens, is £7 7s. in quarter-plate, £9 9s. in 5 by 4 and postcard, and £10 10s. in half-plate. The postcard model is fitted with reversing back.



### Express Adjustable Daylight Enlargers. Sold by W. Butcher & Sons, Ltd., Camera House, Farringdon Avenue, London, E.C.

In this series of folding daylight enlarging cameras Messrs. Butcher have provided the amateur worker with a strongly made apparatus which, as sent out, may be used as a fixed-focus instrument for enlargement upon either of two definite scales, or, if preferred, can be set by the worker himself for intermediate degrees of enlargement. The camera, as shown in the drawing, consists of



a back body holding the dark-slide. To this body is hinged the baseboard, which, when the enlarger is closed, completely shuts in the bellows and two frames, the one for the lens and the other for the negative. These latter are held firmly in position on the baseboard, and are adjusted according to the indications of bold register numbers. The apparatus is strongly made in bird's-eye birch, and is fitted with extremely solid brass struts, so that when erected the whole forms a substantial instrument. It is made in five sizes. The smallest, for enlarging quarter-plates to half or whole-plate, price £1 1s. For enlarging quarters to whole-plate or 12 x 10, the price is £1 10s. For postcard negatives to these two latter sizes the price is also £1 10s. For half-plates to 12 x 10 or 15 x 12, £2 2s. A size is also made for 9 x 12 cm. negatives, enlargements from which may be obtained in 18 x 24 cm. or 24 x 30 cm., price £1 15s. These prices include single achromatic lens and one dark-slide.

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## CATALOGUES AND TRADE NOTICES.

Paragon Plates.—Mr. W. Ziegler, the agent of these plates, has just issued a thirty-six-page book of extracts from letters from professional users testifying to their qualities. The booklet may be had on application to 14, Oliver Grove, South Norwood, London, S.E.

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# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, November 3.

Barrhead and District Amateur Art Club. Annual Social.
Cowlairs Co-operative Camera Club. Autotype Carbon Demonstration.
North Middlesex Photographic Society. Night Outing, Hyde Park.

### Monday, November 6.

Southport Photographic Society. "By Road and Water in Norway." C. L. Faunthorpe.
Bath Photographic Society. "Developing." W. J. Hallett.
Catford and Forest Hill Photographic Society. "Flashlight Photography." E. E. Hill.
South London Photographic Society. Lantern Slide Competition. "Unconventional Portraiture." E. O. Hoppé.
Southampton Camera Club. "Some Dutch Places and People." Arthur Marshall.
Bradford Photographic Society. "A Toned Bromide, and Carbon Enlargement from a Quarter-Plate Negative in One Hour's Time." W. H. Womersley.
Bowes Park and District Photographic Society. "An Evening with Pictures." P. Bale Rider.
Dewsbury Photographic Society. "With Naturalists under Canvas in West Ireland." Chris. A. Cheetham.
City of London and Cripplegate Photographic Society. "Enlarging." F. W. Gardner.
Leeds Camera Club. "From Land's End to Shrewsbury." Godfrey Bingley.
Oldham Equitable Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

### Tuesday, November 7.

Royal Photographic Society of Great Britain. "The Differences in Reticulation of Gelatine Obtained by the Use of Various Chromates and Bichromates." W. T. Wilkinson
Hackney Photographic Society. A Review of the Exhibition.
Sheffield Photographic Society. "Lantern Slide Making." T. G. Hibbert.
Southampton Camera Club. "A Maker of Empire." F. G. Ryder.
Leeds Photographic Society. "Rome—Ancient and Modern, with a Peep at the Italian Lakes." Rev. W. H. Booth.
Doncaster Camera Club. "The Gum Bichromate Process." A. H. Hill.
Bradford Grammar School Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.
Handsworth Photographic Society. Council Meeting.

### Wednesday, November 8.

Borough Polytechnic Photographic Society. "Through Belgium to Switzerland." Harold G. Bailey.
Croydon Camera Club. Visit to the Works of the Platinotype Company at Penge.
Coventry Photographic Club. "Toning, Finishing, and Mounting Bromide Prints." Members.
Partick Camera Club. "My Methods." Wm. Duff.
Edinburgh Photographic Society. "Practical Slide Making." C. D. Paton.
Halifax Camera Club. "What is Pictorialism." J. R. Wigfull.
West Surrey Photographic Society. "Amateur Photographer ?" Prize Slides.
Hucknall and District Photographic Society. Autotype Carbon Demonstration.
Sale Photographic Society. "Carbon and Ozobrome Demonstration."
North Middlesex Photographic Society. "The Garden of the Mediterranean." C. H. E. West.
Accrington Camera Club. "Retouching." W. Bell, for Gevaert, Limited.

### Thursday, November 9.

Rodley, Farsley, Calverley, and Bramley Photographic Society. "Album Making." W. H. Womersley.
Southampton Camera Club. "Old Southampton." G. T. Vivian.
Liverpool Amateur Photographic Association. "Pictorial Work in Great Towns." A. H. Blake.
Photographic Society of Ireland. "'X' Ray Photography." Dr. W. S. Haughton.
Oldham Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.
Handsworth Photographic Society. "Photography" Prize Slides.
London and Provincial Photographic Association. "Art and the Camera." P. Bale Rider.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, October 31, Mr. W. B. Ferguson, K.C., in the chair.

Mr. F. G. Newmarch delivered an interesting lecture entitled "A Glimpse of Spain," dealing chiefly with those cities which were most characteristic of the country and people, the whole being illustrated with a large number of excellent lantern slides. A vote of thanks to the lecturer terminated the proceedings.

Croydon Camera Club.—It must be six or seven years ago when Mr. Edwin W. Taylor first initiated members into the mysteries of "Faking," considered as a fine art. Since then his lecture has been included in the Affiliation set of "roundabouts," amply evidenced by the cracked and damaged condition of the slides illustrating it.

Last week this accomplished photographic prestidigitateur and quick-change artist was accorded a most cordial reception, and deservedly so, since years have tempered enthusiasm with discretion, and nothing has been lost thereby. No longer can we imagine Mr. Taylor setting forth with camera and plates bent on securing landscapes containing the maximum of objectionable features, for the mere pleasure of subsequently converting them into things of beauty and a joy for ever; but, on the other hand, the occasions are not infrequent when an otherwise excellent subject is spoilt by the inclusion of some undesirable object, and even the most rigid purist might here pardon an obliteration followed by a harmonious substitution. Unless told, he certainly would not be aware of the alteration, if Mr. Taylor had effected it. It is, however, to be hoped that none of the lecturer's productions will ever find themselves in the archives of the many Survey and Record societies now in existence. If so, some very nice disputes are bound to arise in days to come, for Mr. Taylor has a decided penchant for "opening out landscapes" by the demolition of houses and hills, and changing the configuration of the country generally. Antiquarians in dispute have not a reputation for the best of tempers, and very serious results might arise out of an argument based on one of Mr. Taylor's photographs.

Quite an appreciated discussion followed the lecture, and, considering the subject, in its way it would have been a record had not Mr. Keane, just at the last, and without the faintest provocation, brought up the interminable ethics of the "right to fake," "If," said Mr. Keane, with vehement self-imposed indignation, "photography is to be considered an art, everything conducing to that end," etc., etc., etc. Encouraging cries from friends such as, "Do shut up!" and "Good night!" brought Mr. Keane and a most interesting evening to a close.

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# Commercial & Legal Intelligence.

At the Bristol Bankruptcy Court, on October 27, Mrs. E. B. Hamilton, photographer, carrying on business under the name of Allan Hamilton and Sons, 7, Paul Street, Kingsdown, was publicly examined. Debtor was a widow, and her late husband had been in the business since 1880, and had died intestate last year. For some years prior to her husband's death, trade had been falling off, and soon after his decease it became clear that the business was insolvent. The profits were only about £50 a year, while the household expenses amounted to £90. The examination was adjourned.

Legal Notices.—A receiving order has been made in the case of Fritz Robert Alfred Rosener (trading as the West London Stores and Studios), photographer, etc., The Square, Seaton, Devonshire. A receiving order has been made in the case of George Lazar, photographic artist, 81, Marlborough Road, Roath, Cardiff, lately residing at 29, Tudor Road, and carrying on business at 33, Queen Street, Cardiff.

### NEW COMPANY REGISTERED.

Sticky Backs Photo. Co., Ltd.—This company was registered with a capital of £1,000 in £1 shares. Objects, to take over the business of photographers carried on by E. S. Perry and D. R. Blair, at 4a, Acre Lane, Brixton. First directors, D. R. Blair, E. S. Perry, and L. F. Pugh. Registered office, 4a, Acre Lane, Brixton, S.W. Private company.

## News and Notes.

R.P.S.—On November 21, after the paper entitled "A New Density Meter," by Mr. W. B. Ferguson, has been read, Mr. F. F. Renwick will read a paper on "Wedge Screens and Some of Their Uses."

**The late Mr. E. H. Hobbs.**—It is with much regret that we record the recent death of Mr. E. H. Hobbs, in Newcastle-on-Tyne, at the age of 47. For nearly twenty years Mr. Hobbs has been connected with the photographic trade. For some time he was manager of the photographic department of the Army and Navy Auxiliary Co-operative Society, and he afterwards became manager of the European Blair Film Company in the early days of film photography. From that time until the day of his death, Mr. Hobbs was connected in one capacity or another with Kodak, Limited. He joined the Kodak company some twelve years ago, to become manager of their new branch shop in Brompton Road, London, and in a few years he was promoted to the management of the Regent Street branch. In 1907 he was chosen to accompany Mr. H. M. Smith on a tour to India in the interests of the Kodak Company, and on his return became manager of the Newcastle branch. Both in London and the provinces Mr. Hobbs made many friends, who learned with sorrow the news of his sudden illness and death from pneumonia, following on influenza. The funeral took place at the Saltwell Cemetery, Newcastle-on-Tyne, on October 20. Mr. W. J. West, of Glasgow, was present to represent the directors of Kodak Limited, Mr. Reginald Owen to represent the professional photographers, Mr. J. Smith to represent the dealers, and Mr. E. C. Harwood to represent the friends of Mr. Hobbs in the London offices of the firm.

**Festival of Empire, 1911.**—Photographic Section.—The following is the official list of awards at the recent Festival of Empire at the Crystal Palace :—

Silver Cup, awarded for the best collection of pictures sent by a British Society.—Birmingham Photographic Society.

Silver Cup, awarded for the best collection of pictures sent by an Overseas Society.—Winnipeg Camera Club.

Diploma for Gold Medal, awarded to South London Photographic Society and to the Cape Town Photographic Society.

Silver Medal awarded to Bromley Camera Club and to Photographic Art Club, of Ottawa.

The following awards were made for individual pictures :—

Grand Prix : G. Clark, South London Photographic Society, for No. 654, "Broadstairs."

Gold Medals : Harold Baker, Birmingham Photographic Society, for No. 70, "The long, dim, lofty aisle"; Mrs. Barton, Birmingham Photographic Society, for No. 75, "The Soul of the Rose"; J. C. S. Mummery, North Middlesex Photographic Society, for No. 300, "Near Amberley"; A. E. Hearne, Winnipeg Camera Club, for No. 1,088, "Old Log Cabin."

Silver Medals : S. W. Shore, Bowes Park Photographic Society, for No. 138, "The Sanctuary—Evening"; Grafton Goatley, City of London and Cripplegate Photographic Society, for No. 156, "The Gillie"; Bertram Wickison, City of London and Cripplegate Photographic Society, for No. 175, "On the Tide"; Howden Wilkie, Wimbledon Park Photographic Society, for Nos. 561, 562, and 563 (series); G. T. Walford, South London Photographic Society, for No. 667, "Flecked with Sunlight"; W. J. Edmunds, Watford Camera Club, for No. 425, "Murky London"; M. Thompson, Cape Town Photographic Society, for No. 1,119, "Whence comes mine Aid"; Mrs. H. H. Hart, Photographic Society of India, for No. 1,209, "A Mountain Solitude"; Rev. W. Forbes, Cape Town Photographic Society, for No. 1,110, "Summer."

Professional Photography.—Grand Prix : Borup Bros., 156, Streatham High Road, S.W.

Gold Medal : Miss Ellen Macnaughten, 83a, Gloucester Road, S.W.

Silver Medals : The Mattype Company, 30, New Bond Street, W.; Howard M. King, 85, George Street, Croydon.

## Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

### EXPOSURES WITH STUDIO ARC LAMPS.

To the Editors.

Gentlemen,—We see in your issue of October 20, under the "Answers to Correspondents," that "Artificial Light" is asking about his lamps and complaining of the long exposures. It appears that he is burning them two in series on 220-volt continuous current. This is, of course, a great mistake for photographic work, and if proper photographic lamps are employed they should be burnt singly on the 220-volt circuit, the exposures would then be about one-fifth of what they are with his present arrangement. No alteration in the carbons of his present lamps will make much difference. —Yours faithfully,

The Westminster Engineering Co., Ltd.
Willesden, N.W. J. O. Girdlestone.

### TANK DEVELOPMENT.

To the Editors.

Gentlemen,—Having read the recent correspondence in the "Journal" on tank development, I feel that something yet remains to be said in favour of the tank method.

As Mr. Morse truly says in the current number of the "Journal," there is nothing special in the tank itself to explain why the average amateur gets better results with the tank than he can without it. The real secrets of the success of the tank method are twofold :—

(1) Because tank development is *time* development.

(2) Because it is carried out in *total darkness.*

The average amateur who tries to ascertain the density of his negative by the light of the ordinary ruby lamp is unable to judge of the exact moment when development should be stopped. If he uses rapid plates he probably fogs his negatives at the same time by undue exposure to the dark-room lamp. The use of various brands of plates would still further increase the difficulty of judging density owing to the different thickness of the emulsion on different brands.

In the tank method development is measured by *time,* and when that time has expired *correct density is reached* and *without any risk of fog.*

I do not pretend to be an expert photographer myself, not having much time for the hobby. I am therefore not ashamed to confess that usually when developing my holiday batch of plates I have hopelessly failed to get even a fair approximation to regularity as regards density, and certainly the majority of my negatives have been more or less fogged by light.

During the present year, however, I had a pleasant surprise. A friend who had invented a new method of daylight development asked me to try it while away on my holiday. The system admitted of developing the plates singly or in batches, and I was able to carry out all the operations in a bathroom which conveniently contained a table, chair, jug of water, basin, etc. Having made some exposures in the morning I usually developed them in the afternoon in the full light of day with the sun often shining into the room.

In the old days, after developing and fixing a negative I used to ask myself : "Is it a good one?" and I must say that oftener than not, to use a parliamentary phrase (doubly true in this case), the answer was "in the negative." With the tank system, however, I found that after the first day's operations the answer was in the affirmative. The next day the answer was the same, and at the end of a week I began to realise the fact that photography for me had at last become an exact science, and that I could attain the desired and prearranged result *every time*. At any rate, I have proved to my own satisfaction that there is more in time development by means of a tank, for the average amateur, than Mr. Morse seems to realise. I believe that "you will get better results with the tank than without it" is true when addressed to the vast majority of amateur photographers, and therefore that tank development has come to stay.—Yours faithfully, W. H. Phillips.

98, Truro Road, Wood Green, N.,
October 27, 1911.

## SPEED MARKINGS OF SHUTTERS.

To the Editors.

Gentlemen,—I was greatly interested in Mr. Smith's paper on tests of photographic shutters, and have been watching the advertising pages in the hope that some manufacturer existed who had sufficient confidence in his goods to announce his readiness to supply a shutter that would pass the National Physical Laboratory Tests, but up to the present that hope does not appear to have been realised.

Is there no maker, British or foreign, who can give us a shutter which is reliable, fairly and regularly efficient, and within 20 per cent. of its marked speeds?

I wrote to one firm some little time ago asking for full particulars of the performance of one of the most expensive "between lens" shutters now on the market; but all I got was a pamphlet with a number of bald but flowery statements which gave no information of any value.

Is there no manufacturer who will give us a shutter that is not even blatantly dishonest; for it is now fairly well known that the higher speeds are generally deliberately marked much higher than they ever attain?—Yours faithfully,

Krypton.

## HALATION IN REFERENCE TO LENSES.

To the Editors.

Gentlemen,—I wish to call the attention of photographers to the fact that some forms, at least, of the modern anastigmat lenses (the double) show a great deal more halation in photographing interiors with windows, and in making transparencies in the camera than the simpler forms of rectilinear and single lenses. I attribute this to the larger number of reflecting surfaces in that form of lens.

Whether all do this I am not in a position to say. It has occurred with me with a German anastigmat, and with an American make of double anastigmat. I first noticed it in making enlarged transparencies and negatives in a window with the camera, of which sort of work we do considerable. I found the fine details very much obscured, and one day was startled by the difference when I put in the place of the anastigmat a Dallmeyer wide-angle rectilinear, and still more so in using the single combinations of the latter.

It may be possible that all anastigmats do not have this defect, but the two German lenses I have, as well as the Domestic lens, all show this peculiarity. With this, however, in making exposures for at home interior portraits, I find the anastigmats give better definition in the shadows with less exposure than the older form of lenses working at the same relative apertures. Is not this due to the same quality that causes halation? D. Bachrach.

16, W. Lexington Street, Baltimore, U.S.A.

[It is hardly in the nature of things that halation should be caused by a defective lens. We should imagine that spherical aberration was present in the anastigmats. This would give a blurred rim round the strongest lights in a picture, say, the collar in a man's portrait, which has much the appearance of halation. As a rule, well corrected rectilinears are free from spherical aberration over at least the central part of the field, while many otherwise excellent anastigmats are not.—Eds. "B. J."]

## PHOTOGRAPHIC ASSISTANTS.

To the Editors.

Gentlemen,—It is refreshing to learn from "Scot's" letter in your last issue that one employer at least is prepared to pay a living wage, and it is to be regretted that "Scot" should have been imposed upon by a waster; but the remedy is in the employers' own hands to a great extent. They invite this sort of imposture. They insert that objectional phrase in their advertisements, "state salary required." The waster states a low figure, and the better men, knowing a cheap assistant is wanted, will not reply to advertisements so worded, unless he is a married man, and must get employment at once, and he asks a poor wage simply to tide him over until he can get something better, and, like all cheap men, he will clear out in a few weeks.

If a married man asks a salary only sufficient to keep a small family in comfort, and to prevent the eternal struggle to make ends meet, then he can wait in vain for replies, for the cheap man with a plausible yarn will surely beat him.

We know there is no sentiment in business, but there is at home, and if the employer will offer the steady married man a wage sufficient to keep things going comfortably at home, he will find that he will be amply repaid for the few extra shillings in salary by increase in business: the married man whose heart is in his profession does not want to be continually on the move, and is not always watching the clock.

I myself have been seeking an appointment, through circumstances beyond my control, and have become so utterly disgusted with the princely wages offered to me that I have sought employment in another trade until I can find an employer prepared to pay a reasonable salary to an employee who will stay with him and study his interests.

Employers have been talking a lot about lifting up the photographic profession; let them start by lifting up the salaries of steady men they employ, and they will soon find the assistants will begin to lift the business.—Yours faithfully,

H. Jones.

Ivy Cottage, Leech Green Lanes,
Rednal, Worcestershire, Oct. 30, 1911.

To the Editors.

Gentlemen,—As one who has only recently emerged from the employee stage, I wish to partake in the discussion of the proposed union of assistants. I feel particularly called upon to reply to Mr. W. G. Hearn's criticism against the formation of such a union, basing his hostile attitude upon the happy standing of assistants, painting their condition in fairy colours, and actually challenging every good worker who cannot dictate his own terms. I think it is rather a pity that Mr. Hearn omitted to read the sad revelations contained in the articles signed by "Too Old at Forty," or in the voluminous correspondence re Sunday trading, which has a bearing upon the state of assistants. To evade Mr. Hearn's obvious trap, I like to pose before your intelligent readers as one who worked to the satisfaction of firms inside of Bond Street, but, nevertheless, circumstances forced me a few years ago to work for a house also not very far from Bond Street. I started at 9 a.m. and finished at 11 p.m., sometimes 12 p.m., six times a week, and additional odd jobs especially preserved for Sundays, the intricacies of which occupied all my attention, and, leaving time to look after itself, I passed through this ordeal, side by side with others, for £1 a week. Fate has endowed that employer with the ambition to survive, and I cannot exactly blame him individually. But, just the same, is not price-cutting the cause of our humiliation? Is not every unfair competitor trading seven days a week, and extorting two men's labour values out of one, a tyrant, a despot to employer and employee alike? I wish "Non-Unionist," Mr. Goodyer, and the above gentleman could enlighten us as to what more can assistants do than making bricks without straw. They also fail to allocate time for self-improvement. I think I know of numbers to whom this luxurious pursuit is quite out of reach. As to Mr. Hearn's assertion that trade unionists are dishonest, the only word I can reply in repudiating the charge is that it is insulting.

I advocate unionism as a first step to tackle an intolerable state of affairs, confronting the ordinary and superior worker alike, and as an institution whose function it is to study the causes of irregularities in the labour world, and to devise, wherever possible, means to combat the onslaughts of demand and supply, invention, and capital. I am convinced that a united body of responsive assistants could bring about ameliorating reforms beneficial to the profession.

To my Radical inclinations, revolutionary and wild as it sounds, I think it a possible evolution of concerted action of professional workers' societies to achieve Parliamentary representation. It is also my opinion that formulating a programme of a suggested campaign from either society will appeal more to those concerned than if the call is debarred from outlined propositions.

Before I conclude I would inform "Scot" that photographers here in Dublin are also complaining from the scarcity of good operators. I put it down to smallness of salary offered. Some time ago I received, in reply to my advertisement for an artist, heaps of letters preceded by telegram, stating, "I am coming. Letter follows." I have spent several return fares. The consequences were discouraging.

Finally, I applied for two, and the resulting diminution in bulk of boring matter, furnished me a striking testimony of the inalienated aversion of the indifferent to work in company with a more skilful colleague. By this simple manœuvre I succeeded in getting the right man. All I have to add is that my terms in the advertisement and following agreement were explicit.—Yours most respectfully.

A. Cohen.

9, Mary Street, Dublin.
October 30, 1911.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photographs Registered:

W. Hampton, Devon Bank, Stepps, Glasgow. *Photograph of firing arm and shoulder with face pose in profile, and background space reserved for trade, purposes, over the deltoid and biceps muscles*

G. L. Hoffman, West Cliff Studio, Freeland Road, Clacton-on-Sea. *Photograph West Parade, Clacton-on-Sea: "South-West Storm."*

J. Ingham and Sons Winton House, Ashton-on-Mersey, Cheshire. *Photograph of the late Sir William J. Crossley, Baronet.*

G. and H. A.—We think you had best apply to Messrs. Sichel and Co., or the Tress Co., stating your requirements.

**Colouring Photographs.**—Can you recommend an instructive book on tinting photographs in water-colours?—M. B.

"Art of Retouching Negatives and Finishing and Colouring Photographs," by R. Johnson. Marion and Co., 2s.

**Cinematography.**—I should be glad if you can tell me if there is any paper devoted to the cinematograph; also any good book on the subject.—C. O. P.

The "Bioscope" and the "Kinematograph Journal," each 1d. weekly. About the best practical book is the "Modern Bioscope Operator," published at the "Bioscope" office (Ganes, Ltd., Shaftesbury Avenue, W.).

**Enclosed Arc Lamps.**—In your issue of October 13, page 774, you have a par on "More light." Please say in what way your advice can be applied to the —— lamp, and oblige.—Yorkshire.

The paragraph in question referred to open arc lamps only, and more particularly to those of the older models used in "umbrella" reflectors. The only way to obtain more light with the Jandus system is to increase the number of lamps.

**Jan.**—The copper method is as good as any we know for commercial work. You can sulphide-tone, and then, by toning with gold, get a good red tone, but it is a rather round-about method. Another method is to bleach in an iodine solution as formerly used for sulphide toning, say, iodine, 4 grs.; potass iodide, 10 grs.; water, 1 oz.; wash well, and tone in Schlippe's salt, 25 grs.; soda carbonate, 15 grs.; water, 1 oz. This bath must be used fresh.

**Books on Oil and Water-Colour Painting.**—Are there any books published on the art of oil paintings, portraits, etc., and address where I could purchase them, and at what cost of same? 2. Are there any books on water-colours? Address where I could purchase them, and cost.—Anxious.

Apply to Messrs. Winsor and Newton, 38, Rathbone Place, London, W.

**Relief Castings.**—Will you kindly give me your opinion on the enclosed relief and intaglio? Do you think castings such as these would be of any use commercially—say, to silversmiths or stampers, etc.?—Relief.

The casts are very good examples of the possibilities of photography in relief, but your question is rather out of our province. We should advise you to write to the "Jeweller and Metalworker," 24, Clerkenwell Road.

**Various.**—1. Could you tell me where I can obtain stretchers and cardboards for mounting enlargements? 2. What size condenser I would require for making 20 by 16 prints by gaslight from ¼-plate? 3. Also where I could obtain the water-colours, flesh tint, Nos. 1, 2, and 3, as stated in this year's "Almanac" on page 783? You would greatly oblige—Condenser.

1. Griffiths' Steam Works, 26 to 31, Eyre Street Hill, Holborn, London, W.C. 2. Five-inch, but even with an arc-lamp, exposures will be very long. Why not use bromide? 3. Winsor and Newton, 38, Rathbone Place, London, W.

**C. A. Kesterton.**—You are working in a rather confined situation in respect to both floor space and head room, and on that account alone we should not advise you to use gas, the heat of which, in all but very cold weather, will be a great drawback. We should think that you will require a lamp of the inverted pattern, so for the reflected open-arc lamp, well and good. Messrs. Marion would be able to advise you as to this, whilst for the inverted arcs you can apply to the Westminster Engineering Co., or to as to get the arc as high as you can. If you could find space the Kodak Co. Also, the Jupiter lamp of Messrs. Griffin is of small size, and might suit you well.

**Keeping Proofs.**—Some time ago I had an order to photograph some old buildings the property of a gentleman. I did them from two points of view, and supplied him with a copy of each. Three weeks later he said they were satisfactory, but would keep one and return the other, which he did. Then he wanted my bill, and also two unmounted copies (one of each), and before I could send them he returns the second proof to me through a Court photographer. It looks as if he has got it copied. Have I any remedy?—Wiggle.

No, you have not. It has been held that a customer has the copyright in prints which he does not order.

**Bathing Plates.**—At what temperature does absolute alcohol need to be heated to dissolve pinacyanol and pinachrome to mix for the sensitive bathing of plates? None of the books give anything definite, but merely say warm.—S. J. F. (N.Z.)

The temperature required is according to the speed with which you desire the dye to dissolve. The dye is placed in a thin flask, which is then held over a flame until the solution is complete, 60 degrees Centigrade (140 degrees Fahrenheit) will usually be found sufficient. If the alcohol is allowed to boil the solution will occur at its quickest, but it will dissolve in time at a much lower temperature. Pinacyanol is now sold that is soluble in water, and with this the question would not arise.

**Gaslight and Plate Developer.**—Will you kindly give formula for developer for cheap gaslight papers and postcards to give good contrast—a developer which could also be used for P.S. plates?—Developer.

We cannot. Gaslight paper requires a developer which, as a rule, is about twice the strength of that for plates, and contains more bromide, and the cheaper the paper the more bromide required. We advise you to make up M.Q. developer about double strength, suitable for negatives. Mix this with equal bulk of water for plates, and use neat, with a drop or two of bromide per oz. for paper. Try for this purpose :—

| | |
|---|---|
| Metol | 35 grs. |
| Sodium sulphite | 2 ozs. |
| Hydroquinone | 50 grs. |
| Sodium carbonate | 1½ oz. |
| Distilled water to | 20 ozs. |

**Portrait Lens.**—We shall be much obliged if you will recommend us a portrait lens of a good type of the latest style, suitable for taking cabinet portraits and groups in the studio, or a good size lens to take cabinet and full-plate portraits and groups in the studio, and a 15 x 12 lens to take groups outdoor, and occasionally in the studio, and give us also names of makers of cameras quite suitable for professional use.—R. Salunkay and Co.

We think that you would find a Dallmeyer 3A Patent Portrait lens most suitable for your studio work up to whole-plate, if you have a fairly long studio, otherwise a 2A would be better; for the 15 x 12 plates any good anastigmat working at *f*/6 to *f*/8, and having a focal length of not less than 18 inches. Any of the following would suit your purpose: Homocentric Series II. No. 9, Stigmatic Series II. No. 9, Goerz Celor No. 8, or a 19-inch Rapid Rectilinear by any good maker if *f*/8 is a sufficiently large aperture. As regards studio cameras, see the list of makers under heading "Cameras, Studio," in the "Almanac." 2. It is contrary to our custom. We suggest you apply direct.

**Attendance at Court.**—I was ordered to take a few photographs for a solicitor, and he mentioned that he would require me to attend the court to prove them. When sending the finished photographs I enclosed a letter stating my fee would be £2 2s. for attending court (as no fee was previously mentioned). Now I have just had a reply to that letter which I would like your valued opinion on. The tone of the letter is quite uncalled for, and not at all businesslike as man to man. I should be glad to know if I have done right, and that the fee is in order. It would not pay me to accept less, as it would mean closing the studio for the day, as I have only two youngsters here, who are incapable of operating. I may say the photographs were exceptionally good (although I say it). He is not very enthusiastic in his letter.

The letter is: "The photographs which accompanied your letter of the 21st inst. appear to be satisfactory, but surely you are making a mistake in asking a fee of £2 2s. for attending the court merely to say 'these photographs are accurate.' I would remind you that I am not asking you to conduct the case."—E.C.

We are not aware of any scale of charges for such services; but even if you have to spend the best part of the day at the court we should have said a guinea should have satisfied you, considering you had received the order for the photographs.

**Carbon, etc.**—1. Can old unexposed plates be fixed out, treated with bichromate, and exposed to daylight, and used for support in carbon transparencies for making enlarged negatives? 2. I have read that to transfer carbon prints to unprepared paper the print is developed on ground opal, when dried coated with 3 per cent. solution of gelatine, and in one hour's time the unprepared paper is slightly damped, squeegeed to the gelatine print, and when dry easily stripped. Is this method reliable? 3. If so, would it not be the same thing to develop print on flexible temporary support and coat the unprepared paper with the 3 per cent. solution of gelatine, squeegeeing it, when set, on to the temporary support? 4. Is there not a simple method of toning an ordinary ferro-prussiate blue print to green or brown; and if so, could you give formula?—E. E. C.

1. They can be used as you describe, but probably you will find it sufficient to let the fixed and washed plates become thoroughly dry simply, instead of bichromating them. 2 and 3. We have no experience of the process, and we doubt if it would work well as regards providing a firm hold of the image on the final unprepared paper, as the gelatine coating is not in the pores of the paper. It is usual for such work to coat the paper with the usual gelatine and chromic acid mixture and produce the carbon print upon it by the single transfer method. 4. There is no really satisfactory process; all yield a weak image and give a stained ground.

**Old Negatives, etc.**—1. Can you inform me through your valuable paper how I can remove film from negatives to use for greenhouse? 2. Have studio 20 x 12, have three lenses, No. 7 Stigmatic Dallmeyer Series 3, 9.5in. focus, 1/1-plate Cooke, and 10 x 8 R.R. Dallmeyer old type. Now, what would you advise? I use the 12 x 10 Stigmatic Dallmeyer for cabinet heads and postcard. Cannot get full length cabinet with it. I also use it for children, 12 x 10 groups. I have few to take—perhaps three a year; could I not dispense with this lens? I have been told, but should like your authority on the matter, that a 1/1-plate R.R. lens with iris by R. and J. Beck, early original make, would answer the purpose, and could get full-size cabinet, and that it is excellent for groups in limited space. Is it very rapid—I mean rapid enough for children? Would you advise disposing of the Cooke and Dallmeyer and getting the Beck? As the 10 x 8, although older pattern, is rapid, and covers 12 x 10, it would do for 12 x 10 work, what little I have. Would this lens come in for anything in studio? Hoping I have not trespassed too much.—Anxious.

1. You can remove the films from old negatives by soaking them in a hot solution of washing soda and scrubbing them with a hard nail-brush. 2. We should advise you to retain the No. 7 Stigmatic for all-round work, using the whole-plate Cooke for full-length cabinets. The whole-plate Beck R.R. is rather too long in focus for full-length, and would require twice the exposure of the Stigmatic if both were employed at full aperture. The 10 x 8 Dallmeyer R.R. is a little slower than the Beck R.R., and is certainly too small for 12 x 10 groups, although it would answer for many architectural subjects.

**Various.**—1. I have a number of large porcelain dishes, with a small portion of the side broken out. Can you recommend a cement with which to fix the pieces in place again, so that we could again use the dishes? Also where the cement is obtainable if it is special. 2. I have ½-plate lens (a Cooke) which I use for landscape work, and wish at times to increase size of some object being photographed without moving camera nearer. Will you kindly advise best method to do this, and would it require much extension of camera? 3. With present portraiture in studio, showing background perfectly white, I find some difficulty in getting the ground white enough. I use white with a little sky blue in it; is there a special blue and white obtainable for best results?—F. E. G.

1. Some time ago an excellent cement called Cementium was recommended by Mr. Watmough Webster for mending dishes. It is, or was, made by Cementium, Ltd., 31, Tanner Street, Bermondsey, London, S.E. Stickphast China Cement, made by Field and Tuer, Leadenhall Street, London, is almost identical in its qualities. It dries like porcelain and will stand hot water. 2. You can get an extension lens for lengthening the focus of your half-plate Cooke. The size for a half-plate lens costs £1 10s., and increases the focal length to nearly 13 inches; the full aperture is reduced to *f*/11, that of the original lens being *f*/6.5. Write to Messrs. Taylor and Hobson, giving full particulars of your lens, and they will send you a list of these attachments. 3. With regard to background, there is nothing better than pure white distemper. Try to arrange your blinds so that some direct light falls upon the background while the sitter is shaded, that is to say, bring sitter well forward, and open a blind behind him if possible.

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The British Journal of Photography.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2688. Vol. LVIII. FRIDAY, NOVEMBER 10, 1911. Price Twopence.

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## SUMMARY.

MM. A. and L. Lumière and A. Seyewetz, in a paper read before the last meeting of the French Photographic Society, have described two alternative methods of making negatives direct from negatives by a reversal method employed in conjunction with the process of development after fixing, as described in our columns some month or two ago. (P. 851.)

With cold weather threatening the dark-room worker, it is well to remember that over-heating of developing solutions may be just as harmful, though in another direction, as undue chilling of the developer. A thermometer should be kept at hand in every dark-room. (P. 850.)

By taking a little extra trouble, the lantern-slide maker can bind slides so that their arrangement in the correct order for a lecture and correct position for the lanternist is greatly expedited. (P. 850.)

Dr. Edwin F. Northrup, in a recent paper before the Franklin Institute has described the details of the method used by him for the photography of vortex rings. (P. 852.)

The printing of borders, mottoes, etc., at the same time as the negative proper has been granted patent protection. (P. 859.)

The importance which a photographer's customers set upon an absolute fulfilment of a promise of, say, the delivery of a proof or enlargement, is the subject of a note on page 850.

A brief description of the new Kingsway headquarters of the Kodak Company in Europe will be found on page 855.

The firm of C. P. Goerz has this week celebrated twenty-five years' connection with the photographic optics industry. (P. 857.)

The evasions and subterfuges of the illustrated Press to provide pictures alleged to be photographic reproductions of scenes in the Law Courts has been the subject of recent comment. (P. 849.)

An albumen wet-plate process, rights in photographs, fitting up the dark-room, studio lighting, enlarging, etc., are subjects dealt with under "Answers to Correspondents." (P. 866.)

The applications of stripping negatives in making composite half-tone blocks are the subject of notes on "Process Matters." (P. 858.)

A "Society of Photo-Micrographers" has been formed, and will meet once each month at the Gardenia Restaurant, Catherine Street, Strand. (P. 865.)

Focal-plane and other shutters, rapid bromide printing machines, and colour cinematography likewise figure under "Patent News." (P. 859.)

## EX CATHEDRA.

**Royal Society of Painters in Water Colours.** The photographs have given way to painted pictures at 5a, Pall Mall, where a feast of colour now reigns. It would be well worth the while if workers with Autochromes and other colour mediums were to go and study this delightful exhibition. We fancy they would see that the usual point-of-view of colour as seen by photographers is neither the only one nor the best one, since in most cases it concerns itself with the local colour of objects, and that is the least artistic aspect. The subject of Mrs. Laura Knight's bold work called "The Deck Chair" (102) is one that the Autochrome has rendered scores of times—namely, a lady sitting in a sunny garden. Here the simplicity and brilliance of the colour-scheme should be noted. The show is full of triumphs of picture making, and perhaps the fact most noteworthy about it this season is the sudden blossoming of J. Walter West from a pretty illustrator into a landscapist of unusual power and promise.

* * *

**Spurious Photographs.** In view of the fact that photography in court has recently been prohibited it is remarkable that an evening paper of November 1 ventured to publish some photographs described as having been taken in court during the Foster v. Foster and Beecham trial. Such a proceeding may be well described as asking for trouble, and, naturally, trouble ensued, with the result that it had to be confessed that the photographs were made, not in the court, but at the newspaper offices, while the editor had also to submit to a severe reprimand for the terminological inexactitudes of the description. It was also admitted that a picture of the learned counsel addressing the court was not a photograph at all but a drawing made from memory. Thus we see that photography has once more been dragged into disrepute by up-to-date press customs which have already done quite enough mischief in causing the issue of so many prohibitions. Photography in court has, of course, been forbidden, because the privilege was so grossly misused. Witnesses and other parties, very few of whom were anxious to appear in court at all, were photographed without permission and the results published broadcast. In some cases no doubt such publication was a welcome advertisement, but this again was a gross breach of privilege, to which no self-respecting photographer would have lent his aid. These things were bad enough, but it was quite unnecessary to cap them with the production of what amounted to bogus representations, which can only serve to increase the rapidly growing distrust of the general public in all illustrations, whether really photographic or otherwise. There seems to be a mistaken idea among pressmen of a certain class that the faked-up or bogus photographic illustration is a smart thing and a highly commendable piece of journalistic enterprise; the bald and obvious truth, however, is that it is simply an indication of incompetence and a confession of failure. The final result will be that the cheap photographic process block will be so discredited that it will have to be replaced either by type matter or by the yet more expensive artist's drawing, which, even though as a record it can never rival the true photograph, is yet quite as valuable as a faked one and far more interesting.

* * *

**Keeping Faith.** In conversation with a member of the public the other day we were treated to a diatribe on the unpunctuality of photographers in the completion and delivery of their work. What he particularly complained of was the failure to send either proofs or finished pictures at the promised time. It was not, he said, a question of waiting so much as of disappointment, and he pointed out how much more desirable it would be if photographers allowed themselves a little margin of time so as to provide for any source of delay. Recently, in one of the largest and most successful stores in London, we were enquiring for a certain motor accessory. It was not in stock, and on asking when it could be delivered the assistant said "Probably to-morrow; but I must not definitely promise. We are forbidden to promise anything unless we are *absolutely certain* that it can be delivered to time." A little of this policy would, we are sure, be beneficial to most photographic businesses. Some years ago an American humourist published a fable about a photographer who delivered his work to time and achieved such phenomenal success that in three years his daughter could afford to come to England and marry a title. One often finds in the guise of a joke the true opinion of those who are too good tempered or too lazy to complain, but, for all that, appreciate good service as much as the grumblers do.

* * *

**Warm Developer.** The question of the temperature of the developer is one which is perennially cropping up, particularly with the approach of winter. As a rule the fault of photographers lies in the direction of using too cold a solution, but a case has recently come under our notice in which the trouble was caused by an excess of warmth. A brand of plates which had been giving satisfactory results suddenly yielded nothing but flat foggy negatives with a want of gradation in the high-lights. Variation of exposure and overhauling of the camera and dark-room did not remedy the evil, and it was only when we discovered that the developer was being used at a temperature of about 85 degs. Fahr. that the plates resumed their normal behaviour. It is very necessary if even quality of image is to be obtained to use a thermometer so that at all events development is commenced at the same temperature, but for some reason photographers seem to have a rooted objection to the use of such an instrument. Men who will gladly pay five or six pounds for a chair grudge eighteen pence for a thermometer, the parsimony with regard to dishes and measures being equally noticeable. We have been in dark-rooms where the work of a prosperous business has been done, and have found that the assistants had to use the same dishes for all developers, intensifying and reducing. This is false economy; one stained negative will often waste sufficient of the printer's and finisher's time to pay for a dish, but it does not appear as a separate item.

* * *

**Lantern-Slide Binding for Lecturers.** The ordinary method of binding lantern slides makes small provision for labelling the individual slides, and none at all for sorting them. The following expedient will, however, remedy both deficiencies in a very simple fashion. In binding the slide black slips are used for the bottom edge and the two sides, but the top edge is bound with a white slip cut as wide as the masking of the slide will allow. When the binding is dry, a brush full of Indian ink is passed over the portion of the white slip that appears on the back of the slide, and then we have left a wide, white label at the top of the front of the slide, and also a white strip at the top edge, all the binding at the back of the slide being black. The slides are then placed in a box in proper order, all facing the same way, and all being arranged with the white edge uppermost. A ruler is laid diagonally across the top edges of the slides and a black ink line is ruled right across the lot with either a drawing pen or a brush. This done, it will be found that the sorting and arranging of the slides in proper order is a quite simple matter. If any slide is out of its proper place, that fact can be seen at a glance, because the black line will be broken, while if all the slides are out of the box and mixed up, they can

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## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

The fifty-first annual issue of The British Journal Photographic Almanac will be published on December 1.

Among other new features in the forthcoming Almanac are articles as follows:—

### Lantern-slide Making. By the Editor.

A complete practical guide to the making of lantern-transparencies by reduction and contact, illustrated with special drawings of apparatus; processes of development for black and warm tones; warm tones by after-toning, and other methods of producing the best results.

### At Home Portraiture. By C. H. Hewitt, F.R.P.S.

Precise directions for indoor and outdoor portraiture without a studio. Illustrated with diagrams and art supplement plates, showing effects of good and bad lighting.

### Hints in Pictures.

A section entitled "How to Do It," helping the beginner to perform such operations as stripping negative films, mounting prints, etc. One hundred and twenty illustrations.

As in recent issues, the systematic review of the practical work of the year under the title "Epitome of Progress" will be a strong feature of the volume.

The lines followed in the previous editions of the Almanac will be maintained in general, but in a number of particulars the arrangement of the volume for 1912 will be modified to make it more than ever the book of universal photographic reference.

### To Selling Agents of Almanac.

Dealers, newsagents, etc., are advised that the greater proportion of the edition is already ordered, and therefore those who wish to make certain of obtaining their supplies are requested to place their orders with Messrs. H. Greenwood and Co. without delay.

The Publishers will despatch parcels for simultaneous distribution throughout the United Kingdom.

be taken in any order, put in the box, and then be re-arranged until the diagonal line is again correct. It is thus possible to re-sort them without consulting either the titles or the numbers, a glance at the binding being sufficient to show which way round and which way up each slide should go. The white slip on the face of each slide gives plenty of room for title and particulars, while a reference number on the edge will enable us to pick out any particular slide required.

## WHEELS IN THE CINEMATOGRAPH.

A QUESTION which we are often required to answer is why the wheels of carriages so often appear to revolve in the wrong direction in cinematograph pictures. This is not at all an unusual effect, for we have very seldom seen any cinematograph entertainment in which it was not observable in one or more films. The problem is a fairly simple one to understand, though the explanation may not be readily obvious to the general public, who hardly realise the manner in which cinematograph films are produced. The various little pictures that make up the cinematograph film are taken in succession at intervals averaging about 1-16th of a second. Suppose a wheel with sixteen spokes to be rotating once every second, then it is obvious that in each picture the spokes will all appear to be in precisely the same position. As a matter of fact, each spoke will have moved round one-sixteenth of the circumference of the wheel, but, all the spokes being alike, the fact that they have moved will not be apparent, and in the projected cinematograph picture the wheel will not appear to rotate at all, but simply to skid along the ground. This will always be the case with the sixteen-spoke wheel so long as the time of rotation is equal to a definite number of seconds; if, however, the period of rotation involves a fraction of a second, then the effect of movement is obtained, and whether this is a forward or a backward movement depends entirely upon whether that fraction is greater than or less than one-half. Suppose the wheel to rotate once in one and a quarter seconds. This is a lower speed than one revolution per second, therefore the spokes will not travel so far in one-sixteenth of a second. They will, in fact, only move four-fifths of the distance, so that in each successive picture each spoke will be seen in a position that is a little behind that which was occupied by the preceding spoke in the last picture, and, the spokes being confused one with another on account of their similarity, the effect is as if each spoke had moved backwards. If, on the other hand, the speed had been one revolution in three-quarters of a second, each spoke would have moved a greater distance, equal to one-third more than the distance between two spokes. In each picture it would therefore appear a little in advance of the position of the preceding spoke in the last picture, and so an effect of forward movement would be given. If the fraction involved is a half, then the effect is that of a very jerky forward movement, for the nearer the period is to a whole number the smoother is the motion. A corollary of this explanation is the fact that so long as the spokes are well defined the speed with which the wheels appear to revolve must be about the same. That is to say, the apparent speed in the cinematograph will appear to be the same whether the rate of revolution is three-quarters, one and three-quarters, or two and three-quarters per second. Though the spokes in the three cases travel one and one-third, two and one-third and three and one-third spaces in between each exposure, yet the apparent amount of movement will only be one-third. Hence it often happens that the apparent rate of revolution of the wheels is too slow for the speed of the vehicle to which they belong. The actual figures we have used, of course, relate to the assumed case of a sixteen-spoke wheel; with a different number of spokes the actual figures will be different, though the same general principles apply.

# REVERSED NEGATIVES DIRECT BY DEVELOPMENT AFTER FIXING.

A paper, by MM. A. and L. Lumière and A. Seyewetz, read at the last meeting of the French Photographic Society.

WE have applied the method of development after fixing to the production of reversed negatives direct by the process, two variations of which we describe below.

One of the customary methods of producing a negative direct from a negative, which was suggested by Biny[1], and further improved by Obernetter[2], consists, as is well known, in developing an image, and then, without fixing it, dissolving away the reduced silver which forms the image in a suitable solution, finally developing the residual bromide or chloride of silver in full daylight.

This method, when used with ordinary plates, has the drawback of very frequently giving foggy results, in consequence of the presence, in the sensitive film, of an excess of silver bromide which, relatively to the total quantity of silver bromide forming the negative and positive images, is considerable.

It has occurred to us that it would perhaps be possible to avoid this drawback by fixing the image before submitting it to the second development; then treating it, after fixing, by one of those physical developers (intensifiers), of which we have given formulæ in our paper of a month or two ago on development after fixing[3]. Experiment has confirmed our supposition, but, in order to obtain good results, it is essential to develop, or, rather, re-develop, with a mercury solution, not with one of silver, and to adhere precisely to the following conditions:—

(1) The plates used should be rapid rather than slow, and the time of the first development should be prolonged considerably further (about four times) than when using the diamidophenol developer in the ordinary way. Subsequent manipulation may be done in full daylight.

(2) As a solvent of the primary silver image a bath of acid permanganate of the following composition should be used:—

| | |
|---|---|
| Potass. permanganate ........................ | 1 gm. |
| Sulphuric acid, concentrated ...................... | 10 ccs. |
| Water ................................................ | 1,000 ,, |

About 200 ccs. of this bath are used for a plate 7 x 5 inches[4].

(3) The negative is then rinsed and cleared of any colour of the permanganate by treating it for a few seconds in a weak bath of sodium bisulphite, about 20 ccs. of commercial bisulphite lye in 1,000 ccs. of water. If, after this treatment, the image does not show as perfectly bleached, but still contains

---

[1] "Moniteur de la Photographie," 1881, p. 84.

[2] "Photographische Mitteilungen," vol. xix, pp. 172 and 177. Eder's "Jahrbuch," 1887, p. 172.

[3] "British Journal of Photography," August 25, 1911, p. 643.

[4] In very hot weather care should be taken to use the acid permanganate bath not warmer than 70 deg. F., otherwise it is apt to affect the gelatine.

parts of undissolved reduced silver, the treatment with the permanganate, followed by the bisulphite bath, must be repeated.

(4) The plate is then fixed in a ten per cent. solution of hypo and thoroughly washed in order to remove the last traces of this latter[5].

(5) It is then re-developed with a physical developer consisting of the double sulphite of mercury and sodium[6], which is prepared as follows:—

| | | |
|---|---|---|
| A. | Soda sulphite, anhydrous | 180 gms. |
| | Mercuric bromide | 9 ,, |
| | Water | 1,000 ccs. |
| B. | Soda sulphite, anhydrous | 20 gms. |
| | Metol | 20 ,, |
| | Water | 1,000 ccs. |

For use on a 7 x 5 plate 150 ccs. of solution A is mixed with 40 ccs. of solution B. Following the above instructions, reversed negatives practically free from fog are readily obtained.

We have likewise attempted to employ the method of developing after fixing in making reversed negatives direct according to the process published in the "Agenda Lumière."[7] Here the silver of the developed and unfixed image is dissolved only after it has been used as a species of screen in exposing the remainder of the silver bromide in the plate.

We have thus produced excellent reversed results which we think are better than those obtained by the other method. The method of manipulation which we recommend is as follows:—

(1) Develop the plates fully after having exposed them for the normal time. Use an ordinary developer, such as diamidophenol, and after development rinse the plate for about a minute.

(2) Place the developed plate against a black ground[8], say, a sheet of black paper, which is made to adhere to the glass side of the plate simply by moistening it so that the light acts only from above.

(3) Expose the silver bromide left unreduced by the developer to light, the latter passing through the image. An ordinary incandescent gas burner serves as a convenient source of light[9].

(4) Dissolve the silver image in the solution of acid permanganate given above[10] so that the image is completely removed. This treatment, as also the subsequent stages described below, should be done by the red or green light of the dark-room. After dissolving the image, treat the plate with the weak bath of sodium bisulphite and follow with a short rinse.

(5) Fix the plate in ten per cent. hypo solution and wash thoroughly.

(6) Bring up the image again with the physical mercury developer given above.

The image appears after about a minute, but gains strength slowly. By continuing the action of the developer for a sufficient time, from one hour to an hour and a half, the image is obtained in finest detail with the dense portions as vigorous as those of a negative developed by the customary alkaline method.

Although the time of the re-development is considerable the solution remains perfectly usable throughout. It should be noted that an acid solution of potass. bichromate, which frequently is preferably employed in development after fixing, cannot be used in this method since it partially destroys the latent image which is left after fixing.

A. and L. **Lumière.**
A. **Seyewetz.**

---

[5] The preceding operations having been done in full daylight, the silver bromide forming the image is thereby exposed sufficiently to permit of development after fixing.

[6] Development with the double sulphite of silver and sodium gives images which are not nearly so good as those produced with the mercury formula.

[7] "Agenda Lumière," 1907, p. 215.

[8] The use of a black support for the plate can be dispensed with by using ant halation (backed) plates.

[9] With a Welsbach burner No. 2, for example, placing the negative about 20 inches away, the time of exposure will be from 10 to 15 minutes. Instead of the burner one can use 24 to 28 inches of magnesium ribbon about ⅛-inch wide and burnt about 8 inches from the negative.

[10] In hot weather take care to cool this solution so that it is not more than 70 deg. F. in temperature.

# THE PHOTOGRAPHY OF VORTEX RINGS.

[In the current number of the Journal of the Franklin Institute Dr. Edwin F. Northrupp describes in detail the methods employed by himself for the photography of vortex rings in motion, a branch of applied photography which may fitly rank with that of Professor Worthington in the photography of splashes. The great scientific interest of Dr. Northrupp's work induces us to reprint the major part of his paper, although the reproductions from half-tone proofs fail to do justice to the original vortex-ring photographs.—Eds., "B.J."]

The problem which was presented of photographing fluid vortices proved to be one of very great difficulty. It was, indeed, over a year after the first attempt at solution before a satisfactory one was found. In the beginning the facilities available were inadequate, and interruptions were frequent during the course of the experiments.

At the outset it was decided to take stereoscopic views, practically full size, and, if possible, so nearly instantaneous that, with the swiftest motions, there would be no lack of sharpness in the photographs. A little calculation will show the briefness of the interval required for a successful exposure. Some of the negatives were made from rings moving at the rate of 20 mm. in 1/80 of a second. If the photograph is to show clear and sharp under a lens, no part of the ring should move over 1/20, or certainly not over 1/10 mm., during the time of an exposure. Hence the exposure should not last longer than from 1/16,000 to 1/32,000 of a second.

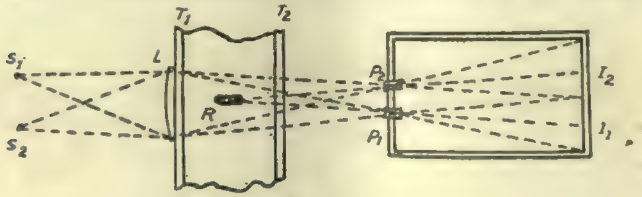


Fig. 1.

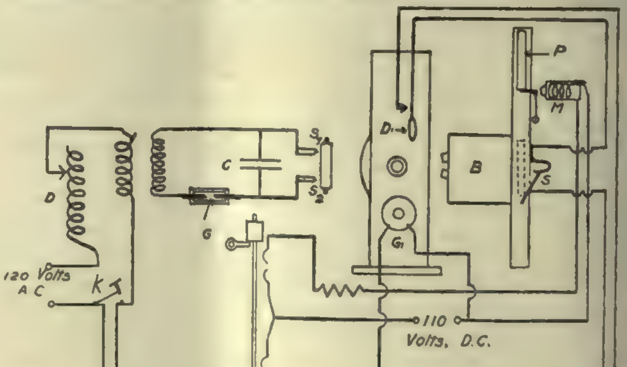


Fig. 2.

No mechanical shutter could be constructed to give so short an exposure. At first this fact was not fully appreciated, and a few preliminary trials were made in which a steel shutter moved by a powerful spring was used. Views were obtained, but the delicate details were all absent. It was then rightfully concluded that the photographs must be made with an electric spark, which preferably should not last over 1/50,000 of a second. As the intensity of the light must be great in proportion as the time of exposure is reduced, and as the light must pass through 12 cm. of water besides two plates of glass and at least two lenses, it was necessary to devise means of obtaining a light of very great intensity and quantity.

In photographing falling drops of a liquid, as was done so beautifully by Worthington, the time of fall through a given height in air could be depended upon as fairly constant. The "reproducibility" of the speed of the vortex rings could not, however, be so depended upon. Experiments showed that it was impossible so exactly to regulate the force of the blow on the diaphragm of the gun and other necessary conditions that the velocity of the rings could be relied upon to be twice quite alike. All difficulties, except the last, were overcome, and this proved not to be serious in the end.

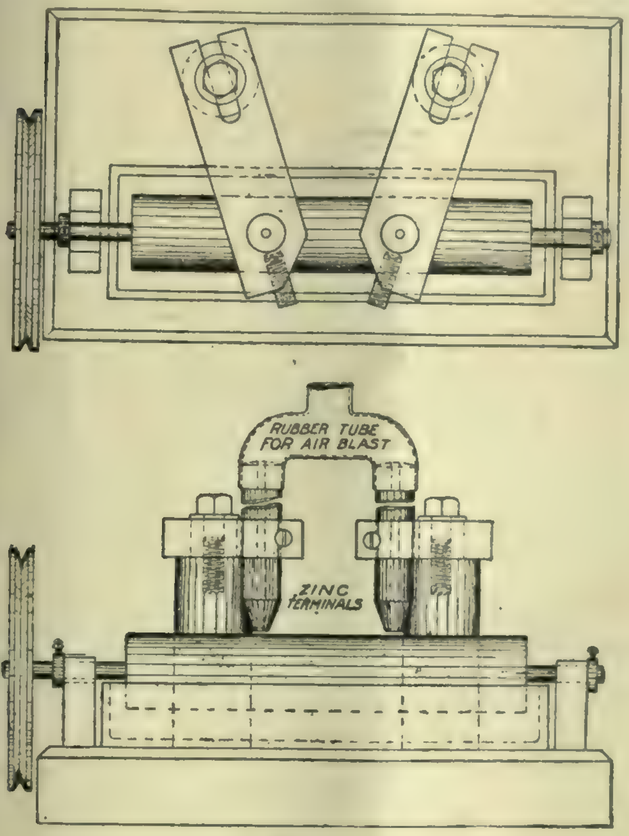


Fig. 3.

The optical method employed giving complete success, and which I think could not be improved upon, was as follows :—

A plano-convex lens, L, (Fig. 1) 12.5 cm. in diameter, was held in a frame against one of the glass sides of the tank. The lenses, $p_1$ and $p_2$, of the stereoscopic camera were placed as shown in the diagram, 25 cm. from a plane midway between and parallel to the sides of the tank. The camera was adjusted to give a focus at 25 cm. The two stereoscopic images of the ring R would thus appear full size upon the photographic plates. Two sources of light, $s_1$ and $s_2$, were located back of the lens in such positions that the image of $s_1$ was focussed on the lens $p_1$ and the image of $s_2$ on the lens $p_2$. This arrangement projected upon the camera plates $I_1$ and $I_2$ two brilliant circular discs of light of uniform brightness. The ring thus appeared in the camera as a dark object against a brilliantly lighted background.

If a suitably moving photographic plate and the vortex ring R are as indicated, when instantaneous flashes simultaneously occur at $s$ and $s_2$ stereoscopic negatives are secured. A variety of makes of photographic plates $3\frac{1}{2}$ x $6\frac{1}{2}$ inches were tried. The most rapid plate tried was the Lumiere Sigma, but Seed plates and Eastman plates also gave satisfactory results.

Methods of producing strong flashes of light at $s_1$ and $s_2$ received considerable study and experimentation before a satisfactory one was hit upon. The arrangement finally employed is shown in Fig. 2.

A generator of several kilowatts capacity supplied alternating current of forty cycles at 120 volts to the primary of a transformer having a transformation ratio of 1/100. In the circuit with the primary of the transformer there was a variable inductance D of low ohmic resistance. In circuit with the secondary of the transformer were the two spark gaps $s_1$ and $s_2$, in series, and together in shunt with a high tension condenser C. The capacity of this condenser was .013 M.F. It was also found necessary in regulating the discharges at $s_1$ and $s_2$ to introduce an adjustable air gap at G. This air gap consisted of two steel rods 7 mm. in diameter inserted into the opposite ends of a porcelain tube and separated from each other, near the centre of the tube, by about 1 cm.

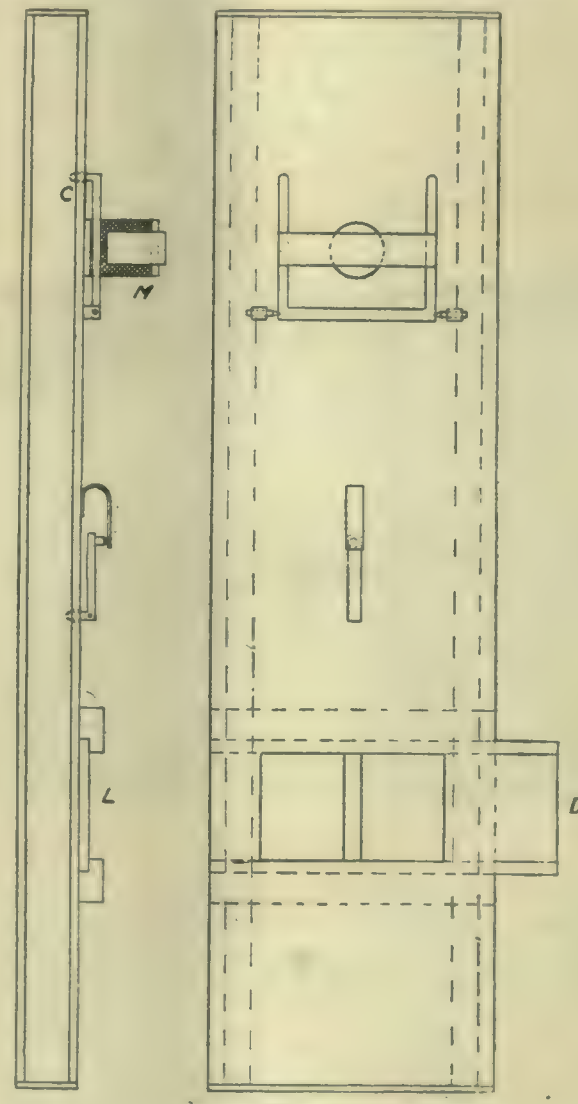


Fig. 4.

The problem was to make such adjustments that only one discharge would occur at the air gaps $s_1$ and $s_2$ during the time of each alternation of the generator current, or 80 discharges per second. It was arranged to have the dropping photographic plate P fall in 1/80 of a second through a distance equal to the diameter of one of the illuminated areas on the plate. Thus two successive illuminated areas on the plate would touch, tangent to each other, and not overlap. If the plate were a long one, three or four round discs of deep black (in the negative) would be photographed upon it during its passage past the back of the camera box B. If the ring happened to be in the field of view while the plate was passing the camera box, two, three, or even four views, 1/80 of a second apart, might be secured.

The design of the spark gaps $s_1$ and $s_2$ was carefully worked out to give necessary uniformity in the discharges, as well as the greatest possible brilliancy and actinic power to the light.

The construction of this double discharge gap is shown in Fig. 3. It consists of three essential parts, a trough of mercury, a rotating cylinder of brass dipping into the mercury, and two upright rods of zinc to which the high-tension terminals of the transformer are joined. The discharge takes place between the amalgamated ends of the zinc rod and the amalgamated mirror-like surface of the rotating brass cylinder. The parts were made sufficiently large to run quite cool. A small motor maintained the brass cylinder in rotation at a moderate speed. It is thought an air-blast as shown in the figure would have been an improvement as tending to steady the discharge and keep it more regular. It too frequently happened that, due to inability to hold conditions constant, two or more discharges occurred during a half cycle and negatives were spoiled.

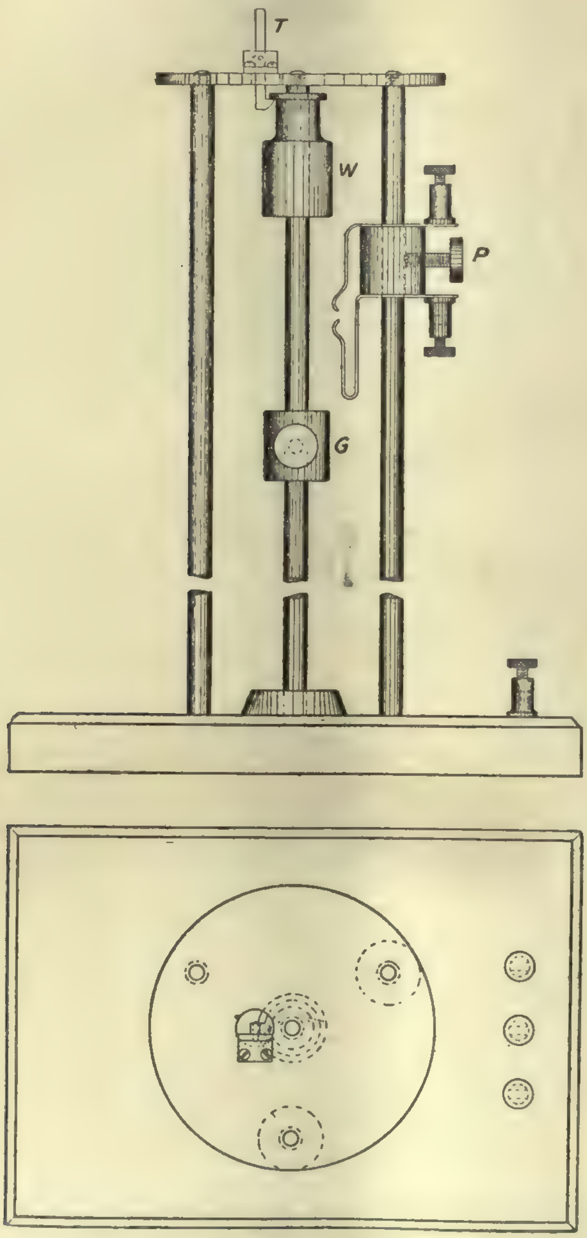


Fig. 5.

The plate slide is plainly shown in more detail in Fig. 4.

As two plates had to be dropped at exactly the same time, a brass frame was constructed which held the two plates in rigid relation to each other. The plates were put in this frame, and when it was released by the magnet M and the catch C. Fig. 4, fell between two steel guides, shown in dotted lines. It was caught in a light-tight bag held below the slide. The guides for the plate frame were covered and made light-tight. A sliding door D, opposite the back of the camera, could be opened and ground glass inserted in place of the plate, and in this manner the camera focussed.

The timing of the fall of the plates and the arrival of the ring in the field of view, so that it would be properly caught upon the plates, was accomplished in the following manner: A metal weight was so arranged that, upon releasing a catch, it would fall and make electric contact between two spring terminals in the circuit of an electric magnet, thereby releasing the plate frame; then, after a short definite time, the falling weight made contact between two other spring terminals, closing the circuit through the electro-magnet gun. This timing device is shown in Fig. 5.

The relative positions of the first and second pair of contact springs could be adjusted to regulate to a nicety the interval between the release of a plate and the energising of the gun magnet. To determine the proper positions at which to set the above two contacts the following procedure was adopted: There was first suspended in the tank of water a small disc ($D_1$ Fig. 2) at the exact position where it was desired that the ring should be at the moment of the exposure. When a ring was projected so as to strike this disc, it would close by its impact upon the disc an electric circuit. The contact was in circuit with the primary of the transformer and also in circuit with another contact (S, Fig. 2), which normally remained closed, but which the falling of the plate frame would open at a moment when the plates were in a position to receive the image of the ring. When the trigger released the contact weight, magnet M, Figs. 2 and 4, first released the plate frame, then after an interval the gun magnet $G_1$ was energised, and if the ring reached the disc before the plate frame reached its exposure position, the circuit through the transformer was closed and a flash of light at the spark gaps occurred. If, however, the plate frame reached the exposure position before the ring reached the disc, the primary circuit of the transformer was open and there was no flash of light at the spark gaps. An up-and-down adjustment was made of the pair of contact springs in circuit with the gun until a flash of light of the briefest possible duration was seen. This completed the timing, which meant that the ring reached the disc at the same instant that the plate frame and plate reached the exposure position. The disc which the ring was made to strike was then removed from the tank and the circuit short-circuited at K.

By the above procedure and adjustments everything was put in readiness for exposing the plates. To decrease the danger of fogging the plates the work was usually done at night. When all was in readiness, the main circuit switch was closed to start the spark and the timing weight was released. This last started the plate frame on its fall and after a short interval fired the gun. The plate frame was caught in a bag and carried to the dark-room for development. There resulted, on the average, about one drop out of five which gave photographs worth preserving. There were so many things to be kept in exact adjustment at the same time that numerous failures were inevitable. The expense for plates was considerable, and the innumerable trifles which persisted in going wrong at a critical moment were often discouraging.

After about thirteen first-class pairs of stereoscopic views had been secured and about twice this number of single views, it seemed that the research was consuming time out of proportion to the value of the results being obtained, and the writer did not feel justified in continuing the investigations further. The negatives secured, however, especially the stereoscopic ones, were sufficient to show, in a very adequate way, the precise character of the phenomena under investigation.

As the light was quite sufficient, a strong developer could be employed, and only about five minutes, as a rule, was consumed in the development of one pair of plates.

The developer employed was usually made up shortly before it was used and according to the following formula :—

| | |
|---|---|
| Water | 10.7 ozs. |
| Metol | 0.5 gram |
| Hydroquinone | 2.1 grams |
| Sodium sulphite | 7.85 grams |
| Sodium carbonate | 14.3 grams |

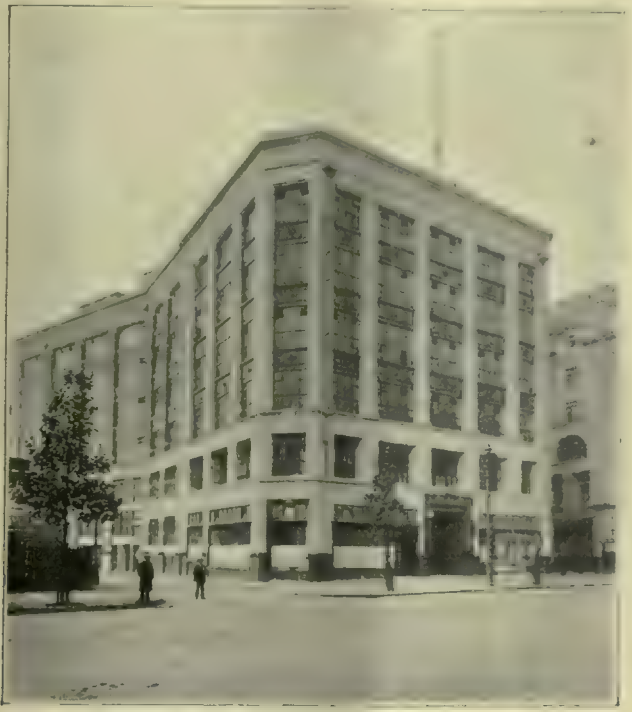
This was put in a bottle with a tight glass stopper, and it was found to keep without deterioration when the bottle was kept filled. Before using it was diluted with an equal quantity of water.

EDWIN F. NORTHRUPP, Ph.D.

*(To be continued.)*

## THE NEW HEADQUARTERS OF THE KODAK COMPANY.

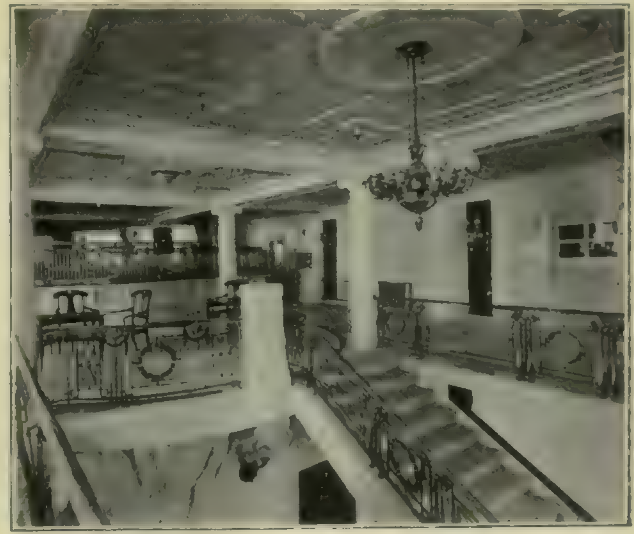
ALMOST exactly a year ago—in our issue of November 25 last year—we published a reproduction of the architect's perspective drawing of the building planned for the Kodak Company in Kingsway. At that date the site was in the hands of the excavators, but with the rapidity which the substitution of steel frames for bricks and mortar in the erection of buildings has made possible, the huge block has risen week by week, and about a month ago received the whole of the office fittings, stock, etc., from the Clerkenwell Road premises of the Kodak Company, which have now been vacated. On the occasion of a recent small informal gathering, we had the opportunity of making a tour of the premises under the guidance of Mr. W. S. Gifford, a co-director with Mr. George Eastman of the company. The premises have been designed, not simply as the business headquarters in London of the Kodak Company, but also as the centre of supply of the Kodak productions throughout the continent of Europe, certain of the British Colonies, and to some other countries. The block is constructed with freight lifts on one side and two passenger lifts on the other. Occupying what is practically an island site, the lighting of all six floors is exceedingly efficient, despite the fact that, owing to a legal limit of the total height of the building, the separate floors are not of the loftiest.



The New European Headquarters of the Kodak Company in Kingsway, London.

The first floor, where are situated the chief executive offices, counting-house and correspondence departments, is gained from the street level by a staircase of Greek marble, the walls of the entrance hall and first floor (shown in the second photograph) being of Italian statuary marble, decorated with pilasters of blue Belge marble, and presenting, in conjunction with the wrought-iron balustrades and matt-silvered electric light fittings, a most ornate appearance.

From this floor our tour was made to the top (fifth) floor, which is devoted chiefly to professional photographic requisites. We reproduce two photographs which will show better than any words of description the elaborate show-room to which the Kodak Company invite professional photographers needing any description of apparatus or material. The show-room is admirably lighted and fitted for the display of backgrounds, cameras, and the many accessories in the way of furniture, etc., in the supply of which the Company actively specialises. The stock rooms of professional plates, papers, etc., adjoin, whilst on the floor below a studio has been fitted for portraiture both by daylight and various artificial lighting systems. Here professional photographers will have full opportunity of making their own tests of a lens, plate, or arc lamp in which they may be interested. The department for repairs to cameras and other apparatus is placed upon this professional floor, where are also the tea-rooms and kitchen for the meals of the female staff.



Reception gallery, counting house, and executive offices on first floor.

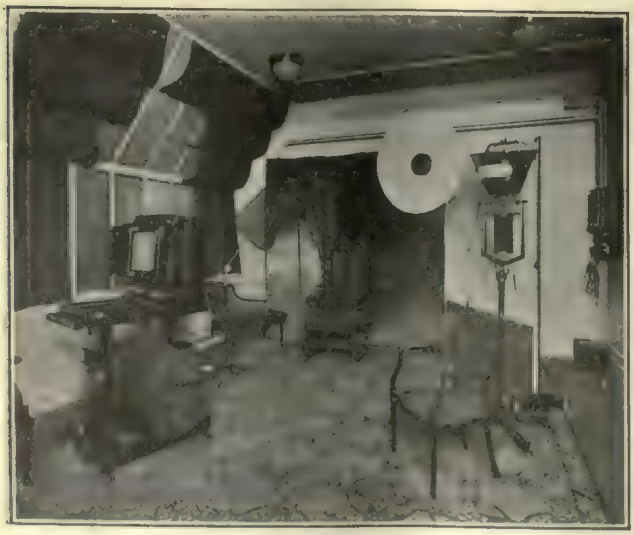
On the floor below a good deal of space is taken up by the advertising and buying and export departments, whilst what is known as the technical department is here fitted with an office, enlarging and dark-room, fully fitted for dealing with any complaints which users may have to make in respect to the Company's materials.

At the present time the third floor is reserved for expansion in the Company's business. It contains, however, a full-size cinematograph theatre, in addition to developing and printing room for cinematograph film. Purchasers of these products, in which the Kodak Company now does an enormous business, are here provided with the fullest demonstration facilities. In our descent again we reach, on the second floor, the invoicing, town order, and dealers' stock departments, pass on the ground floor the shipping and receiving departments, and finally descend to the large and lofty basement wherein are stocked immense cases of film, plates, papers and apparatus which pass through these vaults en route to customers in Great Britain and on the European continent.

The building is heated throughout with hot water, supplemented by a blower system of ventilation. Though the construction is as nearly fire-proof as it is possible to obtain, a most complete automatic sprinkling system has been supplied both from the main and from storage tanks on the roof, having a capacity of 11,500 gallons. The manner in which the whole work of the huge establishment has been sub-divided may be cited as an admirable example of business-

The Professional Showroom.

Professional Showroom—another view.



Day and artificial-light studio for professional customers.

Invoicing Department—one of many similar busy offices.

Shipping and Forwarding Department.

The Heart of the Business-Direction. Mr. W. S. Gifford in his private office.

organisation. The photographic visitor, who makes a tour of floor after floor of these busy offices, where are employed upwards of 300 persons, cannot fail to accord his tribute to the skill, enterprise and knowledge which has brought the Kodak Company to this supreme position in the world's photographic trade. It is now almost exactly five-and-twenty years since the business of the Company, then styled the Eastman Dry Plate and Film Company, made its entrance into the British photographic trade in comparatively small premises at 13, Soho Square. The subsequent introduction of daylight-loading celluloid film formed the basis of an immense amateur business, but of late years the Company has broadened the foundations of its trade, which now includes every phase of the photographic business. The present building in Kingsway is an eloquent symbol in stone and iron of the success which has followed this great commercial enterprise.

## A CELEBRATION OF GOERZ PROGRESS.

WITHIN the past few days the Berlin firm of lens manufacturers, Messrs. C. P. Goerz, have been celebrating in characteristically German fashion, by a social gathering or "fest," the completion of twenty-five years in the business of photographic optics. The period is one which the present head of the firm, Mr. C. P. Goerz, must review with great satisfaction. It was in 1886 that, from a small establishment in Berlin and with one assistant only, Mr. Goerz started selling cameras. A couple of years later the manufacture of lenses was begun in a small workshop in Belforter Strasse. This was in the days before the new Jena glasses, and the Goerz lenses which emanated from this small works were of the pre-anastigmat or rectilinear class. They were sold under the name of "Lynkeioskop," and though little known in England, where they were never placed on the market, they are still manufactured. In 1889 a larger factory was established at Schöneberg, and from here in 1892 and 1893 the now celebrated Goerz "double anastigmat," or "Dagor," as of late years it has been re-named, was issued. The new lens rapidly obtained a leading place among photographic objectives, as witnessed by its enormous sales. According to the firm's official figures in 1894, 20,000 lenses had been sold; in 1900, 60,000; in 1903, 100,000; and in 1908, 200,000.

HERR C. P. GOERZ, FOUNDER OF THE GOERZ OPTICAL CO.

But, as is well known, the name of Goerz is a hall-mark of high quality in cameras as well as in lenses. The Berlin firm was the first to issue a camera of the distinctive type which is now known throughout the globe as the Goerz-Anschutz folding focal-plane, a type of camera for instantaneous photography which was produced from a pattern of instrument employed by Herr Ottomar Anschütz, one of the pioneers in instantaneous work. In Messrs. Goerz's hands the camera has continuously undergone improvement, whilst of late years other models of folding camera, such as the "Tenax," have been introduced. Meanwhile Messrs. Goerz had not stood still in the matter of lenses, and the original "Double Anastigmat" was followed by others of larger aperture, as the result of the calculations of the original computor, Herr von Hoegh.

In 1896 the Goerz factory commenced the manufacture of other non photographic optical goods, such as the now well known "Trieder" binoculars, the prism telescope, in addition to instruments for naval and military use, such as the panoramic telescope, which has been largely adopted by the War Departments of many great Powers, and has also been adopted as a periscope for use on submarines. The year 1898 saw the transference of the Goerz optical manufactures to a specially built factory at Friedenau, where the business has undergone further expansion, and at the present day employs, as we are informed, 1,900 workpeople, a number which does not represent the sum total of those engaged in the manufacture of the Goerz productions, since the firm has also factories at Winterstein in Thuringia, at Vienna, Pressburg in Hungary, and St. Petersburg. The application of optical science in industry has undoubtedly borne richer fruit in Germany than in any other country, yet even so it is not always the case that the early pioneers are those who reap the financial reward. Mr. Goerz, who, as shown by his photograph, is still a comparatively young man, will doubtless have many personal congratulations upon this twenty-fifth anniversary of his career as a manufacturer, and the great numbers of photographers who have availed themselves of the high quality of his productions will, we are sure, join in the spirit which prompts such compliments upon a record of great industrial success.

## WARM TONES BY MEANS OF DYES.

IN further reference to the article by Mr. E. J. Wall which appeared in the "British Journal of Photography" for August 11, 1911, we may quote here a short contribution to the "Bulletin Nord de la France," in which M. F. Lefebvre records his practical experience in working the diachrome process. A glass transparency, or lantern slide, is made in the usual way and the silver image converted into silver iodide in a solution made as follows:—

| | |
|---|---|
| Iodine | 1 gm. |
| Potass iodide | 2 gms. |
| Water | 100 ccs. |

The transparency is left in this liquid until the shadows are yellowish white in appearance, not only on the front but when examined from the back. The plate is then washed for a few minutes and put to dye in a suitable bath, where it is allowed to remain from fifteen to twenty minutes, the plates being examined from the glass side in order to see that the iodide has completely been saturated by the dye. The final coloration obtained is the same whether the dye bath be strong or weak; the time of immersion will, of course, vary, and light tints, corresponding to the dyeing of part only of the silver iodide are obtained by reducing the time of immersion.

The slide is then washed in order to remove the dye from the gelatine, a little acetic acid being added to the wash water for this purpose. It is then fixed in a bath of hypo containing a small quantity of tannin and sodium acetate. This last operation may sometimes be a cause of failure, and may quite well be omitted as the image obtained, even with the iodide in the film, is fairly transparent, though, of course, it is necessary, to remove it in aiming at highly brilliant colours.

The dyes employed are those which can be purchased at ordinary drug stores, such as fuchsine violet and fuchsine red, although the purer dyes, such as those of the Hoechst, Agfa, or St. Denis brands, are obviously to be preferred. In all cases with the red and violet fuchsines, the stained gelatine does not yield its colour to ordinary washing, even in water containing acetic acid, but requires a 5 per cent. solution of soda bisulphite. Fixing in hypo and the final washing in no way altered the original tint. A certain crystal green, chosen among other cheap aniline colours, was found to work excellently; on the other hand, a ponceau red, a blue, and a yellow gave negative results.

◆

**BARNET NEGATIVES WANTED.**—Messrs. Elliott and Sons, Ltd., Barnet, Herts, are offering to purchase negatives, of good technical quality, made upon their plates. They should represent attractive subjects suitable for advertising the Barnet plates.

# Photo-Mechanical Notes.

### Clever Photo Engraving.

In the current issue of the "British Printer" there is an example of half-tone work—an illustration of a church interior—which shows remarkable skill on the part of the operator. Eight negatives have been made, each through a different cross-line screen, the rulings running from 65 to 200 lines per inch, and then from each of these negatives a different piece has been taken and joined up to make the complete picture. The negatives must have been all alike in tone-rendering, since at a little distance there is no sign that the picture is not all from one negative, and the stripping has also been excellently done, as the joins are quite invisible. The reproduction is by Messrs. Alfred Craske and Co. It is described as being unique, but, if our recollection serves us, a similar thing was done of a portrait subject by the American Suffolk Engraving Company some time ago, though this, of course, does not in any way detract from the merit of the present job.

### The Need for Stripping.

The plethora of interesting photographs with which editors are inundated, and the necessity for showing them attractively is leading to the use of all sorts of decorative borders, and the use of many photographs arranged in all kinds of fashions on the same page. Examples are to be seen, especially in the "Sphere" and the "Graphic," and it is fairly obvious that it has only been possible to make such arrangements by stripping the negatives. Full directions as to stripping methods were published in the "Process Photogram" in 1901, and an example shown of how the page in many Continental papers is made up by means of stripped negatives. Ease and rapidity in stripping is an advantage of the wet-plate process, but easy as it is, the difficulty of getting men able to do it well has prevented the method being used hitherto as much as it might otherwise have been.

### PHOTO-MECHANICAL PATENTS.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901 :—

Relief Printing.—No. 16,695. Process for the production of relief printing blocks. Bendixen.

### FORTHCOMING EXHIBITIONS.

November 6 to 11.—Southampton Camera Club. Sec., C. M. Cooper, 203, Shirley Road, Southampton.

November 7 to 11.—Norwich Photographic Society. Sec., J. T. Tanner, The Lodge, Bowthorpe Road, Norwich.

November 15 to 18.—Cambridge and District Photographic Club. Sec., T. J. Sowdon, Sunny Side, Guest Road, Cambridge.

November 15 to 22.—Portsmouth Camera Club. Sec., J. C. Thompson, 23, Elm Grove, Southsea.

November 27 to 30.—City of London and Cripplegate Photographic Society. Sec., F. W. Gardner, 135, Vaughan Road, Harrow.

1912.

March 12 to 16.—Sheffield Photographic Society. Sec., James W. Wright, 30, Oakhill Road, Sheffield.

May 3 to 11.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

Royal Institution.—The eighty-sixth Christmas course of juvenile lectures, founded at the Royal Institution in 1826 by Michael Faraday, will be delivered this year by Dr. P. Chalmers Mitchell, D.Sc., LL.D., F.R.S., Secretary of the Zoological Society, his subject being "The Childhood of Animals." The lectures will be delivered on the following dates, at 3 o'clock :—Thursday, December 28, December 30, 1911, January 2, 4, 6, and 9, 1912.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following application for patents have been received between October 23 and 28.

Plate-holders.—No. 23,378. Photographic plate or film holders. Samuel Konrad Bohlin and Erik Magnus Edström.

Packing Device.—No. 23,877. Packing device for sensitised photographic materials. Albert George Nepean Ford.

Light-measuring Appliances.—No. 23,429. Devices for quantitatively measuring the light transmitted or reflected by colour or monochrome plates, transparencies or coloured materials. Edward Sanger-Shepherd.

Daylight Developing.—No. 23,506. Daylight photographic plate-developing apparatus. Charles Burdon Buxton.

Colour Reproduction.—No. 23,645. Method for producing cinematograph films, roll films, photographic plates, and the like in natural colours. William James May.

Colour Cinematography.—No. 23,384. Colour screens for use in connection with the preparation of negatives for colour cinematography. John Campbell and Thomas Thompson.

Colour Cinematography.—No. 23,385. Colour screens for use in connection with the preparation of negatives for colour cinematography. John Campbell and Thomas Thompson.

Colour Cinematography.—No. 23,386. Films for colour cinematography. John Campbell and Thomas Thompson.

Colour Cinematography.—No. 23,387. Manufacture of cinematograph sheet films for the production of coloured pictures. John Campbell and Thomas Thompson.

Colour Cinematography.—No. 23,388. Manufacture of cinematograph sheet films for the production of coloured pictures. John Campbell and Thomas Thompson.

Colour Cinematography.—No. 23,497. Films for the production of coloured cinematograph pictures. John Campbell and Thomas Thompson.

Colour Cinematography.—No. 23,498. Films for the production of coloured cinematograph pictures. John Campbell and Thomas Thompson.

Cinematographs.—No. 23,505. Cinematograph cameras. Ernest Francis Moy and Percy Henry Bastie.

Cinematography.—No. 23,551. Cinematograph or motion pictures. John Owden O'Brien, for Edward John Wall, United States.

Cinematography.—No. 23,564. Cinematograph clock slide. Herbert Hill Micklewood.

Cinematograph-Phonograph.—No. 23,620. System of phono-cinematography. Augustus Rosenberg.

Colour Cinematography.—No. 23,825. Method and device for cutting out contour bands used in colouring cinematograph films. Itala Film.

Colour Cinematography.—No. 23,826. Method of cutting out the contour bands used in colouring cinematograph films. Itala Films.

Cinematographs.—No. 23,890. Cinematograph apparatus. Arthur Hibbert Diggle.

Cinematography.—No. 23,942. Apparatus with perforator for the continuous phototypoglyptic reproduction of cinematograph films, postcards, pictures, and moulds of any kind. Société Sohier et Cie.

Apparatus.—No. 23,931. Photographic apparatus for indicating and measuring changes in electrical pressure. John Steward Dow.

### *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or* *abroad, in the case of patents granted under the International Convention.*

Printing Wording, Borders, etc., on Negatives.—No. 27,486, 1910 (Nov. 25, 1910).—The claim is for a method of printing extra words such as Christmas greetings or designs or borders on photographic prints in one printing which consists of first placing the photographic negative in the printing frame and then placing on the negative in the desired position a strip of transparent material with the extra words, design or border printed opaquely thereon, and finally placing in the frame the printing paper on which the print is to be obtained.

The invention is designed to provide means to render unnecessary the double printing processes with masks now used to print extra borders, etc., on photographic prints. The extra words, design or border which we desire to reproduce on the photographic print, or printed in opaque material, on a conveniently shaped thin strip of suitable transparent material such as gelatine or celluloid. This strip is of such a thickness that it can be inserted between the negative and the printing paper without interfering with the printing process. All that it is necessary to do is to first place the negative in the printing frame in the usual manner and then place the strip of gelatine or celluloid with the printed greeting or the like in the desired position on the negative, and finally the printing paper on which the print is to be obtained. A print is obtained on the printing paper from the negative with the required extra words, design or border printed in the desired position thereon.

Finally, it should be mentioned that it is common practice to modify a print by placing between the negative and the print a sheet of transparent celluloid on which is applied patches of colour so as to more or less mask from the print certain parts of the negative. John J. Griffin and Sons, Ltd., Kingsway, London, W.C., and John Thompson, 23, Warner Road, Hornsey, London, N.

Cinematographs.—27,207, 1910 (November 23, 1910). The invention consists in forming a double horizontal illuminant chamber containing a high-power and lower-power arc connected by a quick change-over switch and having an intermediate resistance, the whole being carried on a solid framework whereby steadiness of the apparatus is ensured. It also consists in carrying a series of arms, any one of which can be readily brought into position to tint or colour any part or the whole of a picture being shown whilst the apparatus is in operation. Arthur Hibbert Diggle, 238, Middleton Road, Oldham.

Instantaneous Shutters.—No. 3,318, 1911 (February 9, 1911).—The invention is a shutter for bulb, time, and instantaneous exposures. Its chief feature is a carriage capable of occupying three positions which correspond with these three cases.

In the first position of the carriage, corresponding with "time," time-exposure lever, which is mounted on the carriage, can be pushed by means of a release-lever provided with an externally projecting presser handle, and momentarily engages the shutter proper when the latter, in its movement, brings its apertures in front of the lenses, this shutter being then stopped for the whole duration of the exposure by an auxiliary release lever.

In the same position, a piece mounted on the carriage puts out of action an automatic actuating or controlling lever, itself controlled by a spring and provided with a dash-pot, the piston of which can move at a variable speed, which permits the speed of this lever to be regulated at will.

In the second position, on the one hand, an abutment or stop mounted on the carriage limits the amplitude of the movement which can be imparted to the release lever, in such a manner that the time-exposure lever can no longer be driven by the release lever and becomes inactive, at the same time as the auxiliary release-lever becomes independent of this actuating lever; on the other hand the automatic actuating lever is released and can actuate the auxiliary release lever when it has gone off, after the instant that pressure has been applied to the presser-member or handle of the release lever, a time which depends on the adjustment which has been given to the dash-pot.

In the third position, which corresponds to the case of a very rapid "instantaneous" exposure, the time exposure lever remains inactive as before, and, moreover, the auxiliary release lever is locked, in such a manner that, when the presser member or handle is pressed, the shutter passes from the "set" position to the position of rest, without stopping and at a high speed.

For the full explanation of the mechanism the nineteen drawings in the complete specifications are necessary. Louis Joseph Emmanuel Colardeau, 13, Rue de Navarin, and Jules Richard, 23, Rue Mélingue, Paris.

Focal plane Shutters.—No. 27,461, 1910 (November 25, 1910). The invention relates to mechanism for altering width of slit and setting for "time," "bulb," and "instantaneous" exposures. A distinctive feature of the plan herein is the adoption of a swinging hook working in conjunction, and on alternate sides, of an extension formed on a part representing a time detent, and at the same time engaging with, and releasing, a pawl from the winding wheel. Although the invention may be applied to shutters differing widely in construction, it is particularly adaptable to that described in Patent No. 12,105, 1909 ("B.J.," July 22, 1910, p. 555), in which the blind is divided into two sections that are capable of independent movement for the adjustment of the exposing aperture or slit, and also for the self-capping action at the termination of the exposure.

The sections referred to above are carried on two rollers, one of which is situated at the lower part of the shutter box and contains a spring which always tends to wind the blind-sections downwards; the second roller is at the upper part of the shutter box, and serves the purpose for winding up, or setting, the shutter prior to exposure. It is furnished with an extended spindle to which a pinion is fixed, this pinion engaging with a gear or winding wheel in the well-known manner.

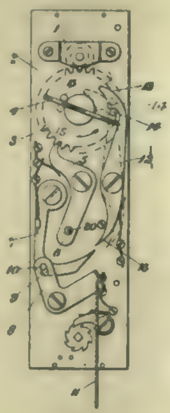


Fig. 1.

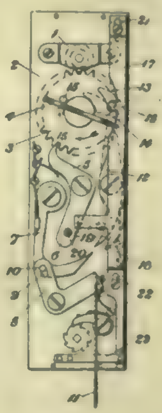


Fig. 2.

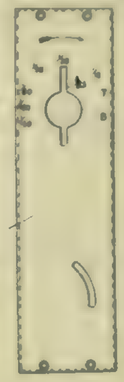


Fig. 3.

The claims are :—

1. The provision of a time detent, as shown at 12, Figs. 1 and 2, having an extension as at 16, working in conjunction with a swinging hook 7, which also actuates the release pawl 5 holding the shutter set, and being thrown into the active position by means of a stud 14 fixed to the winding wheel.

2. The provision of a time detent and swinging hook, as in Claim 1, and a sliding piece as shown at 17, Fig. 2, for holding the pawl 5 clear of the winding wheel during the closing of the shutter, the sliding piece being actuated in either direction by the stud 14 substantially as described in the drawings. George Frederick Prout, 1,029, Forest Road, Walthamstow; Herbert Holmes, Ensign Works, Clifford Road, Walthamstow; and Houghtons, Ltd., 88 and 89, High Holborn, London, W.C.

Cinematograph Paper Bands.—No. 23,688, 1910 (October 30, 1909). The invention consists of an improved process for the manufacture of electrolytically metallised paper for cinematographic bands, in which a non-cohesive almost imponderable coating of silver (approximately 5 decigrammes per square metre) is deposited on a polished cathode and transferred to the paper, which is coated with an adhesive mixture, by interposing between the cathode and the paper a simple or complex organic solution such as a celluloid solution, capable of forming after drying an impermeable insoluble and cohesive film adhering to both the paper and the silver, but not to the cathode, to enable the easy final separation of the cathode from the paper. Edouard and Charles Dupuis, 22, Rue de la Cerisaie, Charenton, Seine, France.

**Rapid Bromide Printing Machine.**—No. 26,553, 1910 (October 11, 1910). The claim is for a printing machine in which the strip of sensitive paper is passed under an exposure shutter and then through a series of baths. Means are provided for intermittently opening the shutter whilst arresting the movement of the strip. There is a feed roller, which is intermittently rotated directly from a continuously rotating main-shaft; and also a pivoted lever, one arm of which actuates the shutter while the other is operated by the shaft during the arrest of the paper.

After the end roll of the roller carrying bromide paper *a* has been drawn over the transport roll through the liquid receptacle, this roll or strip is fastened between the two rollers *b* and *c*. By turning the shaft *d*, the wooden roller *b* and the indiarubber roller *c* are turned by means of the cogwheels *e*, *f*. By this means the strip is drawn through the arrangement, until the bromide paper *g* is brought under the negative *h*. Although the hand shaft *d* is always turned, the bromide strip remains still for a short time, until the interval *i* of the cog-wheel *e* has passed the cog-wheel *f*, and the teeth of the two wheels catch into each other again. During this interval, the arm *k*, which is fitted to the cog-wheel *e*, presses on the lever *l*, so that by the turning of the latter the paper is pressed against the negative *h* through a wooden plate *m*, and at the same time the cover *o* of the frame *p* is raised, whereby the exposure of the paper takes place.

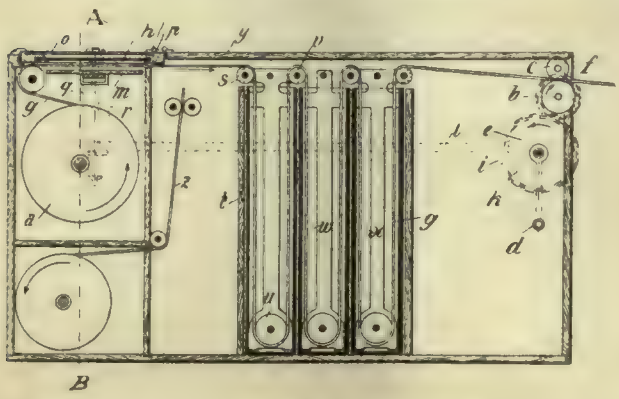


Fig. 1.

The rods *q* and *r*, which are connected with the cover *o* and are necessary for the pressing and exposure of the paper, are so arranged that the rods only lift up the cover *o*, when by means of the rod *q* and the wooden plate *m* the paper is pressed firmly to the negative *h*, so that exposure should not take place too soon. When the pressure of the arm *k* is released from the lever, the latter goes back into its place, and with it also the rods *q* and *r*. The rod *r* is pivoted at $l^1$ to the lever *l*, and its lower end is bent laterally to form a support for a spiral spring which surrounds the lower end of the rod *q*. This rod is provided with a shoulder, against which the spring abuts, and the lower end of the rod passes through an elongated aperture in the bent portion of the rod *r*. When the lever *l* is operated the first effect is to raise both rods *q* and *r* so that the plate *m* on the former presses the paper against the negative, and then the lever *l* raises the rod *r*, together with the shutter *o*, against the action of the spring, thus exposing the negative. The space between the plate *m* and the negative *h* is just sufficient to allow the paper strip *g* to pass freely.

The shutter *o* is constructed as a hinged lid, and may be provided on its under side with a mirror, the shutter being hinged at $o^1$ to the frame *p*.

As soon as the printing is finished, the cog-wheels *e* and *f* catch into each other again, and the paper strip is pushed on further for the length of a picture, *i.e.*, until the interval on the cog-wheel *e* comes again to the cog-wheel *f*. Now the unexposed paper which has been pushed forward is again exposed to the light, as already described, and so on. The printed strips are now first of all brought over the roller *s* into the receptacle *t*, full of developer, and passed over the roller *u* up to the roller *v*. Through this arrangement of the rollers, the strip to be developed is drawn twice through the receptacle, and thereby has sufficient time to develop. The developed strip is in the same way drawn through the fixing bath in the receptacle *w*, and then through the water bath *x*, so that it emerges finished from the arrangement through the rolls *h* and *c*.

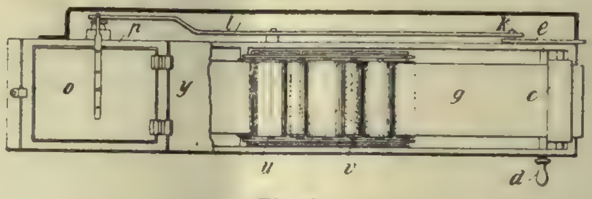


Fig. 2.

If sufficient pictures have been made, and the roller *a* has not yet been completely unwound, the cover *y* is opened, the printed strip is cut off from that still unexposed, and the former is to be joined to the ordinary strip *z*, made of cheap paper, so that this remains in the liquid receptacles whilst the apparatus is not in use, and there is a saving of the bromide paper. If then the arrangement is to be put in use again, the paper strip *z* is to be cut asunder and joined to bromide paper from the roller *a*. Instead of the cover *o* fitted with a mirror, a shutter closing can also be used. Theodor Busam, 106, Heusteigstrasse, Stuttgart.

**Colour Cinematograph Camera.**—No. 1,642, 1911 (January 21, 1911). The colour cinematograph camera differs from existing types in that with it may be obtained the necessary colour sensation records simultaneously by means, firstly, of the employment of a film-shifting movement pitched to at the least twice the usual amount of picture-shift. In conjunction with the above is employed a battery of two or more lenses of equal focus and placed one above the other so that their centres are at approximately the distance apart of a single cinematograph picture, such lenses being employed in conjunction with stationary colour screens or filters placed either before, between, or behind the lens combinations, as may prove most convenient in practice.

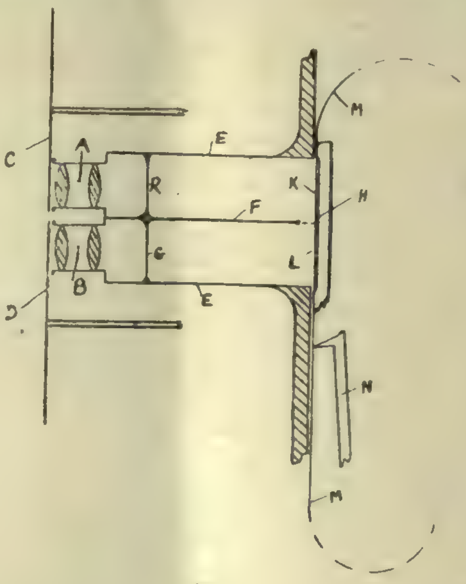


Fig. 1.

The novel feature of this invention is the employment of the extended picture-shift movement in the manner about to be further described, and in conjunction with two or more lenses provided with stationary colour-filters as before stated. By the term extended (or multiple) picture shift is meant that the movement which draws down the film after each exposure (otherwise known as the cinematograph camera escapement), shall, instead of operating so as to pull down the film the width of one picture only, operate so as to pull it down the distance of two or more pictures, according as two or more lenses are used on the camera, this number of lenses being in itself determined by the number of distinct colour record negatives it is desired to make of each given movement phase.

Thus, in the case of a cinematograph camera intended for two-colour negative making, the arrangement would be substantially as shown in Fig. 1. In this, A and B are two lenses of similar equivalent focus mounted on a light-tight box-form mount E in front of the cinematograph camera gate H. Inside this box-form mount E may be fitted the stationary colour-filters R (red) and G (green), the light tracks of the two lenses being for convenience kept apart by the internal division F, which partition need not, however, be continued right up to the gate mask. K L shows the opening of the gate mask, which opening is twice the length customary when taking an ordinary sized cinematograph picture. M is the film band travelling from the feed box (not figured) through the gate H, and N is the claw of the escapement action whereby the film is, by virtue of the before-mentioned extended picture shaft, pulled down the space of two pictures as the result of each engagement of such claw with the film perforations. C, D, are rotary light-shutters operating before the lenses A and B respectively, both shutters working in synchronisation as the result of being connected together by means of gear wheels, and which gear wheels are themselves actuated by the camera-driving mechanism in the usual manner. The shutters C and D will also have their cut-away sectors so adjusted that exposure of the film through lenses A and B proceeds at the same moment. Fig. 2 gives an enlarged front view of such a suitable adjustment of lenses and shutters. With such an arrangement as that described it follows that the effect of each exposure interval will be to impress upon the film stock the two distinct colour negative records, one being K, the red record, and the other L, the green colour record. Further, the two records will be of precisely the same movement phase where there was movement in the original subject or subjects taken, and, the mechanism and lens centring being correctly adjusted, the red and green colour record negatives will further be spaced upon the film band at the usual distance apart of ordinary cinematograph pictures. Also by the above means it will be seen that a continuous sequence of colour negatives of regulation cinematograph size may be made upon a band of film stock of the usual commercial width, such negatives being correctly placed the one above the other without calling into requisition any prism or prisms whatsoever.

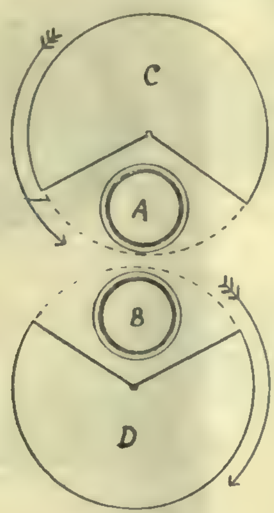


Fig. 2.

Since this multi-lens system of obtaining the colour record negatives for colour cinematography does not take into account errors of parallax (such errors being normally but slight provided fairly long focus lenses are used), means are provided of decreasing parallax errors where they may show themselves. Such means takes the form of making the centring of the lenses to and from one another adjustable within small limits. This may be effected by the same means as is usually employed in the centring of microscopic sub-stage condensers, namely, by means of a split ring and milled head screws; or other suitable means may be employed. By whatever manner adopted, the centring of the lens may at will be altered to rather more than the full picture height. In this way, by introducing slight opposing parallax error into the rendering of distant objects, the effect of the natural parallax in near objects will become less pronounced. Colin Noel Bennett, 9, Morrab Road, Penzance.

## New Trade Names.

PLASCO.—No. 336,566. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Thos. Hinshelwood and Co., Ltd., Glasgow Oil and Colour Works, Glenpark Street, Glasgow, Scotland, paint manufacturers, etc. October 2, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### A Use for a Nail-Brush.

When self-toning prints are undergoing a final washing (writes G. B. L. in "Photography and Focus" for November 7) in an ordinary porcelain dish, they sometimes curl up so much that ridges down the centre of the paper remain almost entirely unwashed. As it is impossible to watch them all the time, some means must be found to keep them moderately flat. A wooden backed nail-brush forms an efficient instrument. Float it bristles up on the top of the water, and any unruly print will be kept safely below the surface. The advantages of the nail-brush lies in the fact that it is not so heavy as to press upon the prints and prevent proper circulation of the water. Also, since it remains floating, the current of the water passing through the dish keeps it in that position where it is most needed, namely, where the water flows over the edge of the dish. A glass rod is apt to press down too heavily, and does not adapt itself so well.

### "Artura-Method" Sepias.

The following note appears in the November issue of the "Photo Era":—"One of the sensations at the conventions this season was the new hypo-alum bath with gold, by means of which sepia tones on Artura may be produced with an ease and certainty hitherto lacking. It is stated that with this bath it does not matter about the exact tone or colour of the original black-and-white print—they will all make good sepias. Even toning of the deposit and greater transparency in the shadows are claimed as well.

"Dissolve 8 ozs. of hypo in 128 ozs. of boiling water. Then add 2 ozs. of powdered alum. After this is dissolved, add 2 ozs. of sodium phosphate. Next dissolve 60 grs. of silver nitrate in 1 oz. of water and 180 grs. of potassium bromide in 1 oz. of water. Pour the bromide solution into the silver solution and add the mixture to the bath. Stir the solution constantly while adding the various chemicals. Last, add gold chloride 8 grs.

"The right temperature for the bath during toning is between 110 and 120 deg. It is stated that the tones will be uniform while the bath remains at a constant temperature, but can be varied by using different degrees of heat up to 140 or 150 deg."

# New Materials, &c.

Noctona Christmas Postcards.—Of all the forms of photographic Christmas postcards there is none to our thinking which is neater than that obtainable by using the small greeting negatives which Messrs. Griffin send out with each packet of their "Noctona" Christmas postcards. The greeting negative is simply laid between the paper and the negative proper when making the exposure, and is thus obtained, at a single printing, on the part of the subject most suitable for it. A variety of designs of greeting negative is available, and the method, for which Messrs. Griffin have recently obtained patent protection, calls for no additional manipulation beyond laying the greeting negative in the required position. Incidentally the user of this special method will learn of the wide range of results which he can obtain on "Noctona" gaslight cards simply by altering the exposure and developing for a greater or less time in the same solution. Shorter exposure and longer development will give him a softer print, whilst longer exposure and shorter development yields greater vigour, a characteristic of the "Noctona" emulsion to which we have referred in the past, but which may have escaped the notice of many readers. The Christmas postal cards are issued in three grades, Pearl-Matt, Satin, and Glossy, at the prices of 1s. per packet of eighteen of the regulation size, or 6d. per packet of nine court size; one design of greeting negative being included in each packet.

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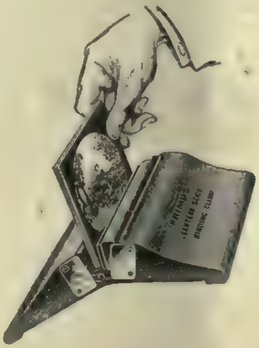
Midland Photographic Federation.—At the fourth annual meeting, held at Leicester on October 28, the secretary reported that there were now forty-two societies in the Federation, the Midland Railway Institute Society having joined during the year. The lecture list was largely used in the last session, when sixty-two lectures were given to twenty-five societies. For this winter several new lectures have been added, and there are now 129 available. The following officers were elected for 1911-12. President, Mr. G. Whitehouse (Birmingham); president-elect, Mr. G. Embrey (Gloucester); vice-presidents, Messrs. A. E. Cope (Birmingham), W. T. Gomer (Walsall), W. T. Mason (Leicester), T. Wright, F.R.P.S. (Nottingham); treasurer, Mr. H. Newson (Nottingham); secretary, Mr. Lewis Lloyd (Birmingham); folio secretary, Mr. W. Grove (Handsworth); slide secretary, Mr. J. O. Wilkes (Bournville). Previous to the meeting an excellent programme of visits to some of the interesting buildings of Leicester had been arranged by our Leicester friends.

# New Apparatus, &c.

**Lantern-Slide Binding Equipment. Sold by W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London, E.C.**

The lantern-slide maker would seem to be becoming a luxurious creature who must have all kinds of accessories to aid him in his work. Still, one can sympathise with a desire for an appliance which expedites the application of the binding strips to the finished slides. We have always preferred, and still do so, the use of a single length of strip completely enclosing the whole slide, including the corners, but undoubtedly the use of cut strips of 3½ inches length makes the binding of the slides a speedier process. For pressing the strip in contact with the two glasses Messrs. Butcher now supply the frame shown in the drawing. The appliance consists of a pair of wood blocks spring-hinged together, and with the two interior facing surfaces covered with rubber. On placing the strip along the edge of the slide and pressing the latter down, as shown in the illustration, the adhesive paper is first pressed against the edge of the slide, and next, as the jaws of the binder close upon it, upon the sides. This little accessory is sold at 3s. 6d.



Messrs. Butcher also, we are glad to see, are issuing gummed binding strip in 10-yard lengths, mounted in a very neat form of holder, which allows of the strip being evenly drawn off, and any required length being cut off. The binder can thus be kept conveniently flat, an immense advantage in use as compared with loose binding strips, which are apt to curl up on keeping, and give extra trouble before they can be applied. The price per 10-yard reel is 3d.

A further neat form of sending out binding material is represented by the box shown in the third drawing, and supplied at 1s. It contains 3½-inch black gummed strips for binding, 2½-inch white gummed strips for titles, and a supply of gummed white paper discs of ⅜-inch diameter for spotting. As in the case of the reel-binder, the paper is of stout but thin substance and coated with a strong adhesive.

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## CATALOGUES AND TRADE NOTICES.

Ensignette Cameras. — In a new attractive booklet Messrs. Houghtons demonstrate the excellent results which are yielded by their truly waistcoat-pocket camera. The booklet contains reproductions of an immense variety of subjects, and may be obtained on application to 88-89, High Holborn, London, W.C.

Teb Christmas Mounts.—The Camera House Journal of Messrs. W. Butcher and Sons, Ltd., this month takes the form of a list of the attractive art Christmas mounts for photographs issued under the trade mark "Teb," a synonym for tastefulness of design and production.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, November 10.

Hampshire House Photographic Society. "North Devon." Rev. G. Williamson.
Southampton Camera Club. "Winchester Cathedral." S. G. Kimber.
Preston Pictorial. "Retouching." W. Bell, for Gevaert, Limited.

### Monday, November 13.

Scarborough and District Photographic Society. "More Volcanoes." Dr Tempest Anderson.
Bath Photographic Society. "Architecture, Pictorial and Technical." H. W. Bennett.
Leek Photographic Society. "Photography and Focus" Prize Slides.
South London Photographic Society. "An Evening with Pictures." P. Bale Rider.
Southport Photographic Society. "Control in Bromide Work." Dr. A. T. Lakin.
Southampton Camera Club. "Our Impressions of the Exhibition."
Bradford Photographic Society. "Basilicothaumaturgical Views." J. Ingham Learoyd.
Bowes Park and District Photographic Society. "Hints to Beginners culled from Personal Experience." A. H. Lisett.
Dewsbury Photographic Society. "Elementary Principles of Art as applied to Photography." Alexander Keighley.
City of London and Cripplegate Photographic Society. Ladies' Night. "Afar in the Fatherland." W. L. F. Wastell.
Leeds Camera Club. "The Handy Man at Home as applied to Photography." J. Perrin.
Marylebone Camera Club. "Life from the Lower Deck of a Dreadnought." H. Nevil Smart.

### Tuesday, November 14.

Royal Photographic Society of Great Britain. Traill-Taylor Memorial Lecture. "Optical Glass." Dr. W. Rosenhain.
Sheffield Photographic Society. "Ways and Means in Photography." Burroughs, Wellcome & Co.
Hackney Photographic Society. "Some Quiet Spots in Suffolk." J. Grice.
Halifax Camera Club. Slide Criticism. The Members.
Leeds Photographic Society. "Some Schools of Art and their Photographic Comparison." H. Barratt.
Birmingham Photographic Society. "A Week in the London Zoo." B. Hancock.
Dumbarton, Denny Institute Photographic Society. "Developers and Developing." R. M. Fortune.
Manchester Amateur Photographic Society. Discussion on the 1911 Members' Exhibition.
Warrington Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

### Wednesday, November 15.

Croydon Camera Club. "Agfa Flashlight Photography." E. E. Hill (Messrs. Chas. Zimmermann and Co).
Partick Camera Club. Magazine Night.
West Surrey Photographic Society. "Florence." Dr. H. Pelham Webb.
Borough Polytechnic Photographic Society. "The Swiss Alps." R. Gorbold.
Ealing Photographic Society. "Nixon's Enlarging Meter." T. W. Bartlett.
Huddersfield Naturalist and Photographic Society. "Ruined Abbeys of Yorkshire." Rev. Joseph Beanland, M.A.
North Middlesex Photographic Society. "Fresson Process." Louis Dick. Print Competition—Outing, Teddington and Kingston.
Sale Photographic Society. "Development." H. Peddar.
Coventry Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

### Thursday, November 16.

Folkestone and District Camera Club. "The Highlands and Islands of Scotland."
Chelsea and District Photographic Society. "Dinant." A. H. Purkiss.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "More Photographic Fakes." J. F. Seamen.
Liverpool Amateur Photographic Association. "Old and New Methods of Photography in Natural Colour." F. W. Parrott.
Photographic Society of Ireland. "Composition." A. Werner.
Handsworth Photographic Society. "Bromide Toning." R. J. Pummell.
Sutton Photographic Club. "Agfa Flashlight Photography." E. E. Hill.
Richmond Camera Club. Autotype Carbon Demonstration.
London and Provincial Photographic Association. Paper by Dr. S. E. Sheppard.
Bournville Camera Club. "Retouching." W. Bell, for Gevaert, Limited.

## PROFESSIONAL PHOTOGRAPHERS' ASSOCIATION.

A meeting of the Edinburgh branch was held at 125, Princes Street, Edinburgh, on October 25. Present, Messrs. F. C. Inglis, J. Drummond Shiels, T. Drummond Shiels, Sidney C. Salmon, J. C. H. Balmain, T. A. A. Morrison, J. K. Hume Crawford, E. Drummond Young, Douglas Watson, George Ayton, J. I. Spence, and the Secretary. After the minutes of last meeting had been read and approved, the Treasurer made his statement of accounts, which was also approved. Mr. W. Crooke was re-elected President, and Mr. F. P. Moffat Secretary and Treasurer. The Secretary remarked that he thought the membership of the Association might be increased if some of the members would call upon those photographers who do not at present belong to the Association. This was agreed to and arranged. Copyright and press photography was again discussed and the Secretary was instructed to purchase a copy of the new Bill. It was decided that the next meeting should be held in November, and that the National Insurance Bill should be discussed.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, November 7, Mr. Chapman Jones in the chair.

Mr. W. T. Wilkinson read a short paper on "The Differences in the Reticulation of Gelatine Obtained by the Use of Various Chromates and Bichromates." Mr. Wilkinson in this series of practical notes on the collotype method of reproduction gave details of mixtures of chromates suited for use as sensitisers, and showed photomicrographic lantern-slides of the various species of grain produced. He dealt with the advantage as regards speed of printing of a suitable grain. Following the discussion, in which Messrs. A. C. Braham, A. E. Smith, F. T. Hollyer, and others took part, the thanks of the meeting were accorded to Mr. Wilkinson for his paper.

**Croydon Camera Club.**—A brilliant conversational evening, interrupted at intervals by a lecture by Mr. S. J. Tayler, on "Lantern-slide Making by Reduction," took place last week. It has been the custom of the club, tacitly agreed to by lecturers, being members, that on elementary evenings those really wishing to learn cluster round the lecture table, whilst those who, in their own opinion, are past gleaning hints, deport themselves as fancy dictates. To do Mr. Tayler justice, he did his level best to break up a consolidated corner of confirmed conversationalists. Waiting for lulls, he skilfully drove vocal wedges into what proved to be an unsplittable mass of talk, and, nothing daunted by failure, tried dispersing staccato stabs, equally without avail. Our unfortunate reporter found himself tightly jammed among the loquacious veterans, and the following is a fair sample of the lecture, as heard by him, mingled with extraneous remarks. "The better the quality of the original negative, naturally the better the quality of the resulting slide. I am proud to say I have just recorded my vote as an honest Socialist. Who ever heard of an honest Socialist?" And then a scornful voice, "Why not, when there are bonâ-fide lunatics? My method of making lantern-slides by reduction is probably unique. Women inspectors have proved a complete failure, their appointment has resulted in appeal after appeal to the Home Secretary, who must wish them further. The negative, as you can all see, is perfectly and evenly illuminated. I can assure you, even if the envelope does split, it almost invariably forms a parachute, and the occupants of the balloon descend safely. I have been tempted to try the experiment myself. That's not conjugate, my dear boy. Where's Piper? Here, Piper, come and teach our hon. secretary something about conjugate foci. I always use Rytol for the development of slides; it gives a good——. Metaphysics makes me positively ill. You will deny next that I exist. I deny nothing, but it reasonably might be contended that—— Really, gentlemen, the noise in that corner passes all bounds; some attention to the lecturer, please."

At this juncture, our reporter, evading the many feet thoughtfully placed at his disposal, escaped, and found that Mr. Tayler's method of making lantern-slides by "ensmallment" (to use the lecturer's descriptive word) consisted of a reflex camera, with home-made extension piece to carry the lens, facing the negative, which was held in an enlarging-lantern with the bellows removed, a piece of opal or ground glass ensuring even illumination. The lantern-plates were exposed in a quarter-plate Mackenzie-Wishart slide by means of a simple carrier devised by the lecturer. A piece of stiff black paper, 4¼ by 3¼, had a slip of thin card, ¼in. wide, glued at each end, leaving a space between them for the insertion of the lantern-plate, the carrier and plate being inserted together in the envelope in the usual way. A rather curious phenomenon illustrating the forward projection of images, was shown by the lens, a Voigtländer 4.5 Heliar. Examined about 20 degrees from its axis, five bright images in line of the illuminated negative opposite were apparent, three inverted and two upright, the two in front apparently standing out in mid-air well in advance of the objective. Mr. Tayler, in reply to a question, said that the lens was singularly free from flare and secondary images, and he had used it with entire satisfaction for trying night work. Some discussion also took place on a remark of the lecturer's that he had found a difficulty in getting the best possible focus on white card when reducing with a lantern. Matt opal often used, it was incidentally pointed out, was singularly inefficient owing to the way in which the image sank in, and it was suggested that the best method to procure critical definition was to substitute for the negative a finely-ruled screen, approximate focus being first obtained. Some unsymmetrical objectives, however, gave inferior definition as ordinarily affixed to the enlarging lantern—viz., reversed. Here the cure was obvious, if not in all cases easy of accomplishment. The President, in proposing a vote of thanks to a most good-tempered lecturer, pointedly alluded to one or two conversational evenings fixed for Christmas time. There was plenty of material at hand to make such evenings a pronounced success.

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# Commercial & Legal Intelligence.

Legal Notices.—A first and final dividend of 1s. 3d. in the £ has been declared in the bankrupt estate of Samuel Hodge, photographer, etc., Spohr House, Fore Street, Sidmouth, Devonshire.

A first dividend of 3s. 4d. in the £ has been declared in the bankrupt estate of Frederick George Clapham, dealer in photographic apparatus, etc., The Medical Hall, 110, West Street, Farnham, Surrey.

## NEW COMPANIES REGISTERED.

Day and Night Screens, Ltd.—This company was registered with a capital of £1,000 (6,040 shares of 1s. each and 698 shares of £1 each). Objects, to carry on the business of manufacturers of and dealers in screens for the projection, production, and exhibition of cinematograph photographs or pictures, etc. First directors, W. Prowse-Jones, J. Reith-Jones, E. Michael, G. Phillips Baron, Ascar von Ernsthousen, and W. Trevelyan. Registered office, 38a, Berners Street, W. Private company.

Western Import Co., Ltd.—This company was registered with a capital of £1,000 in £1 shares. Objects, to take over the business of cinematograph film importers and manufacturers carried on by R. E. Aitken and H. E. Aitken, at 7, Rupert Court, Rupert Street, W., as the Western Import Film Co. First directors, R. E. Aitken and H. E. Aitken (both permanent). Registered office, Rupert Court, Shaftesbury Avenue, W. Private company.

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# News and Notes.

Affiliation of Photographic Societies.—The annual dinner is announced to take place on Saturday, November 25, at Lyons' Birkbeck Café, High Holborn, at 7.15 p.m. Tickets (price 3s. 6d. each), for which early application is advisable as the seating accommodation is limited, may be obtained from either of the following:—Mr. F. C. Boyes, 4, King's Bench Walk, Temple, E.C., or Mr. Harold G. Bailey, 10, Fulham Place, Paddington Green, W.

Photography and Smoke Nuisance.—At the North London Police court last week the Great Northern Railway Company, King's Cross, were fined 40s., and costs 23s., the offence being that one of their engines emitted black smoke at Highbury Vale on October 22. Mr. Hedderwick suggested that the London County Council inspectors, in order to deal with this kind of work, might be supplied with a little camera so as to show the volume of black smoke emitted. He added, "Black smoke will come out beautifully in a photograph."

Royal Institution.—A general monthly meeting of the members of the Royal Institution was held on the 6th inst., the Duke of Northumberland, K.G., President, in the chair. Miss C. A. Clarendon, Lord Congleton, and Mr. A. Hall were elected members. The chairman reported the decease of the Right Hon. Earl Cathcart, D.L., J.P., a manager; Professor G. L. Van der Mensbrugghe, Professor W. V. Spring, and Professor L. J. Troost, honorary members of the Royal Institution, and resolutions of condolence with the families were passed.

The Scottish Federation.—The list of judges, lecturers, etc., for 1911-12 has now been issued, and shows a steadily increasing volume of subjects. The judges are all men well-known in Scottish photography, and their services are given free to the federated societies; in fact, every volunteer on the list gives his services gratis, but it is stipulated, and rightly so, that "the expenses of each must be paid to him on the evening of the lecture." The list is delightfully varied as to its contents, and whether instruction in photography, or popular lecture is desired, it can be got here. We observe, however, that the lecturers and demonstrators represent only twenty societies, a much smaller number than one would expect from the membership of the Federation.

Royal Society of Arts.—The Royal Society of Arts begins its 158th session on Wednesday, November 15th, with an address from Lord Sanderson, G.C.B., the Chairman of the Council. Five meetings are announced before Christmas, at which papers will be read on "The Industrial Progress of America," by Professor James Douglas, LL.D.; on "The Efficiency of the Aeroplane," by Mr. A. E. Berriman; on "British Guiana," by Mr. J. A. J. de Villiers; on "London Transport," by Mr. W. Yorath Lewis; and on "Bengal Fisheries," by Dr. J. Travers Jenkins. Four Cantor lectures on "The Carbonisation of Coal" will be delivered by Professor Vivian Lewes, and two juvenile lectures on "Soap Bubbles" will be given in January by Mr. C. V. Boys, F.R.S. A long list of papers for the meetings to be held after Christmas is also published.

The Scottish Pictorial Circle.—Mr. James McKissack supplied a talk on "Photographic Experiences on the Continent" at the November meeting of the Pictorial Circle. In his survey of Continental beauty spots he included Holland, Belgium, Normandy, Touraine, Bavaria, Northern Italy, Venice, and Switzerland. He treated fully on the best routes to the various places, the cost of travelling (which he found very reasonable), and the cost of living (which he found inexpensive if the tourist hotels were avoided). He described the leading features of the different places visited, and the class of work to be found in each. He could not resist the temptation to dilate on the beauties of his much-loved Rothenburg in Bavaria. Here he said was an old-walled town, set in an old-world atmosphere, its architecture and its people uncontaminated by the worship of hustle. Kindly people were the inhabitants, anxious to do what they could to make the stranger's visit a pleasant one; here dozens of plates could be exposed in one street, and every turn revealed new beauties. In conclusion, he advised his audience, when thinking of a Continental holiday, not to consult a tourist agent, but rather get information from one who had himself covered the ground.

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# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SHUTTER SPEED MARKING.

To the Editors.

Gentlemen,—In the current issue of your "Journal" we notice a letter signed "Krypton" respecting the speed marking of shutters.

The marking of shutter speeds has been, for a very considerable time, a matter of uncertainty, and as we are the largest dealers in shutters of the between lens pattern, we have probably had the greatest experience in this matter.

The matter has been discussed a great number of times in the various papers, and it is a well known fact that the great majority of shutters of this type, although marked to a speed of 1/100th of a second for the highest speed, rarely attain a speed greater than 1/35 to 1/40th of a second.

Some few seasons ago we introduced to this market the "Compound" shutter, and we can now offer a shutter which in the smallest size is speeded to 1/250th of a second, and in the larger sizes proportionally.

Without doubt this shutter is the most accurately speeded shutter on the market, and it has the further advantage that each individual speed can be adjusted. We are prepared to submit any of these shutters to the National Physical Laboratory for their test, if our clients will bear the cost of such a test, and we already have sent several with the most satisfactory results.

We have not been able, recently, to advertise this shutter on account of the fact that we have been working at full pressure on orders to fill our contracts, and have had none for our stock, but we are now better equipped for their supply, and can deliver fairly promptly.

The price of the shutter is most moderate, and within the reach of all.—Yours faithfully, A. E. Staley and Co.

19, Thavies Inn, Holborn Circus,
London, E.C.
November 3, 1911.

## TANK DEVELOPMENT.

To the Editors.

Gentlemen,—Apropos of the recent articles in your correspondence department on the subject of tank development, permit me to point out that it is only the extravagant advertising claims for the tank which have tended to discredit the method, for uniform and reasonably accurate exposures, uniform development, whether in tank or tray, will doubtless give standard results. It is in dealing with the exceptional subject which requires either more or less development than the average that the tank method shows its greatest weakness. Personally, I consider the tank merely a convenient dish in which to develop six or more plates at the same time, but regulate the results by examination of the plates at intervals, removing them only when they have attained sufficient density. In this manner I developed some 150 whole-plates of patients, surgical apparatus, orthopædic gymnastics, etc., for illustrating a work on orthopædic surgery, the exposures ranging from slow snaps indoors to long time exposures, and got very satisfactory results. My method was reprinted in abstract by you from the 1911 "American Annual of Photography," and I may say that I still consider it the only satisfactory way to use a tank—the effusions of tank advocates to the contrary notwithstanding. In short, different subjects, particularly in pictorial landscape photography, require individual treatment in development if one is to get the best possible results from every exposure.

I enclose herewith a cutting from an American house-organ. The plate-rack described therein was exhibited at the Bridgeport (Conn.) Convention of the Photographers' Association of New England (September 12-16, 1911), and attracted much attention. "No more fingers in the developer" is a slogan which should appeal to the professional, particularly as this rack gives him the same control over results which he has in the tray method, with the added convenience of leaving each individual plate in the rack during fixing, washing, and drying if desired.—I am, Sirs, yours very truly,

Malcolm Dean Miller, M.D.,
Asso. Ed., "Photo-Era" Magazine.
383, Boylston Street, Boston, Mass., U.S.A.,
October 26, 1911.

[The rack referred to by Dr. Miller is that of Frank J. Curry, and will be found briefly described in the forthcoming "B.J. Almanac," 1912, p. 1,364.—Eds. "B.J."]

## EXPOSURES WITH ENCLOSED ARC LAMPS.

To the Editors.

Gentlemen,—We notice in your issue of November 3, under "Answers to Correspondents," that "Yorkshire" is asking how more light can be obtained from enclosed arc lamps, and that you refer to the Jandus system. Your reply is, of course, correct providing his present lamp is correctly adjusted, but it should be possible to give an exposure of a fraction of a second and to make prints on P.O.P. in about two minutes. If his lamp does not meet these conditions the makers should be consulted. Our expert knowledge with regard to the adjustment of the lamp for obtaining the maximum of actinic light is always at the service of our clients. Yours faithfully, The Jandus Arc Lamp and Electric Co., Ltd.,

A. Denman Jones, General Manager.
Hartham Road, N.,
November 6, 1911.

## A SOCIETY FOR PHOTO-MICROGRAPHERS.

To the Editors.

Gentlemen,—I shall be greatly obliged if you can find space to announce that a meeting was held at the Gardenia Restaurant on November 2, when the Photo-Micrographic Society was formed with about a dozen members. Since the several photo-micro workers have expressed their desire to join this society, practical meetings (papers, lantern, etc.) will be held on the last Tuesday of each month at 6 p.m. at the Gardenia Restaurant, 6, Catherine Street, Strand. For further particulars apply to Mr. J. G. Bradbury, Hon. Sec., 1, Hogarth Hill, Finchley Road, Hendon, N.W.—Yours,

Camera Club, F. C. Lambert.
17, John Street, Adelphi, W.C.

P.S.—First meeting, Nov. 28. Dr. Rodman, "An Hour with the Microscope and Camera."

## PHOTOGRAPHIC ASSISTANTS.

To the Editors.

Gentlemen,—I crave as a last indulgence a little of your space once more, and I will endeavour to be as brief as possible. I think the time has arrived for a little straight talking on essentials. Personally I am about sick of seeing so much space taken up week after week, and have concluded that it is a case of "the mountain being in labour," and the proverbial mouse is the result.

I am quite aware that we cannot all agree upon everything at all times, and I try to make reasonable allowance for my brethren who probably have not "been through the mill," as I have; but for men to write as some have written on this subject causes me to wonder where they have lived, if they have lived, and whether they are real live men, or whether I have lost my balance, and where we are generally, etc., etc.

As far as I am personally concerned, I have nothing to complain of. I have the honour to have been for some years in the employ of one of the best men that ever walked this earth as an employer of labour, and I can speak "as one having authority," having had a wide and varied commercial experience, and, in addition, twenty years more or less active service in the industrial arena. An "agitator," if you like: we're all agitators in a way. The man who perforce belongs to the ranks of the "hewers of wood and drawers of water" that others may get the bulk of both warmth and water can't help being an agitator, and is bound to be when his conditions get bad enough.

It is by no means an unusual thing for the gentleman who shouts, "Yah! Agitator! Who keeps you? What about the 25s.?" etc., etc., ad lib., to hold his gentlemanly paw out for the increase that has been obtained despite his yahooing and the fact that he was numbered amongst the loyal supporters who remained at his post while those he derided were out for better conditions—and got them—in which, unfortunately, he shares afterwards.

The fact that I am employed by an ideal man (eh, what? a dreamer? no, he is not—he is a hustler) does not blind me to this fact, that, whether I like it or not, there is in existence a class war, always waging. Like it or lump it, it is there.

I know that as a class the interest of the master is diametrically opposed to mine. His is to give as little for me and my class as possible, and get as much as he can, *sans* method, manliness, and everything, "'ceptin' No. 1."

Mine is to sell the only thing I have to sell—while I can—my labour, and get the highest I can. The natural result is ructions, sometimes. I know this, and consequently I am out for better conditions. The right to work under fair conditions; the right to live, not exist with the infernal millstone of anxiety hung about my neck as to whether I shall get the sack this week or next, and whether I really shall be able to give my boys and girls a better start than I had, and less struggling and anxiety.

I claim the inalienable right of every son and daughter—equality of opportunity to live, to stretch myself, to grow into what I believe the Being who called me into existence meant me to be—a man ('rit large), not a machine or a makeshift, not a slave to toil (as Mr. Cohen states) for one pound per week, to be eventually consigned to the scrap-heap. Am I asking anything unreasonable or impossible? I don't think so. I'm out to get it, anyway, not by kow-towing or going cap in hand to the genus "influential" who imagines he and his class own those who work for him both body and soul. I know that nothing ever has or ever will be got from masters as a class except what has been wrung from them. But I respect them all the same, because they are logical, while their employees are not.

How the gods must weep to see them hug and cherish their chains as they do—the hall-mark, or badge, of their intelligence. And the stupidity and sadness of it all. They want a Union to get better conditions, etc., etc.? which means taking something from the employer, and then have the effrontery not only to ask the employer to finance them, but assist them also in robbing his hen-roost, and as a crowning piece are trying to kid him that they are out to get all these things by peaceful methods. What utter nonsense!

I have heard some strange things in my time, and actually saw two farm labourers (one receiving 15s. per week and the other 13s.) fight to a finish over—would you believe it?—the respective wealth of their masters.

I want a Union to be formed of assistants of both sexes and all grades, composed of men and women who know where they are, what they are, and what they want and how to get it.

They, like every other worker, "have nothing to lose but their chains."

Those that like them may have them.

I don't like them, and don't thank others who, by their ignorance and apathy, are responsible for the conditions that obtain to-day which some feel, and which they also will feel later—at least, I hope so. For it seems there are still a few existing for whom anything will do, and nothing short of a severe application of the masters' thumb-screw at some time will make them do their duty even to themselves. My employer says he has never seen anything so funny as the "modus operandi." And I may also add that every master I have encountered views it in the same light. They say, "Have your Union if you like. But when you want me simply to provide funds for your war chest against me—that's the limit."

Personally, I think assistants favouring that scheme should be thoroughly ashamed of themselves. If they haven't sufficient manliness, self-respect, and courage to "pay their own piper" and run the show themselves, the sooner history repeats itself and they "run into the sea," etc., etc., the better. As to whether they understand or appreciate this effusion is quite immaterial to me. I have no axe to grind, as I have previously stated.

All the Unions in the world would not affect my employer, who recognises that we are human beings, and not automatic machines. Everyone serves him gladly, and absolute harmony prevails, and he is a keen business man for all that.

If any employer wants to know how it is done I shall be pleased to enlighten him.

In conclusion, I suggest to all those who mean business to get into line, and, if not sufficiently strong numerically, to fall in with, say, the shop assistants, or any other section of organised workers suitable for the purpose. But above all things cast to the four winds any ideas of "plush-glove campaigns" they may have dreamed of. This will prevent a rude awakening and probable disappointment. The masters are logical. Take a leaf out of their books.—Again thanking you, I am, Gentlemen, yours faithfully,

"Cavendo Tutus."

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To the Editors.

Gentlemen,—Will you grant me a little space to thank Mr. A. Cohen for his reply to me, and for the personal information he gave bearing out my contentions?

I had said in my original letter that there was a dearth of good workers in our profession; that the assistant generally was paid as much as he was worth; that the good man could practically command his own terms; and, if I may quote, "On the other hand, if he is no good, he had better stick to his 25s., be thankful he can get it, and remember there are other fools who don't get as much." Now, in last week's "Journal," Mr. Cohen says that he has been working fifteen hours every day and Sundays for a pound a week. I am much obliged to Mr. Cohen.—Yours faithfully,

William G. Hearn.

16, Manchester Street, W.
November 7, 1911.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to Advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photographs Registered:

W. D. Moss. Gainsborough House, Cirencester. *Photograph of Mrs. Pankhurst stepping into motor car.*

D. A. Grant, The Studio, Acre Street, Nairn. *Two photographs of the Rev. Dr. W. R. Pirie. Photograph of the Rev. R. Wilson.*

J. D., R. M. and Others.—In our next.

Elect.—The firm you require is F. Durra, 20, Bank Street, Glasgow.

F. G. Willatt.—We know of no agency. Better write to the papers direct, George Street, Melbourne.

Address Wanted.—Would you, through your valuable journal, favour me with the address of Mr. W. Bell, who is reported in the issue of October 27, 1911, as having given a paper on "Retouching" at the opening meeting at the Blackburn Camera Club. A reply through your columns would oblige.—Woodhey.

Address, c/o Messrs. Gevaert, Ltd., 26-28, Farringdon Street, London, E.C.

Tinting Prints.—Will you be kind enough to give me information through your journal where I can obtain a Tint-a-print set of colours in powder form, which is rubbed into the photograph by means of paper stumps? I saw one of these outfits a few years back, but, unfortunately, cannot remember the name of the firm. I take your journal every week, and am very interested in the valuable hints you give from time to time.—Colour.

You are no doubt referring to the "Velvotint" powder colours sold by Houghtons, Ltd., High Holborn.

Hiawatha Photographing.—Could you inform me at your convenience where I could obtain a copy of "How Hiawatha Took a Photograph of His Family," a parody on Longfellow, by the late Lewis Carroll? I have seen a quotation from it, but never the whole poem.—J. I. Thirde.

The parody appears in the collected works of Lewis Carroll; but, in the later editions, in an abridged form. We should advise you to apply to a secondhand bookseller, such as Messrs. Foyle, Charing Cross Road, London, W.C., in order to obtain a copy of the full text.

Spectrum Plate.—(1) Is there a plate on the market so constituted that it would record the solar spectrum as a band of even density, or, if not (2), is it possible to reach that condition in a commercial plate by bathing it and use of filters?—Jack.

(1) There is not. What you describe is the true theoretical isochromatic plate. Commercial panchromatic plates are made to render colours in proportion to their visual brightness. (2) Not with any commercial plates or filters which are known to us.

Possibly Messrs. Wratten could sensitise, and supply light filters for a plate which would do what you require.

**Fixing Transparencies.**—I shall be greatly obliged if you could inform me of any solution that I could use for affixing some transparencies on to a window securely, that opening and shutting will not shake them off. I should prefer it transparent.—A. E. W.

We cannot suggest any method of mounting the transparency on the glass other than that of applying some strong adhesive round the edges, such as fish glue. Any attempt to cement the whole transparency to the window will be bound to fail owing to the unevenness of the glass. The best method undoubtedly is either to make or mount the transparency on a large sheet of glass the full size of the window pane, and fix the large sheet inside the pane.

**Studio Shutter.**—I have just invested in a studio camera and should be very grateful for advice re shutter for same—of course a silent studio, the best working and least liable to get out of order. The lens is a 3B Dallmeyer.

The simplest and most reliable shutter suitable for your purpose is the Packard Ideal. As no rubber or leather is used it does not deteriorate with age. It is not absolutely silent, but the sound caused by opening is very slight and does not disturb the sitter. The Grundner shutter sold by Watson and Sons is absolutely silent and very effective in use; it has a leather body and a rubber inside bellows. The original Cadett velvet flap shutter still finds favour with many photographers, but some object to a flap on the ground that it stirs up dust.

**Carbon Spirit Sensitiser.**—I would be very much obliged if you would give me the formula of a spirit sensitiser for carbon tissue. —Grateful.

We have not had practical experience in making a spirit sensitiser, but suggest your using a 6 per cent. solution of ammonium bichromate, mixed with twice its bulk of alcohol, pure rectified spirits. Another formula which has been recommended is as follows :—

| | | |
|---|---|---|
| Ammonium bichromate ......... | 15 gms. | 66 grs. |
| Water ................................. | 1,200 ccs. | 12 ozs. |
| Disolve and add | | |
| Ammonia .......................... | 5 ccs. | 2½ minims. |
| Stir up bath and add | | |
| Alcohol ............................. | 300 ccs. | 3 ozs. |

This is a weak (1 per cent.) bath for thin negatives.

**Soft Prints from Hard Negatives.** — Some eight years ago a formula was given, consisting, I believe, of bichromate of potash and other chemicals, which solution was applied to the plate before developing, having the property of making pictures of extreme contrasts (e.g., interiors) develop up evenly. Thus one could take a room and a garden outside the window, and all would come out in good gradation. Could you kindly oblige me with this formula?—E. Y. E. N.

You are probably thinking of Mr. Sterry's method of producing soft bromide prints from hard negatives. In this process the print is exposed for the densest portion, then soaked in water, and when limp, transferred for three minutes to a solution of potassium bichromate or of chromic acid, of a strength of about 1 in 2,000. It is then washed for five minutes and developed in the usual way.

**Lenses, etc.**—Will you kindly give me your opinion in the following cases?—(1) Would a 4¾in. focus lens be advisable for general work with a hand-camera 3¼ by 3¼, or would a shorter focus lens be preferable? (2) What is the advantage by making lantern-slides in the camera? Assuming the picture on the negative is the size required for a lantern-slide, in what way would a contact-slide be inferior to one made in the camera?—Plate-waster.

(1) About right. You would get greater depth of focus with a 4-inch lens; but, at the same time, a smaller scale of representation. (2) Practically none. There may be slight want of sharpness due to imperfect contact of lantern-plate and negative; but, of course, a slide by reduction may be much more defective in the same way from improper focussing. We may refer you to the article in the forthcoming "Almanac," where the two methods are considered at length.

**Canada.**—Could you give me any ideas of photographic labour market in Canada (I think of going out early next year), and what rate of wages do they pay? I am a printer in C.C., sepia, P.O.P., and bromide, or general assistant (no retouching). Also name and address of photographic journals in Canada. An early reply will oblige.—Canada.

We can only say, as we said in answer to many identical queries, that many new businesses are opening in Canada as the result of expansion of townships in the Dominion. Wages vary as here. Recollect that the severe winter in Canada makes it inadvisable to get there before March or April. There is no Canadian photographic journal. We suggest the "Bulletin of Photography," "Camera Craft," and Wilson's photographic magazines (see the "B.J. Almanac" for addresses), also the "B.J.," which circulates largely among Canadian studios.

**Stale Plates.**—I have a stock of dry plates purchased at a sale here, many of which, in fact almost every one of them which I have so far developed, give a metal looking edging all round the negative, which causes prints to come out with hazy lighter border. Can you tell me whether I can do anything to remedy them? I suppose the cause is age, but I thought I might treat them chemically in some way so as to avoid the defect.—J. Le Guismet (Cyprus).

It has been suggested to treat such plates in a weak bath of bichromate with the object of clearing off such chemical fog, but at the same time, slowing the plates. Another process which we think you might try is to rub the plates round the edges before exposure with a little cotton wool, prepared with a mixture of "Globe" metal polish and salad oil, the so-called Baskett reducer. This has been recommended for stale plates, though we have never tried it.

**Albumen Wet Plates.**—Would you kindly inform me of a formula for making albumen plates? Is it possible to make a plate as follows? Coat it with well-beaten egg albumen, settled, and containing the necessary chemicals, dry it, and when ready to use sensitise it in a silver bath (the same as a wet collodion), expose wet, and develop. If this method is practical, what chemicals to add to the albumen? what kind of a silver bath and developer?—Isa Beckstead, Iroquois, Canada.

Yes, it is possible; it is, in fact, one of the oldest negative processes, the immediate successor of Talbot's Calotype, and a very slow process, requiring much longer exposures than wet collodion. The full working details cannot be given in the space at liberty in these columns—you should consult text-books of the early fifties of the last century—but, briefly, the albumenising preparation is :—Whipped albumen, 1,000 parts; potass. iodide, 10 parts; iodine, ½ part. The coated and dried plates are sensitised in a bath of silver nitrate, 6 parts; acetic acid, 12 parts; water, 100 parts; exposed and developed with strong gallic acid solution, with or without a little silver nitrate. Numerous variations of this process were published, but they were rendered obsolete in most cases by the wet-collodion process.

**Rights in Photographs.**—Some time ago I tried the methods of taking snapshots in the theatre on a bathed plate, as directed in an article in the "B. J." by Mr. A. Payne, and got some fairly satisfactory results. A week or two ago, at the —— Empire, I took my camera and secured a very successful negative of a troupe of dancers, not in movement, but when posing at the end of the turn. A local stationer, to whom I showed a print, said that he could sell postcards of it if I could supply him at a suitable price. I let him have a few dozen cards, which immediately sold owing to the popularity of the "turn." He has now been told by the manager of the troupe that he must not sell any more cards, as the sole rights of photographing the dancers have been sold to a photographer (in another town). The stationer is inclined to pooh-pooh this, but before supplying him further I should be glad of your opinion, as I suppose that in the event of there being anything in it I should be let in for trouble as much as him.—G. C. R.

Even though the troupe may have disposed of such rights, there is nothing in copyright law, nor in common law, to prevent your supplying, or any agent of yours selling, the photographs. Though such rights are commonly sold by ladies and gentlemen of the stage, their value rests only on the fact that a photographer is given special facilities for obtaining his negatives, while others, like yourself, have to avail themselves of chance opportunities.

**Combined Baths.**—I have two combined bath formulæ, derived at various times from the "B.J.," as follows:—Ammonium sulphocyanide, 240 grs.; citric acid, 60 grs.; lead acetate, 60 grs.; hypo, 5 ozs.; water, 20 ozs.; filter, and add gold chloride, 3 grs. Another formula:—Lead nitrate, 10 grs.; hypo, 4 oz.; gold chloride, 2 grs.; French chalk, ½ oz.; water, 1 pint. 1. Which of these formulæ has the advantage in firstly, permanence of prints toned, and secondly, economy? 2. Can you recommend a better bath for general professional work? 3. How many cab. size prints can safely be toned in, say, a pint of the bath which you recommend? 4. In the second formula, is the French chalk necessary? What is its mission? Should be glad of a reply in your next if possible.—Gold.

1. The first being an acid bath, and the second alkaline, on the score of permanence we should give the preference to the latter, even though, as it contains less gold, it will, of course, not tone so many prints. 2. The second bath is as good a one as we know. 3. It is so difficult to know when the margin of safety is reached with the combined bath that we should in preference advise the use of separate baths. See article by G. T. Harris in "B.J.," September 14, 1906, p. 725, in which the author states that 16 grains of gold with his formula will tone two gross of postcards. This allows three dozen cards to 2 grains of gold, and we doubt if the combined bath you mention could be used safely for so many. 4. The chalk is necessary to neutralise the acidity of the bath, and it should not be filtered out, even though it makes the bath cloudy.

**Fitting Dark-Room Bench.**—I should be glad of your advice in arranging developing bench in room, fixtures in which—door, fireplace, etc.—you will see on rough sketch enclosed. Which do you think would be the best place to put developing sink and work-table? I had thought of having it close against window, fitting same with ruby blind so that in the daytime I could use this light instead of the ruby lamp. As I have to use oil or gas burner in the lamp I am anxious, when doing long spells of work, to avoid getting the room too hot. What do you consider the best arrangement, a large sink, large enough to form the working bench, or a smaller size sink connected with a table for handling development dishes, etc.? Any hints you can give me, doubtless as the result of having seen many tip-top dark-rooms, will be appreciated.—F. Lemane.

The best place you can put the working-bench is extending in either direction from the corner behind the door. We do not think much of using the window as a dark-room lamp, since the constant variations in daylight make it difficult to judge densities of negatives easily, and also, when the light becomes stronger, the fabric may cease to be safe, and further, will gradually become paler in time. The idea of a blind is excellent, but we should have it of black material, or, better, one of black and one of red of the kind which is supplied by Messrs. Sinclair. As there is a fireplace in the room, the use of a small incandescent gas-burner in the dark-room lamp should not give trouble as regards over-heating. A fair size of sink is 20 x 30 or 40in. We advise you to arrange this close under the dark-room lamp and keep it for the fixing baths, continuing the working-bench from the end of the sink furthest from the lamp and arranging it so that it slopes down into the sink. You can then arrange a loose grid, so that it is level, and all spilt solutions will then run into the sink. This latter also is best tilted so that water runs to the outlet and keeps the dark-room drier by lessening the evaporation of water.

**Studio Lighting.**—(1) What is the cause of there being so large spots of light in the eyes in enclosed untoned print? It was taken with a Ross 15in. Symmetric Anastigmat in a single-slant studio, blinds open about 14ft., and from ridge (13ft. high) to within 6ft. from ground. Another one taken within a few minutes, almost identical position and lighting, with a Lancaster 9 in. cabinet lens, does not show the defect nearly so much. (2) I have been trying an old portrait lens, about 12 in. focus and with central stop about 2½ in. (engraved No. 1.261. F. Rogers, 4, Connaught Terrace, Edgware Road), but, as you will see by enclosed postcards, I do not get sharp definition. Is it bad focussing, movement of the sitter, or inferior quality of the lens? (3) I am thinking of replacing it with a secondhand Voigtlander 14 in., as per enclosed list; it would probably be a very old pattern, but would it be likely to be serviceable? Would the 3A Ross be better? The studio is 28 ft. long.—Single Slant.

If you will compare the relative sizes of the spots of light in the two prints you will find them practically equal, being in each case rather less in diameter than the pupil. The size of this spot is governed by the area of your strongest source of illumination and the degree of convexity of the eyeball of the sitter. You have doubtless noticed that it is very large in portraits of elderly people and small in those of young ones. Regarding the definition of the postcard portraits, we should say that it was due to the lens, which probably does not work to the visual focus. The Voigtlander lens may be a good one, but should not be bought without trial, as many of the earlier instruments of this maker had the same defect as the lens you have been trying. You would be quite safe with either the Ross or Dallmeyer, the former being the better for large heads.

**Enlarging.**—I was so pleased with your prompt answer to my query *re* Daguerreotypes on September 15 last, which I found worked quite satisfactorily, that I venture again to ask your valuable help in the following matter. We are having considerable trouble with our enlargements made with a lantern, a rough sketch of which is enclosed. The trouble is the enlargements are so hard. The negatives from which they are made are quite normal, giving good results in C.C. sepia and carbon, but produce unsatisfactory enlargements when made by the lantern. The light used in lantern is an ordinary incandescent gas-burner; condenser 8¾ in. in diameter, and a piece of fine ground glass is placed between light and condenser. Can you kindly inform me if the position of ground glass with relation to the light makes any difference in the quality of the enlargements? A Ross portrait lens is used; we are thus enabled to have a fairly large aperture for the general run of pictures. I may add, the same negatives give excellent results when enlargements are made by *daylight;* but it is essential that we may be able to use artificial light for the purpose.—Lantern.

Your trouble is undoubtedly due to the weakness of the light used. Negatives that give good carbon or platinum prints are almost certain to be too strong for enlarging by incandescent gas. If electricity or acetylene is not available we should advise you to use limelight, which you could easily adapt. Failing this we should recommend the removal of the ground glass in the lantern and the use of the most powerful Howellite incandescent gas-burner. This should give good results up to about 12 by 10, even with fairly strong negatives. If the results are still too hard you can use the Sterry method of treating the print described in answer to "E. Y. E. N." With regard to the ground glass, it always cuts down the light very considerably, but the nearer it is to the light the less light does it cut out. With a new mantle, and especially with one of the inverted form used in the Howellite burner, we never find a ground glass to be really necessary.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2689. Vol. LVIII. FRIDAY, NOVEMBER 17, 1911. Price Twopence.

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## SUMMARY.

A contributor, Mr. T. H. Greenall, describes a new medium which he has devised for the working-up of bromide prints. It allows of ready application of oil colours both to matt and glossy prints. (P. 871.)

A point in copyright connected with photo-micrographic subjects is raised by a correspondent. (P. 886.)

A writer in our San Francisco contemporary "Camera Craft" has dealt with the use of over-exposure and development with the minimum of alkali as a means of avoiding halation in photographing subjects of such extreme contrast as arc lamps. (P. 875.)

In a short note in "Photographic Scraps" Mr. F. F. Renwick usefully deals with the causes of halation. (P. 878.)

A method of development, where subjects of great extremes of contrast are being dealt with, is given in a letter from a correspondent. (P. 885.)

Shutter-speed marking, the conditions of photographic assistants, likewise figure under "Correspondence." (P. 885.)

Some hints on the making up of sulphite solution are given in an article on page 870. Workers who may wish to control the strength of a sulphite mixture by using a simple test solution are there supplied with working directions, while the treatment of sulphite by washing so as to remove the impurities which are formed as the result of storage is also the subject of instruction. (P. 871.)

At the Royal Photographic Society on Tuesday evening last Dr. W. Rosenhain, in delivering the fourteenth Traill-Taylor memorial lecture, took for his subject "Optical Glass." He described the properties which optical glass was required to possess, and described the method of manufacture employed by the glass-maker. (P. 883.)

Process methods of producing imitations of oil paintings is the subject of a paragraph under "Photo-Mechanical Notes," where is also described a half-tone screen which has recently been patented. (P. 879.)

The specifications of two types of anastigmat lens are published in "Patent News." (P. 880.)

The conclusion of the paper by Dr. E. F. Northrup on the photography of vortex rings will be found on page 877.

Dr. A. P. H. Trivelli, in a further chapter on the use of safe-lights for the dark-room, deals with the principles of making safe-lights of the greatest possible permanence. (P. 872.)

## EX CATHEDRA.

**The "Almanac."** Every sheet of the 1912 "Almanac" having now been placed with the binders, our publishers are able to confirm their previous and repeated promises to publish promptly on the customary date of December 1. The last hours of supervising the final index sheet to the fourteen hundred odd pages of the "Almanac" usually fall at a time when its readers in the Western hemisphere are comfortably in their beds. This year, in consequence of the many goods described by a still larger circle of advertisers, a dim November dawn was almost breaking over the deserted streets of London by the time the final revisions of the indexes had been passed to the machines and the engine of a waiting motor bore those responsible for them to their homes and—rest. Their reward, it may be hoped, will be found in the appreciation by the 25,000 readers of the "Almanac," who are thus provided with a guide to every species of goods advertised in its many pages. At the time of writing all but a thousand or so of the whole edition has been ordered by wholesalers, retail dealers, and booksellers and individual subscribers; those, therefore, who have not yet given their instructions for the supply of copies are begged, in their own interest, to do so without delay. The re-printing of a volume which contains supplied insets is, for obvious reasons, absolutely beyond the power of the publishers.

* * *

**Photography of Moving Wheels.** In a recent article we dealt with the various effects produced by moving wheels in cinematograph pictures. Another series of effects is, however, also produced in ordinary photographs, and these effects are equally puzzling to those who have not studied the subject. In a photograph of a moving vehicle it will often be noticed that the spokes are visible only in the lower part of the wheels, and, further, that the few spokes thus visible are not straight, but curved. Such results are sometimes attributed to the shutter, though, as a matter of fact, that has nothing whatever to do with them. Distortion can be introduced by the focal-plane shutter, but this distortion produces effects of a quite different kind, due to the fact that a shutter of this type exposes the wheel in sections. With an ordinary lens-shutter, the whole wheel is exposed at once, and therefore no distortion can be produced by the shutter. The effects we have described are perfectly natural ones, and can in certain circumstances be observed visibly without the intervention of any camera. First, we will consider the invisibility of the upper spokes. It is obvious that the hub of the wheel is moving at the rate of the vehicle, but the upper rim of the wheel is moving at twice that rate; therefore, if the speed of the vehicle is so high that we can only just photograph or see the vehicle itself sharply, the spokes near the upper rim of the wheel will be badly blurred. If the speed of the vehicle is so high that it also is a little blurred, then the upper spokes move so rapidly that they become invisible. To get this effect visually, the rate of movement must be very high indeed, but to get it photographically the rate only needs to be high relatively to the speed of the shutter—that is to say, by slowing the latter down we can always produce the effect. The lower spokes move at a less rate than the vehicle, the bottom end of the one vertical spoke being stationary during the brief period of time in which it rests on the ground. As it departs from this position its rate of movement increases, and the spoke itself is drawn, as it were, around a caustic curve. This curve may be described as the locus of the slowest moving part of the spoke, for the rate of movement of the different parts of the spoke vary with its position. When vertical the lower end near the rim is practically stationary, as already stated, but when horizontal the end nearest the hub is the most slow moving part. The point of slowest movement, therefore, travels up the spoke from rim to hub, as the wheel progresses, and the curve described by this point is the caustic curve mentioned, and the curve photographed if movement is visible at all. The curve is only seen in the result when the hub of the wheel, and therefore the vehicle itself, is blurred by movement—that is to say, when the shutter is too slow for the rate of movement, or the rate is too high for the eye to follow it.

* * *

**An Accessory Exchange.** Most photographers have a store of accessories and backgrounds lying by which they are loth to destroy and which they cannot sell. A man in a small town is not likely to be able to dispose of such articles in his own locality, and he cannot afford to send them on approval to possible purchasers at a distance. As matters now stand the only possible way of realising upon them is by advertising them in our sale and exchange columns, but it often occurs that nothing suitable is offered at the time when a purchaser is on the look-out. One of the brethren recently suggested to us what seems an excellent idea. It is that one of the second-hand dealers should keep a register in the form of a portfolio of photographs of backgrounds, chairs, accessories, and the like which are for disposal, each being marked with a cash price. On receiving an application for one, accompanied by a deposit to its value, the dealer would instruct the owner to forward it to the applicant, sending the cash, less his commission, on to the owner at the end of a specified period. We believe that some such arrangement would be convenient to many or would prevent the lumbering up of every available corner now so prevalent in the older type of studio.

## MAKING UP SULPHITE SOLUTION.

We recently published a note on the testing of sodium sulphite, in which we pointed out that one of the advantages of being able to test sulphite was the ease with which we could then make up solutions of the same standard strength. There is, however, a still further advantage in the fact that we can employ washed sulphite instead of the more or less impure compound that forms the stock of crystals, and so we can not only secure solutions of standard strength, but also of a fairly high standard of purity. If we throw a quantity of sulphite crystals into a vessel, such as a beaker or a large measure, pour a little warm water over them, shake well, and then pour off the water, the crystals that remain are much purer than they were before, for the water has carried away the greater portion of the white powdery deposit which previously coated them. This white powder is not sulphite, but a decomposition product (probably sodium dithionate, with perhaps some sulphate) that is quite useless for photographic purposes. It does not apparently have any appreciable effect on development, but it may become a nuisance, as it is apt to crystallise out in the stock bottle. When a sulphite solution is loaded with this compound it stands to reason that we cannot keep such a strong solution of real sulphite as we could in the absence of the impurity, and as sulphite will only keep in good condition in strong solutions it is evidently desirable to get rid of the useless salts. If we have no means of testing the strength of the sulphite it is somewhat troublesome to deal with washed sulphite, for the crystals must be dried and weighed before we can make up a solution of definite strength. If, however, we are prepared with an iodine solution, and the necessary burette for a titration test, we can dissolve the washed crystals straight away, then test the strength of the solution, and adjust it by dilution to the strength we require.

The following is the exact procedure that we adopt in our own work:—We weigh out 400 grammes (or about 14ozs.) of the crystals, and wash them well with three changes of warm water, each wash being accompanied by

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## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

The fifty-first annual issue of The British Journal Photographic Almanac will be published on December 1.

Among other new features in the forthcoming Almanac are articles as follows:—

### Lantern-slide Making. By the Editor.

A complete practical guide to the making of lantern-transparencies by reduction and contact, illustrated with special drawings of apparatus; processes of development for black and warm tones; warm tones by after-toning, and other methods of producing the best results.

### At Home Portraiture. By C. H. Hewitt, F.R.P.S.

Precise directions for indoor and outdoor portraiture without a studio. Illustrated with diagrams and art supplement plates, showing effects of good and bad lighting.

### Hints in Pictures.

A section entitled "How to Do It," helping the beginner to perform such operations as stripping negative films, mounting prints, etc. One hundred and twenty illustrations.

As in recent issues, the systematic review of the practical work of the year under the title "Epitome of Progress" will be a strong feature of the volume.

The lines followed in the previous editions of the Almanac will be maintained in general, but in a number of particulars the arrangement of the volume for 1912 will be modified to make it more than ever the book of universal photographic reference.

### To Selling Agents of Almanac.

Dealers, newsagents, etc., are advised that the greater proportion of the edition is already ordered, and therefore those who wish to make certain of obtaining their supplies are requested to place their orders with Messrs. H. Greenwood and Co. without delay.

The Publishers will despatch parcels for simultaneous distribution throughout the United Kingdom.

vigorous shaking and stirring, and carried out as quickly as possible so as not to dissolve away too much sulphite. The remaining crystals are then dissolved in water to make approximately 800 ccs., using water heated to about 33 deg. centigrade, or 91 Fahrenheit, which is the temperature at which the salt dissolves most readily. We then take 5 ccs. of this solution and dilute it to 100 ccs. Then take 10 ccs. of this dilute solution and further dilute it well with water to at least 30 ccs., and titrate with N/25 iodine. If we had a 25 per cent. solution of sulphite the amount taken for the test would use up just 25 c.c. of the iodine solution. If it takes less, say 20 cc., it is obviously weaker, and only equal to 20 per cent. If it takes more iodine, say 30 c.c., it is stronger than 25 per cent., being equal to a 30 per cent. solution. The most convenient strength to keep is 20 per cent., and to dilute the strong solution to this strength we make a simple calculation. With a 20 per cent. stock solution the 10 ccs. of dilute solution should take 20 cc. of iodine; they however take 30 c.c. Therefore our stock solution requires dilution in the ratio of 20 to 30. That is to say, every 20 ccs. of the stock solution requires dilution to 30 ccs. to make a 20 per cent. solution. Our 800 ccs. will therefore make 1,200 ccs. of 20 per cent. solution. For such a test as this a burette with glass tap and holding 50 ccs. will be necessary, together with a 5 cc. and a 10 c.c. pipette, with an accurate 100 cc. measure. These will cost about 5s. The iodine solution can be purchased ready mixed for use in N/10 strength, which can be diluted to make N/25 strength, but it is cheaper to prepare it oneself in N/25 strength by taking 5 grammes of iodine, mixing it with 7½ grammes of potassium iodide, then adding a few drops of water, and rubbing the two together with a glass rod until the iodine is dissolved. Finally, the whole is diluted to one litre. The iodine must be very carefully weighed, and the bottle of solution should be kept in the dark. The iodine is added to the sulphite solution until a permanent yellow tint is produced. A first rough test will give the approximate quantity, and then a second test can be made more accurately, using only one drop of iodine solution at a time, when the critical point is known to be near.

Those not inclined to take the trouble of titrating the solution may adopt the following method, which dispenses with both titration and the drying of the crystals after washing. Wash as before described, then drain off the water as completely as possible and weigh the washed crystals and the glass vessel together. From the result deduct the weight of the measure, which should be previously ascertained, and from the remainder deduct about 10 per cent. to allow for the water retained in the mass of crystals. This will give very approximately the weight of the washed crystals, which can then be dissolved in water to make a solution of the desired strength. The best way to drain off the water from the crystals is to strain a piece of coarse cloth or fine muslin over the top of the vessel containing the salt and then turn the whole upside down and shake vigorously. The crystals may, if preferred, be turned out into a cloth, drained, and weighed in the cloth, but this is a clumsier method that makes the scales in an undesirable mess. It is, of course, not usual to take any such precautions as these in preparing a solution of sulphite, but possibly the desirability of washing will be better realised if we point out that it is not very uncommon for a pound of sulphite to contain quite five ounces of material that is not sulphite. Sulphite of about 66 per cent. strength is often met with, and many development troubles may be attributed not so much to the presence of the impurities as to the deficiency in the proper amount of sulphite.

If a neutral sulphite solution containing metabisulphite is to be made up, the sulphite should be washed first, before the second salt is added, for the latter is usually so pure as to need no washing, while it is at the same time much less soluble than the sulphite. If the two are mixed before washing, the final solution will be likely to contain far too much metabisulphite.

# A NEW MEDIUM FOR WORKING ON BROMIDE PRINTS.

In the case of photographic prints, if it is desired to retain their photographic character, handwork of any kind must be unnoticeable at any angle of view. To secure this end a medium is required which admits of the colour of the print being exactly matched. That is a *sine qua non*. Then it should easily yield all the tones in the print from black to the lightest grey, and should be capable of use in fine line work, stipple, or wash equally well. It must be easily removable without injury to the surface of the print, whilst it must not come off with friction alone, and in case of glossy prints it must admit of waxing or glazing. This seems a large order. But having recently some rather important work to do on some glossy bromide prints, I cast about for the means to fill it. I had for some time used spirit of wine (rectified) as a means of applying lamp black, etc., to matt and dull surface prints, but this was not sufficiently adhesive for the glossy paper. I had also used chloral hydrate in spotting carbon and ozobrome, but this was in a watery medium, and was barred in the case of my glossy bromides. Was chloral hydrate soluble in spirit? A reference to the Pharmacopœia proved this to be the case, and the order was filled. Now for the working details.

For a black print use the soot obtained by burning turpentine, and add a little black lead used for polishing grates, and not so much as to give a shiny effect. Add also Prussian blue until the black of the print is exactly matched. Of this mixture take a few grains and mix it on a palette with a drop or two of a solution of one part by weight of chloral hydrate and ten parts by measure of rectified spirit of wine. Spread the cream quickly, with the camel hair brush, which is used for mixing, and let it dry as a thin layer on the palette. On another part of the palette make a similar patch of *white*, using *powdered* French chalk and the solution of chloral, and in the same way make patches of *intermediate greys*, which will be the tints mostly wanted.

For work on the print use a sable No. 2 and No. 1. This must be the kind used for working in oils, *not* water-colour. Dip the sable point in pure spirit of wine, and after working it slightly on the tint required on the palette, apply it to the print. The sable must not be fully charged with spirit, except, of course, for wash work on a large scale. The spirit may be kept in a small cup or four-drachm measure, and used as a medium throughout—*also to clean the sable*. No more of the chloral solution must be used than is required to mix the pigments in the first instance.

Now, in the case of glossy prints it is necessary, as the work proceeds, to go over it with an old soft handkerchief which has been well rubbed with a cake of white wax. This will show how the work is progressing. If more is required go on working on the top of the wax, and wax again until the right effect is obtained. On the other hand, should the work be found too dark, parts may be lightened with a stump moistened with turpentine, or all the work may be wiped off with the aid of the same liquid, and a fresh start made, using lighter tints.

The waxing is necessary to remove surface marks, and, if desired, parts worked on may also be covered with a touch of Japan gold size applied with the finger and smoothed off quickly.

In the case of *matt* prints the procedure is identical, except, of course, as regards the waxing and the use of turpentine. Spirit of wine may be used in this case instead of turpentine to clean off any work which has been overdone, but it must not be expected that the last trace of grey is so easy to remove from a matt print as from a glossy smooth surface.

It is quite possible some makes of bromide paper may be coated with a gelatine which resists the action of the chloral hydrate, especially if treated with alum or formalin. My prints were fixed in plain hypo with acid sulphite only.

T. H. Greenall.

P.S.—It is cheaper to use ordinary methylated spirit in place of the rectified spirit of wine. A very good black may be made from indigo, vegetable black, and black lead.

# SAFE-LIGHTS FOR THE DARK-ROOM IN THEORY AND PRACTICE.

## VI.

All the sources of light employed in practice emit a certain proportion of ultra-violet rays. In a report published a year or two ago on the Euphos glass, L. Th. Reicher[51] wrote:—"The light of the stearine candle appears to extend up to the ultra-violet part of the spectrum, but it is relatively weak in ultra-violet rays. A paraffin lamp or an acetylene burner, on the other hand, emits more of these rays, and their proportion is still greater in an increasing order of magnitude in the case of the incandescent gas burner, the electric incandescent lamp, the electric arc, and the mercury-vapour light."

The ultra-violet of all these sources of light does not extend practically further than 200 $\mu\mu$. The ultra-violet, which is of small wave-length, is so strongly absorbed by the air and has such extremely weak effect upon the photographic plate that an exposed negative may be left to such ultra-violet light during the whole period of development without fear of fog, that is to say, except in the case of plates, such as those of Schumann, specially rendered sensitive to ultra-violet. Moreover, the greater proportion of glasses absorb very strongly ultra-violet rays of wave-length less than 300. The greater the wave-length of the ultra-violet rays the more sensitive is the photographic plate to them. While, in a general way, it may be said that the light of an oil lamp contains more ultra-violet rays than that of an electric incandescent lamp, this is not to say that the intensity of the ultra-violet is weaker than that of a given wave-length, but that the ultra-violet spectrum of the light of the oil lamp is less extended than that of the electric incandescent lamp. These sources of light can thus both contain the same quantity of the ultra-violet rays, highly actinic as regards the photographic plate. The danger of fogging the plate is, therefore, much greater with the ultra-violet of an oil lamp than with that of an electric incandescent. It follows that the Euphos glass is practically entirely satisfactory as a means of obviating the physiological effects of ultra-violet. This glass cannot be recommended for the absorption of ultra-violet in a dark-room, since it still allows to pass a small quantity of these rays, about 400, which are about the most actinic in their action on the sensitive plate.

The preparation of thicker filters of this kind of glass, capable of absorbing the ultra-violet, would lead to filters of undesirable weight, and it seems completely useless to seek to obtain this description of absorption in this way when the same result can be arrived at by a better method.

Use may be made for this purpose of liquid filters consisting of a solution of quinone bisulphate, or of dry filters prepared with æsculine. This latter substance is highly sensitive to light and oxidises rapidly: thus it is not suitable for permanent filters. When the firm of dye makers, Messrs. Meister Lucius and Brüning, placed upon the market a new dye, filter-yellow K (afterwards re-named rapid filter yellow) specially intended for photographic purposes, Novak[52] made spectrographic measurements of its properties. His work, done with the large quartz spectrograph of the Imperial School of Graphic Arts, Vienna, showed that, even in weak concentration, this dye very energetically absorbs all ultra-violet rays. On this account Novak advised the use of this dye for dark-room filters. Rapid filter yellow possesses the further advantage of providing a very constant (transmitted) light.

It is to be remarked that this dye figures in extremely few formulæ for dark-room safe-lights. Thus, for example, in those for liquid light-filters absorption of ultra-violet is still included. The same thing is evident in the case of the new filters of von Hübl. In order to prolong the life of the filters, and at the same time to allow of using the largest possible quantity of the dye, I have avoided mixing rapid filter yellow with other dyes. I have prepared, by means of this dye, a distinct filter (filter No. 1), which is placed along with another filter in the Wratten dark-room lamp, the two sets of grooves of which allow of a couple of separate filters being employed.

### The Permanence of Dark-Room Safe-Lights in Relation to the Mixture of Dyes.

When an organic dye is dissolved in water, this solution forms a homogeneous mixture which is sensitive to light. If it is found that in a certain quantity of this solution, $a$ represents the total quantity of dye, $t$ the time after which a given quantity of this dye is decomposed photo-chemically, and $k$ the absorption-constant of the dye, the rate of photo-chemical decomposition (alteration in light), for a given luminous intensity $i$, will be given by

$$\frac{dx}{dt} = ki\,(a - x)$$

This, by integration, gives the following for the concentration of the dye:—

$$C = ae^{-kE}$$

a calculation in which $E = i \times t$, and $e$ represents the base of the Napierian logarithms.

This equation applies only when the dye follows the ordinary law of absorption, and is exposed to light in a thin film without intermission, or, what amounts to the same thing in practice, when it is greatly diluted. The light-intensity no longer remains the same at all points of the solution when the latter is used at great strength, or in thick films, and $i$ cannot then be considered as a constant quality.

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[51] "Lux," 1910, page 312.

[52] "Photographische Korrespondenz" 1906, page 384.

Experimental researches on the correctness of the preceding equations have shown that in a very large number of photochemical reactions of organic dyes the value of the absorption constant $k$ is, to a great extent, dependent on the presence of other bodies. According to the nature of the by-product, the absorption constant increases or diminishes, and it is on this change that are based, among others, the sensitising and fixing processes in colour photography by the bleach-out method. Thus the same dye will show a sensitiveness to light $\left(\frac{dx}{dt}\right)$ which is different according as the dye is dissolved in water or in alcohol. The products of the photo-chemical decomposition of the dye frequently exert an influence on the absorption constant in such a way that $k$ can become greater or less, and can never be considered as absolutely a constant.

In safe-lights of coloured gelatine the presence of the gelatine has an action on the sensitiveness of the dye to light. The gelatinous absorption of the dye is less sensitive to light than the solution in water, and this is the reason why it is better to give preference to safe-light screens than to liquid filters. However, the presence of by-products contained in the gelatine has its effect on the permanence of the safe-lights, and as these products exist in various brands of gelatine irregularly, both quantitatively and qualitatively, it is all the more impossible, even when preparing a formula with scrupulous care, to obtain safe-lights having the same sensitiveness to light. Thus, safe-lights of the same kind may differ very considerably as regards permanence. All that can be done is to pay regard as far as possible to all the factors which prolong the life of the safe-light.

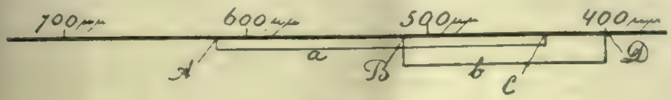

Fig. 1.

The equations given above for the sensitiveness to light can no longer be applied, because we have to do here, not with a homogeneous system, but with one which is of a heterogeneous nature. It is by no means easy to say how these equations should be taken. It may be said that the analogous cases supplied by equations in kinetic chemistry in heterogeneous systems give for different systems results sometimes totally different, indicating the existence of highly complex conditions.

It is thus clear that a dye A can acquire in gelatine a sensitiveness to light of quite different kind, that is to say, a sensitiveness which is greater or less in consequence of simple mixture with another dye B. This makes the problem of obtaining a permanent safe-light one of extreme complexity. As has been already said, these factors are still neglected in practice, our knowledge not being sufficient to trace their action in the preparation of a filter: it will require further long researches to trace them. However, if one of two plans has to be chosen—mixing dyes A and B and covering the two halves of the screen with the same film of gelatine, or preparing two separate solutions and covering one half of a screen with dye A and the other with dye B—the second method seems to me the better. The possibility of increased sensitiveness to light as the result of admixture is always latent in any dye. If it happens that, on the one hand, the dye A becomes more sensitive to light, and, on the other hand, that the dye B becomes more permanent, the constancy of the safe-light itself will not be modified, since this property is always dependent on the dye which is most sensitive to light. As long as we do not possess numerical data of the variations of the absorption-constant we would still prefer, on other grounds, the separation of dyes to employing them in mixtures. Assume that the dye A has a sensitiveness to light greater than that of dye B. This supposition is a reasonable one since up to the present two organic dyes have not been found possessing exactly the same sensitiveness to light.

In fig. 1 the normal spectrum from 700 to 400 is represented graphically by a straight line. Suppose that the dye A absorbs the part AC of the spectrum (absorption band $a$), and that the dye B absorbs the part BD of the spectrum (absorption band $b$). According to the fundamental law of Grothus and Draper the light can act photo-chemically only upon a substance when it is absorbed by this substance. Spectrographic experiments made on the separate organic dyes have already shown that the dye becomes paler in exactly the part of the spectrum which it absorbs, that is to say, in the absorption band of the dye. There is no reason to suppose that this is not the same for all the organic dyes. The dye A would thus undergo photo-chemical bleaching in the whole absorption band of the spectrum $a$, whilst the dye B would suffer the same change in the band $b$. In the part BC the photo-chemical reaction would perhaps be, by a process of bleaching, caused to take place a little more rapidly than in the part AB in the case of the dye A, and in the part CD for the dye B.

If the dyes A and B are separated into the two halves of the screen, that is to say, if on one half the gelatine dyed with A is spread and on the other the gelatine dyed with B, the screen can then be placed in two ways in the lamp:—

(1) The light passing first through the film of dye A and next through that of B.

(2) Light passing first through B and then through A.

We will trace the result of the two cases. In the first case the dye A becomes partly bleached throughout its absorption-band $a$, whilst the dye B only in the part of the spectrum CD.

In the second case the dye B is bleached in the absorption band $b$, and the dye A only in the part AB of the spectrum.

If the two dyes A and B had the same sensitiveness to light, A would bleach first in case No. 1 and dye B first in case No. 2. The dye A being more sensitive to light than B, the safe-light would be less permanent in the first case than in the second. Proceeding on this basis it may be concluded that it is well to turn the side of the safe-light providing the most constant light towards the light-source. It is thus more favourable to separate the dyes than to mix them, because in this way it is possible to suppress a part of the actinic rays in the dye more sensitive to light.

In the preceding notes it is assumed that in the two halves of the filter there is as much of the dye A as of B. If there were less of A (most sensitive to light) and more of B (the more sensitive dye) one would be quite clearly led to follow the rule given above as regards placing the dyed films in position. In the opposite case it can happen that the dye B giving the more constant light bleaches visibly sooner than the more sensitive dye A, and the two halves of the safe-light are then in a state of constantly counter-balancing each other. Thus it is extremely difficult to say how the separate units of the safe-light should be placed.

The constancy of the light supplied by one unit of the screen plays here a more important part than that of the constancy of the light $\left(\frac{dx}{dt}\right)$ produced by the dye: for it is determined by the time of illumination necessary to render visible the commencement of the change in the absorption spectrum of the filters. It need not be said that the constancy of the light supplied by one unit of the safe-light depends not only on the concentration of the dye but also on its type of absorption spectrum. If the more sensitive dye A possesses an absorption spectrum of type II. (see previous article), and the dye B giving the more constant light an absorption spectrum of type I., it can happen that by exposing to light equal quantities of dyes A and B, the more permanent dye B will nevertheless bleach before the less stable dye A. The more fugitive dye A thus produces a more permanent component of the safe-light than the dye B, which gives the more constant light. The converse of this can also occur. At equal concentration, the case exists, among others, for rose Bengal, which is very sensitive to light, and has an absorption spectrum of type II., and naphthol green, giving a very constant light of absorption spectrum, type I. The preceding rule should thus be modified to the effect that one should not place next to the light-source the part of the safe-light containing the dye giving the most constant light, but the part which is most permanent.

The question is rendered still more complex when we have to do with three dyes used in mixtures of two in order to form one of the halves of the safe-light. If the ways in which the three dyes, A, B, and C, may be distributed in the two halves of the safe-light be considered, it would be seen that the possible arrangements are as follows:—

$$\begin{array}{cccc} A & B + C & A + C & B \\ B + C & A & B & A + C \end{array}$$

in which it is assumed that the light first passes through the upper part of the filter and next through the lower part. At a first glance the only solution seems to consist in determining by a strict experimental method the time during which each part of the safe-light retains its properties. The greater the number of the dyes the more tedious becomes any such series of measurements.

This determination, however, appears simpler than it is in reality since the rays from the light-source exert their bleaching action so slowly on the majority of dyes that several years would require to elapse before any noticeable change in the absorption spectrum of one part of the screen could take place. This will seem extremely favourable to the permanence of a safe-light, but it may be desired that safe-lights adopted for daylight use should retain their properties for at least a dozen years. There is no reason to believe that one cannot realise this by applying all the factors capable of increasing the permanence of the filters.

The permanence of one part of a safe-light would be determined by exposing it to daylight, or direct sunlight. The results obtained in this way would not agree with those obtained by exposure to artificial light, such as is employed in the dark-room. The distribution of the intensity of the spectrum is different in the two cases, and this would have a great influence on the determination of the permanence of the units of the safe-light. Thus, the determination with a particular artificial light, say of an oil lamp, cannot be applied to another kind of artificial light, such as incandescent gas, since here again the distribution of the spectral intensity is different. It will thus be seen that in experimental research on the keeping qualities of safe-lights there are the same great defects which are met with in the determination of plate-speeds. This is why it seems to me preferable, in making a safe-light, to separate the dyes as much as possible. If it is necessary to use more than two dyes in a single filter it is best to bring together as far as possible in one part of the whole safe-light the dyes which give the most constant light, and in another part those which give the least constant light.

The manner of arranging the various filters in a safe-light is given only in the case of those described in respect to which I have determined the best disposition. In other matters it must still be left to chance.

In the preparation of safe-lights the separation of the dyes presents a practical inconvenience with which, however, it is not necessary to deal. It should be said that the best spirit level is not sufficient for giving a perfect horizontal position of the glass plates intended for the preparation of a filter and is not enough to allow of obtaining throughout the same thickness of dye. This is most noticeable in dyes having an absorption-spectrum of type I., such as the green and dark-red for dark-room safe-lights. Moreover, it is noticed that, as a general rule, the gelatine film falls off in thickness from one side of the plate to the other. When the two halves of the filter are covered with gelatine containing dye to the same degree it is easy to obviate this defect. One of the sides of the two plates is marked, and care is then taken that these sides are always placed in the same direction, for example, on the right. After having left, without spreading the gelatine, the two halves of the filter to set and dry, the two plates are placed one on the other, gelatine against gelatine, and in such a way that the marked sides are always in opposite directions, that is to say, one to the right and the other to the left. There is thus obtained a safe-light, such as is shown in fig. 2, and in this way a safe-light is obtained the coating of coloured gelatine in which is everywhere of the same thickness.

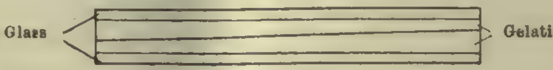

Fig. 2.

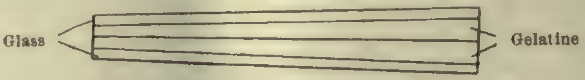

Fig. 3.

If care is not taken to arrange matters in this way the two halves of the safe-light will be formed in a way which multiplies the original error, as indicated in fig. 3. Here the difference in thickness is still greater, and, as a result, the permanence of the filter is appreciably reduced.

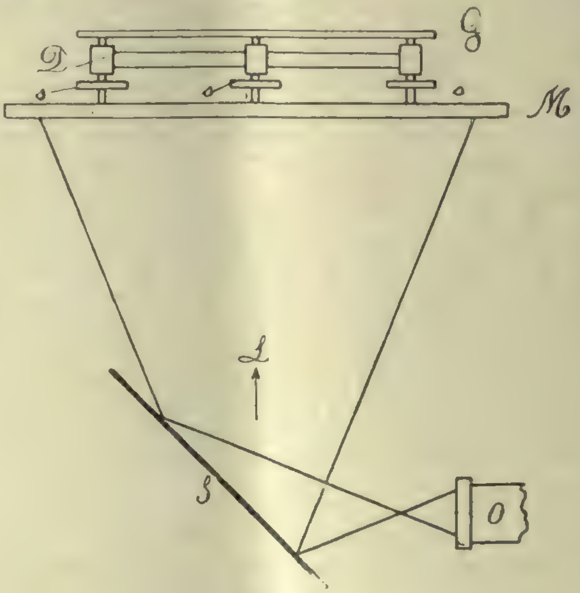

Fig. 4.

When dyes are used, the absorption-spectrum of which is of type I., and when one has not more exact means of setting the plates horizontally than an ordinary spirit level, it is better to mix the dyes than to separate them into two coatings. The defects produced by the separation of the dyes would be greater than those which would eventually result from their mixture.

To digress for a moment, these dyes supply a very exact method of giving to a flat surface a perfectly horizontal position. The method is superior to the use of a spirit level, and it is evident that the dye becomes a more sensitive means of thus securing horizontality as its curve of absorption forms a smaller angle with the abscissa. In principle this takes place rather with a dilute solution than with one of considerable concentration.

In fig. 4 let O be the lens of a projection lantern, the light L, from which is reflected vertically upwards by the glass S placed at an angle of 45 deg. The light uniformly illuminates a large surface of matt glass M placed horizontally by means of a spirit level. On this ground glass is an iron tripod D, two feet of which at least are provided with set-screws *s* which are themselves connected with micrometric screws supporting a small piece of perfectly flat glass, such as carriage lamp glass, the edges of which are greased. This plate, which is cleaned with the greatest care, is placed horizontal by means of a spirit level. It is then coated with a solution of safe-light green, one per cent. strength, in water. Ten ccs. of this solution are poured on for every 100 sq. cm. of surface, and spread by means of a glass tube bent to an obtuse angle. If the observation be now made from above vertically down through the glass plate G covered with the coloured gelatine solution, the difference of absorption between one side or the other will indicate the slightest departure from a perfect level. It will still be possible to approximate to this position by making use of the set-screws *s*.

In this method the ground glass plate M should be strongly illuminated and all light cut off between it and the plate G by means of black paper or card. The lantern is placed on the ground and the ground glass M about 80 cm. above this level. When the surface of the glasses is great, the lantern requires to be fitted with a short focus objective. The exactness of this method of determining the horizontal position can be increased in three ways:—(1) As previously pointed out, by using a solution of dye, the absorption curve of which forms a similar angle with the abscissa. (2) By increasing the surface of the plate G. (3) By placing one or more perfectly flat glass plates above the plate G, covering each with dye solution and arranging that all parts of the upper surface shall be at the same distance from that of G.

The horizontal level obtained by means of a single glass plate, 30 x 40 cm., is so exact that it is perfectly sufficient for the coating of dye solutions for screens.

A. P. H. TRIVELLI.

*(To be continued.)*

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# OVER-EXPOSURE AND DEVELOPMENT WITH LITTLE ALKALI AS A PREVENTIVE OF HALATION.

[From time to time the above-mentioned method has been the subject of writers on the practical side of photography, and has been advanced as a preventive of halation more efficient than backing of the plate. In the current issue of our San Francisco contemporary, "Camera Craft," attention is further directed to it by the reproduction of a pair of remarkable photographs, the work of Mr. J. H. Hallberg, who as an electrical engineer in New York has made extensive use of the camera in photographing arc lamps. It will be seen that by following the method described, Mr. Hallberg secures negatives of these difficult subjects in which the reversal of the arc is avoided. We give the text of his communication to our contemporary.—EDS., "B.J."]

I AM sending herewith two prints. The first, showing complete reversal of the image of the arc, the most pronounced form of halation, is from a negative made on a non-halation plate developed in the ordinary way. The second was made on an ordinary plate, but developed by the special method given in Volume II. of the "Library of Practical Photography," which I recently purchased, and find a great assistance to me in my work. This second photograph is, for my purpose, better than the original subject, for the reason that it so beautifully illustrates the different degrees of the light intensity at the arc craters. With such results possible, they can be studied, compared, used as telling illustrations, and filed away as records having a value that perhaps only an investigator and student of electrical phenomena can appreciate to the full. Both photographs are of the same electric arc, one of eight thousand candle-power, on an alternating current, and intended for a projecting machine. They were taken through the open door of the sheet-metal lamp-house in which it was installed.

As to a description of the method employed, I can only say that I followed as closely as possible the instructions laid down in paragraphs 365 to 379, inclusive, in the volume mentioned above. I am sending herewith the publishers' permission to reprint these directions in your pages, not neglecting to state that the matter is copyrighted by the American School of Art and Photography, under copyright date of 1908 and 1909. The directions follow:—

### Method of Development.

365.—The entire success of this method of development lies in sufficient exposure, and as the latitude as to extreme exposure is so great we must strive only to give full time, as any reasonable amount of over-exposure can be treated in the development of the plate. In the wet-plate days we had less difficulty with these obstacles than we have with the dry plate. Why? For the reason that the emulsion of a wet plate was not one-fiftieth as sensitive to white light as an ordinary dry plate to-day; consequently, there was more latitude in the exposure.

366.—Next to the wet plate we have the process plate, or the lantern-slide plate, all of which are extremely slow plates. For the lantern slide we require the clearest plate possible. The lantern slide must be absolutely clear and free from fog—shadows must be transparent. With the extremely rapid plate this would be impossible to produce except where the most accurate exposure is given, and even then the results are not as satisfactory nor uniform. While the extremely slow plate is superior for quality, yet for general commercial work the slow plate would be impracticable. In many instances quite rapid exposures are necessary to obtain certain results which could not be obtained with the slow plate, and therefore the most rapid plate must be employed and a means of producing the same results, as is possible with the slow plate, must be accomplished in the development.

367.—As stated in the forepart of this instruction, the entire success of special development rests in the exposure. You must time for the most dense shadows, and time them fully; a little overtime will do them no harm, as the overtime can be cared for in the development. By timing for the most dense shadows with this development the high-lights will care for themselves, for you treat them in the developer so as to preserve them.

368.—A good guide for exposure would be as follows: Where you would ordinarily give ten seconds, with this method give from thirty to forty seconds' exposure, etc. All the details in the most dense shadows must be supplied by the exposure, the rest you can obtain in the developing.

369.—The slow process of developing, applied by this method, will, with a full-timed exposure on a fast plate, give you the same excellent results as a long exposure would give you on a slow plate in which the action of light upon the plate is so slow that it does not fog the plate. With a slow plate developed in a normal developer, all chemicals act equally, for there are no great differences to overcome, while in the fast plate there are enormous differences in the effect of light between the strongest highlights and the most dense shadows. In severe cases, by this method of timing fully the most dense shadows, the highlights would be extremely over-timed; therefore, in order to give us a well-balanced negative, we must restrain the highlights during development, and hold them in check until the shadows are fully developed.

Fig. 1.

Fig. 2.

### Developing Formula.

370.—Stock Solution No. 1:—

| | |
|---|---|
| Water | 24 ozs. |
| Pyrogallic acid | 1 oz |
| Sulphuric acid | 8 drops. |

Stock Solution No. 2:—

Sulphite soda solution to test 70 with hydrometer.

Stock Solution No. 3:—

Carbonate soda solution to test 40 with hydrometer.

371.—To develop:—Take one ounce of No. 1, one ounce of No. 2, ten to twelve drops, no more, of No. 3, and add twelve ounces of water.

372.—Before beginning to develop, let us consider again the nature and objects of each chemical used in developing. Stock Solution No. 1 is your pyro solution, or (developing agent) strength-producing agent. Stock Solution No. 2, sulphite soda, is your colour-regulating chemical. Stock Solution No. 3, carbonate of soda, is your detail-producing chemical.

373.—In ordinary developing, if you desire more contrast, you would increase your pyro, because pyro being your developing agent gives you strength, builds up your highlights. If your plate developed yellow in colour, you would increase your sulphite of soda in order to retain the proper colour. If your plate lacked detail, and developed too contrasty, you would add carbonate of soda, because it opens the pores of the film and permits the pyro to get to the shadows, and, therefore, is your detail-producing chemical. For this method of developing we have provided, by prolonged exposure, all the necessary detail; so all we require is to retain this detail and produce the proper strength. It is absolutely impossible to develop a plate without at least some alkali, or detail-producing chemical. It requires but a very small amount of carbonate of soda, yet some of this chemical must be used or the pyro will not attack, and the plate will not develop.

374.—Ordinarily, we would desire to have the pores of the film open up, as it were, by means of carbonate of soda, thus permitting the pyro to act and build up and supply the strength necessary. In this case, however, we do not desire the pores to open, as we are already supplied with the detail by the exposure; therefore, we use only a few drops of the detail-producing chemical, merely sufficient to allow the pyro to develop the plate. The development will be gradual, and the shadows and high-lights will build up gradually in their proper proportions, the plate remaining clear and crisp throughout the development.

375.—After first placing the plate in this solution, it may require some three or four minutes before the image will appear. If it does not appear by that time, add three to five drops more of the carbonate of soda, or Solution No. 3. These additional drops of alkali will start the plate developing quite freely. After a few more minutes add a few drops more of No. 3, and again, from time to time, if necessary, until the plate is fully developed.

376.—You must bear in mind that you have added so little of this solution that the pores of the film are not filled with the carbonate of soda, none of your lights or shadows are clogged or choked; your plate is clear throughout, and your developing has been deeper and more solid, and, therefore, is really developed farther than if it were developed in the ordinary way.

377.—Should you find, after developing for some time, that the plate is apparently fully developed with good, clear detail in the shadows, yet lacking snap in the highest lights, and continuous developing does not seem to build them up, then pour off this solution and make up a normal developer according to regular formula for universal developer. (See paragraph 328.)

378.—Immerse the plate in this normal developer for only a moment, examining very closely, for in the normal developer the plate will build up very rapidly. When you secure the proper strength, which should not require more than a minute or two at the most, rinse the plate in plain water, and finally fix in a plain hypo bath free from other chemicals.

379.—As the developing of the plate by this method is quite slow, requiring fifteen to twenty-five minutes, avoid undue exposure to the ruby light, as you are apt to fog the plate by long development in too strong a light. It is advisable to cover the tray during development and only uncover when you wish to examine it. These precautions must be taken in order to insure perfect success. With care and patience, the most beautiful results can be obtained.

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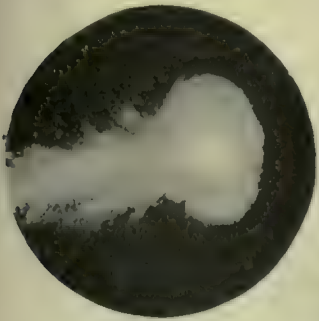
The Durbar in "Kinemacolor."—Mr. Charles Urban, who has been graciously appointed by his Majesty to record the Coronation Durbar at Delhi in "Kinemacolor," left England on Monday last for India, and, with seven of his most expert operators, will "film" in natural colours the magnificent ceremonial of King George being crowned in person and proclaimed monarch of our Eastern Empire. Mr. Urban is a guest of the Indian Government, and in addition to being granted exclusive privileges for securing life-motion scenes of every important incident in connection with their Majesties' high mission, has also a large number of invitations from ruling Princes to visit and take pictures of all the most gorgeous and imposing palaces and estates in the great peninsula. Possessed of a prerogative never previously granted to any kinematographer, Mr. Urban should certainly bring back to England a pictorial history of the unexampled splendours of the King-Emperor's unique visit, the vividness and realism of which mere words cannot anticipate.

# THE PHOTOGRAPHY OF VORTEX RINGS.

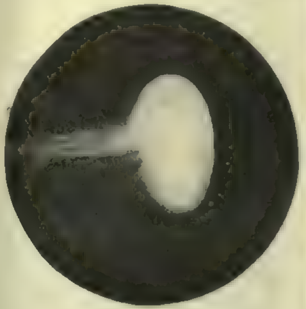
II.

Views of rings at the moment when changing from water into oil, and at the moment of reflecting from an oil or water surface, might have been obtained by a sufficient expenditure of time and care.

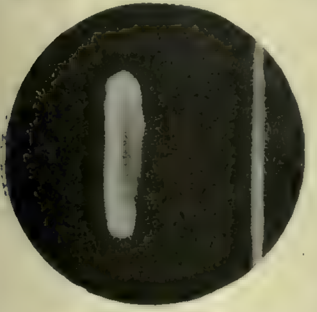
From necessity the photographs were taken of the rings viewed very nearly edgewise; that is, normally to their direction of motion through the tank. It would have been interesting if views could have been secured through the lens in the end of the tank. These would have shown the rings as they appear when approaching the observer. The problem of illumination, however, was difficult, and no serious attempt was made to solve it. It was at first thought that milk-white rings might be sufficiently illuminated to be photographed by reflected light, but when this was tried with white rings of silver chloride they were found to phosphoresce for too long a time to enable instantaneous photographs to be taken, even had the illumination been sufficient, which is doubtful.



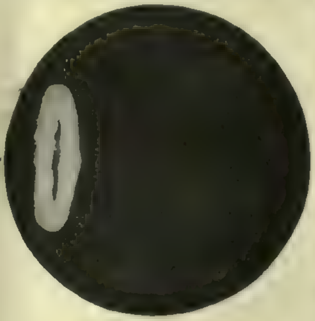
View A.



View B.

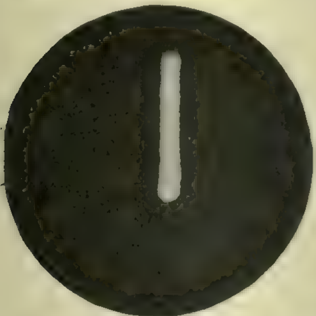


View C.

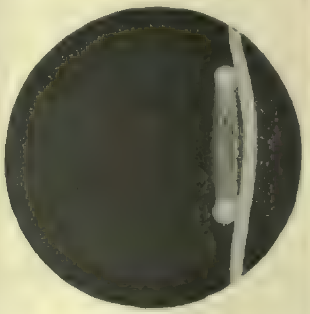


View D.

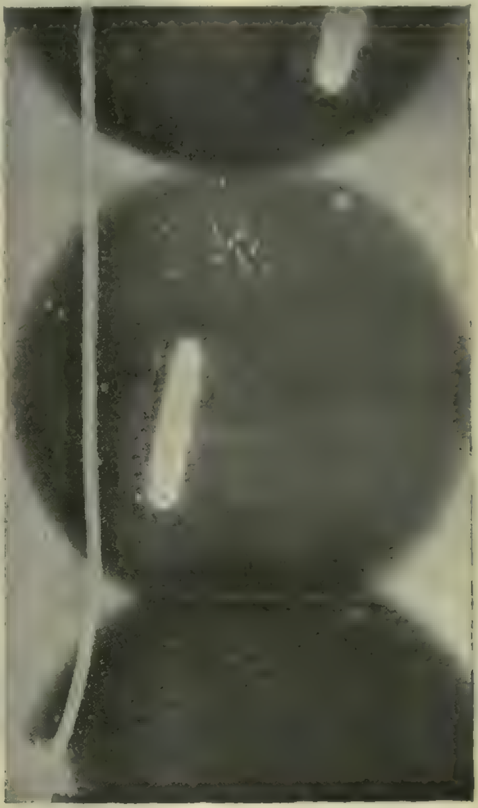
View A is of a single ring, distant a few centimetres from the gun. It has at this point a characteristic mushroom appearance and is followed by a trail of colour. This ring, when photographed, was moving about one and a half metres per second. In View B is shown another ring which has also just left the gun. It probably started with a higher velocity than the ring shown in the previous view, and its mushroom head and trail present a smoother appearance. View C shows a ring which has gone about 30 centimetres from the gun. It started with the same appearance as the ring in View A. The trail has entirely disappeared. It also is moving more than a metre a second and is about to strike a small watch chain suspended vertically in the water. View D is of another ring taken under conditions similar to the conditions under which the ring in View C was taken. View E is of another ring, a greater distance from the gun, in which the colouring matter is less dense. If carefully observed, small dark particles may be seen to be distributed along the filamentary axis of the ring. The position of these particles does not clearly appear in a single view, but when a double view is observed in a stereoscope they are plainly seen to lie along the axis of the ring. In many of the views this line of dark particles is shown very clearly. While it was supposed that the colouring matter of the ring was free from suspended particles, some must have been present originally in the ring, or were gathered up by it in its progress through the water. As a vortex ring throws off particles denser than the material of the ring itself, particles



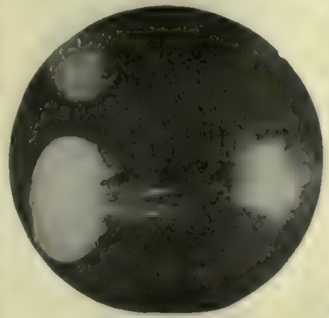
View E.



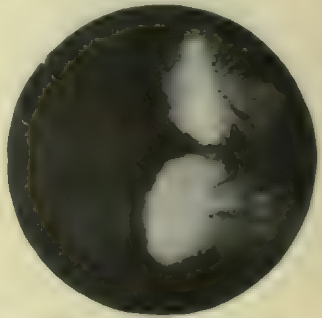
View G.



View F.

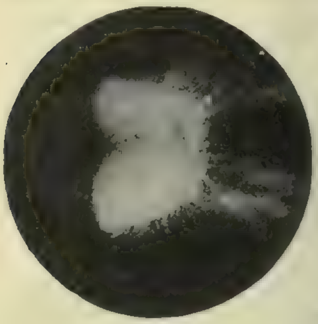


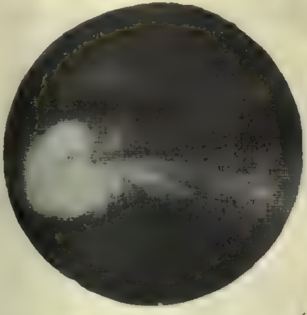
View H.



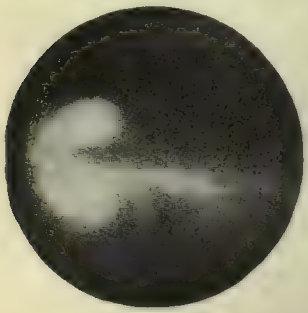
View I.

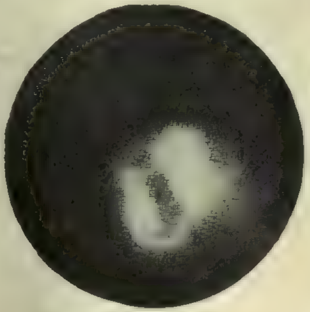
which are retained in a water ring must have a density of less than water. In F we have three views, slightly smaller than the others, of the same ring, taken about 1/50 of a second apart, showing the ring just before and just after it has struck the chain. View G shows remarkably fortunate timing. The ring has moved up to, but has not actually struck, the chain. It will be noted that the chain bulges most on a line from the centre normal to the plane of the ring. The filamentary core of dark particles also shows well in this ring. The core, which seems always to be present, can generally be seen only in rings which are but slightly coloured.

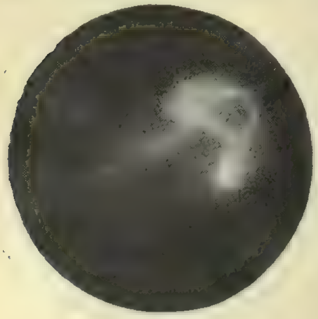

View J.

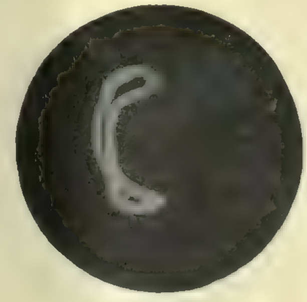

View K.

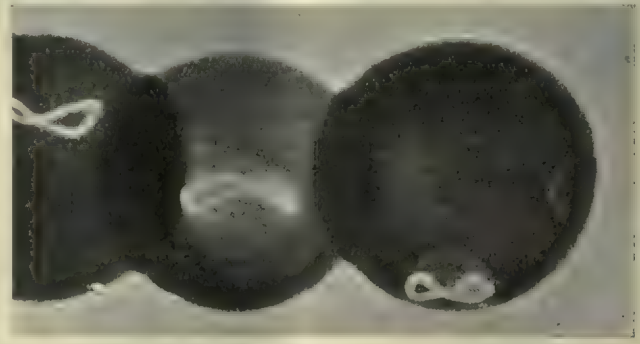
When the diaphragm of the gun is provided with two circular holes, one above the other, two rings are ejected at the same instant. The action upon each other of the two rings ejected is, perhaps, the most interesting property of these vortices. To study this action a large number of exposures of double rings were made and a few very instructive negatives secured. These views were all taken stereoptically, and to learn all they teach should be viewed in a stereoscope. Negatives were obtained of the double rings just as they were leaving the gun and also at different distances up to half a metre. In View H double rings are shown which have issued about 5 cm. from the gun. There is less colouring matter in the upper ring than in the lower, which permits the internal construction of the upper ring to be more clearly seen. Both rings have the mushroom appearance characteristic of single rings just issuing from the gun. There is already an indication in this picture that the two rings are being attracted towards each other, and their planes are seen to be slightly tilted in the direction of their forward motion. The next view, I, shows two other rings a few centimetres farther from the end of the gun. The attraction towards each other and the tilting of the planes of the rings are here still more pronounced. In the following view, J, are shown two other rings a centimetre or two farther from the gun than the previous pair. Here the attraction has become so great that the rings have joined. The dimly seen cores of the separate rings, now become a single ring, show a peculiar outline, somewhat like the letter C, when viewed from a position at right angles to the forward motion of the ring. In View K the two rings have completely joined, but their trails extend back along the separate paths which they had previously followed. View L gives a slightly later stage of a double ring. In View M the vortex has become a distorted ellipse, with major axis normal to the plane of the paper. View N also shows a newly formed double ring. View O is a ring in which the joining of the two separate rings is completed. Its phase of vibration is such that it is convex upon the side facing its direction of motion. It should be noted that the vortex has become cleared of all surrounding colouring matter. In View P is shown another ring, also made up of two separate rings, as it appears in three successive stages separated by intervals of about 1/50 of a second. Here are plainly seen the four kinds of motion possessed by liquid vortices which have been formed from the union of two single rings. First, there is a rotation about the vortex filament; second, the forward motion of the vortex as a whole; third, a motion of oscillation of the extremities of the vertical diameter of the vortex in a vertical plane lying parallel to the direction of forward motion; and fourth, a motion of oscillation of the extremities of the horizontal diameter of the vortex in a horizontal plane parallel with the line of motion of the vortex. These four motions, except the second, are too rapid to be observed satisfactorily with the eye. But the instantaneous photographs here reproduced fairly demonstrate the nature of these motions, and the stereoscopic views especially enable their character to be accurately observed.


View L.


View M.


View N.


View O.


View P.

Edwin F. Northrup, Ph.D.

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## HALATION.

(A note in "Photographic Scraps.")

Any lateral spreading or blurring of the image in the most exposed parts of a negative, appearing as a halo or border in the surrounding less-exposed parts, would be described by most photographers as halation, and it would be assumed that this could always be avoided by the use of a properly backed plate.

Although this may be true of a particular case, it is only partly correct taken generally. Backed plates are largely used, and the object of the backing is well known to be the prevention of reflections from the back of the glass, of that part of the light which is strong enough to pass quite through the film.

It must not be forgotten, however, that a spreading of the photographic image or photographic irradiation, may be, and often is, due to quite other causes, so that it would be a mistake to ascribe all signs of blurring or spreading of the image to the use of unbacked or imperfectly backed plates.

A dark border round the true image of a brilliantly lighted object in a negative may be of at least four different kinds, occurring either separately or together, and may be due to an equal number of different causes.

The commonest variety, and one of the most easily remedied in practice, is that which is properly called halation. It can be readily produced, and its peculiarities studied, by placing in a printing-frame, first a piece of clean white opal glass, then a sheet of thin black paper having a variety of sharply defined patterns cut out of it, and in contact with this, the sensitive surface of an unbacked dry plate. Having pressed all well together by means of the ordinary spring-back; expose the plate through the opal for a few seconds to a powerful light, and develop the plate. The obvious defects produced are due to true halation only, unless exposure has been excessive.

The peculiarity of this type of spreading of the image is, that the strong light, reaching any particular point on the plate, does not produce its border immediately round that point, but the border or halo begins at an appreciable distance from the true image. In its simplest form, produced by a small point of strong light, it appears as a ring at an appreciable distance from the central black image, the diameter of the circle being about 3.6 times the thickness of the glass of the plate. When the brilliant object occupies a considerable continuous area on the plate, the detached character of the halo or border vanishes to a great extent, because those parts of the bright image within its true outline, produce their halation just beyond the true outline and fill up what would otherwise be a gap. Such effects are all due to reflection from the back of the glass, and can be prevented by backing the plate.

The second type of spreading, as a rule, only troubles users of photo-mechanical dry plate for process and half-tone work, expert photo-micrographers and astronomers; to photographers generally, it is insignificant and unimportant. It occurs as a border round a strongly exposed point, line, or surface, after development; but differs from true halation by forming a narrow fringe of rapidly decreasing intensity which appears as a woolliness or blurring of the sharp outlines of the image.

Except with long exposures in astronomical work, the width of the fringe does not usually exceed one or two hundredths of an inch; although this is wide enough to veil the fine lines of a process negative, it is rarely noticed in ordinary photography. The effect is due to scattering of the light by the grains of the silver bromide in the film, and varies in degree with the nature of the emulsion, thickness of the film, and so on, and is unaffected by backing the plate.

It can be demonstrated by the aid of the simple arrangement described above, but using well-backed instead of unbacked plates, exposing very fully with a sheet of clear glass, instead of opal, before the black paper stencil, and using a distant and preferably small source of intense light.

The third and, from the point of view of this article, most important, type of spreading of the image, closely resembles halation in general appearance, as it extends far beyond the true outline of the image, but it has special characteristics; it spreads farther away than true halation, fades in intensity more gradually as its distance from the image increases, and, finally, is never separated from the true image by a lighter border.

The importance of this type of irradiation to every photographer will be apparent, when it is understood that it is most easily and frequently produced by the use of a dusty, smeared, or badly scratched lens. One or other of these conditions is so common that too much stress can hardly be laid on the fact that it is impossible to get a picture of a strongly lighted subject with such a lens, without occasioning the defect. The most perfect backing imaginable, applied an inch thick to the back of a triple-coated plate, can do absolutely nothing to reduce it, seeing that the cause lies in front of the plate. The effect is due to partial dispersion or scatter of the light, as it passes through the lens, by the dust, scratches, or smears on its surfaces, and it is therefore essential that all the surfaces of the lens shall be perfectly clean and bright when a difficult subject with great contrasts of light and shade is to be photographed.

A spread or scattered image, generally accompanied by more or less veil over the whole negative, may also be produced by a dusty, smoky, or hazy atmosphere at the time of exposure. Imperfections in the construction or design of the lens used often induce effects resembling some of those described. F. F. Renwick.

# Photo-Mechanical Notes.

### Oil-Painting Effects in Reproductions.

A recent specification, No. 14,815, 1911, granted to Mr. A. Schmitz, 29, Gloucester Crescent, Regent's Park, London, N.W., describes two alternative methods for producing imitation oil paintings, or more particularly for treating the usual colour prints so as to appear as if painted in oil. A positive plate or matrix is first made as follows :—

A zinc plate of about 2 millimetres thickness is taken, and thereon etch a mock canvas, that is to say, by means of the etching process, horizontal and vertical lines are produced on the face of the matrix, which, when finished, resembles the texture of canvas used in oil painting. Upon the thus treated face of the matrix are copied the lines of the picture to be produced, or more particularly of its various figures, by means of transfer paper. The auxiliary figures thus produced are then painted over with ozokerite, diluted with alcohol, in similar thick layers as the various paints chosen by the painter, whereby it should be observed that here and there the face of the matrix remains bare so as to allow the imitation texture of canvas to appear the same as in the case of every oil painting. The most suitable means for painting the ozokerite on the matrix is a steel brush. The ozokerite, after having thoroughly dried, forms a whole with the matrix.

The second means for producing the imitation oil paintings is a negative plate, which is produced with the above described matrix by pressing the latter on a block composed of a caoutchouc-like mass, which is previously or simultaneously softened by heat, and thereafter hardened by vulcanisation.

The negative plate thus produced is now ready for use. The colour print to be transformed into an imitation oil painting is covered with a layer of gelatine, varnished, and dried, when the negative plate is pressed upon the colour print.

Should it be required to mount the colour print on canvas, the back of the former is to be provided with a layer of gelatine, thereafter varnished with white oil paper varnish and dried. After having dried, the canvas is pressed on the face thus treated, while the colour print is simultaneously exposed to heat. The mounting should take place before applying the negative plate.

### A Patented Half-tone Screen.

Patent protection has been granted to an inventor, Mr. L. E. Smiles, of "Dunrobin," Station Road, Crayford, Kent, for a screen for half-tone reproduction. As described and illustrated in the complete specification (No. 15,883, 1910), the essential features of the screen are that the shaped masses are joined together side by side, and that the opaque portions are in area larger than the transparent portions (Fig. 1).

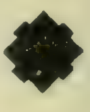


Fig. 1.

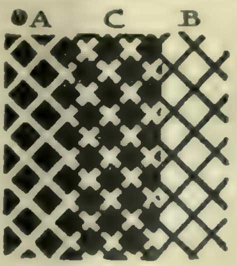


Fig. 3.

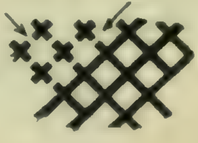


Fig. 2.

The object of the screen is to produce a fuller range of tones in the half-tone or intaglio print, but it is difficult to see on what grounds the inventor expects to secure this fuller range of tone.

The screen is made by drawing the shaped masses, on a large scale, in negative form—black in the place of white, and vice versâ, and reducing by photography to the required size. It may also be made by ruling through a deposited or photographic ruling as shown in Fig. 2, to obtain the negative of the screen from which the required positive may be obtained by photography. Or the screen effect may be obtained by the combination of two sets of ruling, A and B, on separate sheets of glass, which are put face to face to produce the screen C, as shown in Fig. 3.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between October 30 and November 4 :—

PHOTOGRAPHY.—No. 24,112. Photography. William Coles.

CAMERAS.—No. 24,292. Copying or enlarging cameras. Joseph Becker.

ARC LAMPS.—No. 24,300. Stands for supporting and facilitating the manipulation of photographic electric arc lamps. Bernard Alfred Quint.

MULTIPLE PRINTING.—No. 24,487. Method for multiple photographic printing in register on sensitised surfaces. Herbert Morris Pilkington, Clark Aubert Miller, and Alfred Henry Motley, jun.

PRINTING ON GLASS.—No. 23,984. Photographic printing on sensitised glass and other rigid surfaces. Henry Charles Rheinlander and Edgar Alfred Rheinlander.

CINEMATOGRAPHS.—No. 24,514. Cinematograph magic-lantern, and like exhibitions or entertainments. Ernest Ostler.

CINEMATOGRAPHS.—No. 24,540. Cinematographic apparatus. Pierre Deullin.

CINEMATOGRAPH-PHONOGRAPH.—No. 24,091. Synchronising talking-machine and cinematograph. Frank Wordsworth Donisthorpe.

## COMPLETE SPECIFICATIONS ACCEPTED.

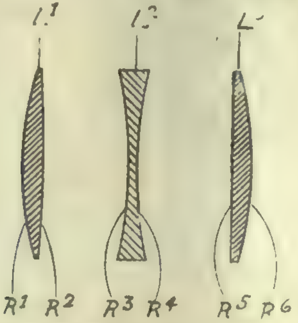
*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

THREE-LENS ANASTIGMAT.—No. 3,399, 1911 (February 10, 1911). The claim is for a photographic lens, spherically, chromatically, and anastigmatically corrected, consisting of two positive and one negative lenses separated by air spaces, none of which spaces are bounded by parallel surfaces, the two positive lenses being made of glasses of low dispersion, but one having much higher refractive index than the other, the negative lens being made of a glass having a much higher dispersion than both and a higher refractive index than one of the positive lenses.

All three lenses are of relatively long focal length, the most powerful having a focal length not less than three-tenths the focal length of the complete combination.

The lens L1 nearest the view consists of a plano-convex lens or a double convex lens in which the curvature of one side is very much greater than the curvature of the other, of low refractive index and low dispersion. The surface of greatest curvature being nearest the view.



The second lens L2 consists of a double concave lens in which the curvature of the two sides is similar or nearly similar, of a high refractive index and high dispersion.

The third lens L3 consists of a plano-convex or nearly plano-convex lens of high refractive index and low dispersion.

The air space between L1 and L2 is the shape of a positive meniscus lens or plano-convex lens and between L2 and L3 is that of a plano or nearly plano-convex lens.

This lens has an aperture of at least one-sixth of the focal length, and, due to the shallow curves and thin lenses, very little light is lost by reflection or absorption.

The drawing shows a lens of aperture of *f*/6 manufactured according to my invention. The data and particulars of a lens of 10in. focal length are as follows :—

| | Radii of Curvature. | Refractive Index. $\mu$ D | Dispersive Ratio. V value |
|---|---|---|---|
| Lens I | $R_1$ + 3.02 inch<br>$R_2$ + 30. inch | 1.5289 | 58.9 |
| Lens II | $R_3$ − 4.05 inch<br>$R_4$ − 4.05 inch | 1·6045 | 38·3 |
| Lens III | $R_5$ $\infty$<br>$R_6$ + 3 34 inch | 1·6141 | 58.3 |

Central distance of $R_1$ to $R_2$ .18 inch
" " $R_2$ to $R_3$ .79 inch
" " $R_3$ to $R_4$ .08 inch
" " $R_4$ to $R_5$ .87 inch
" " $R_5$ to $R_6$ .18 inch

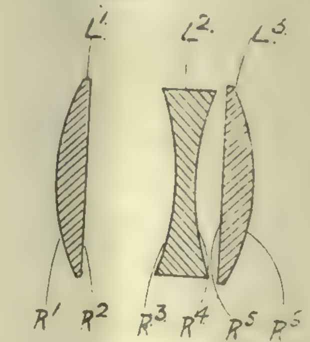
Aperture of lens I 1.75 inch
" " II 1.75 inch
" " III 1.75 inch

The complete lens is used for photography with lens L1 nearest the view. Horace Courthope Beck, 68, Cornhill, London, E.C.

NARROW-ANGLE LARGE-APERTURE ANASTIGMATS.—No. 2,619, 1911 (February 1, 1911). The claim is for a photographic lens, spherically, chromatically, and astigmatically corrected, consisting of two positive and one negative lenses, separated by air spaces with an aperture not less than two-ninths of the focal length of the combined lens, in which the negative lens has a focal length greater than three-tenths that of the focal length of the combined lens, and in which the refractive index for the line D of the glasses of the three lenses does not differ by more than 2 per cent.

The lens is one of very large aperture—at least one-quarter its focus, in which the chromatic, spherical, astigmatic, and other oblique errors are corrected to a degree of accuracy over an angle of view of about 30 or 40 degrees.

The invention consists of three separated lenses, two positive, one on each side of a negative. The two positive lenses are approximately plano-convex and constructed of a glass with high refraction and low dispersion.



The negative lens is an unequal biconcave lens of approximately the same refractive index but greater dispersion. The radii of curvature are in the ratio of 25 to 26.

The shorter radius of curvature of both of the positive lenses is three-tenths of the focal length of the finished lens, and the distances between the six surfaces of the complete lens are as follows :—

| Surface | | |
|---|---|---|
| 1 to 2 | 26 | thousandths of the focus of complete lens. |
| 2 to 3 | 100 | " " " " " |
| 3 to 4 | 31 | " " " " " |
| 4 to 5 | 62 | " " " " " |
| 5 to 6 | 26 | " " " " " |

These data may be varied as regards curvature to a small extent, and as regards distances between the surfaces to a considerable extent.

By this means we can construct a lens of a very large aperture and with curves of relatively large radius of curvature, the individual lenses having relatively long focal lengths, all of them being more than 3-10 of the combined focus. Thus the cost of a large aperture projection or photographic lens is very reduced, and it is also shorter in length than is usual with large aperture lenses.

The data and particulars of a lens of 10in. focus are as follows :—

| | Radii of Curvature | Refractive Index. $\mu$ D | Dispersive Ratio. V value |
|---|---|---|---|
| Lens I | $R_1$ + 3.392 inch | 1·612 | 58·3 |
| | $R_2$ x | | |
| Lens II | $R_3$ − 4.27 inch | 1·618 | 37·7 |
| | $R_4$ − 4.11 inch | | |
| Lens III | $R_5$ − 49.5 inch | 1 612 | 58·3 |
| | $R_6$ + 3.32 inch | | |

Central distance of $R_1$ to $R_2$ .27 inch
,, ,, $R_2$ to $R_3$ 1.15 inch
,, ,, $R_3$ to $R_4$ .33 inch
,, ,, $R_4$ to $R_5$ .65 inch
,, ,, . $R_5$ to $R_6$ .27 inch

Aperture of lens I 2.8 inch
,, ,, II 2.6 inch
,, ,, III 2.8 inch

The lens is used for photography with lens $L_1$ nearest to the view, for projection with lens $L_1$ nearest to the enlarged image.

Conrad and Horace Courthope Beck, 68, Cornhill, London, E.C.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901 :—

CINEMATOGRAPHS.—No. 23,195. Cinematograph apparatus. Dussaud.

## New Trade Names.

HYDRA.—No. 336,532. Photographic plates. The Paget Prize Plate Co., Ltd., St. Albans Road, Watford, Hertfordshire, manufacturers. September 29, 1911.

HYDRA.—No. 336,533. Photographic papers. The Paget Prize Plate Co., Ltd., St. Albans Road, Watford, Hertfordshire, manufacturers. September 29, 1911.

ZELLOTYL.—No. 335,760. Photographic plates and films, varnishes, included in Class 1. Haigasun Barsam Manissadjian, Spalenring 31, Basle, Switzerland, merchant. August 19, 1911.

ZELLOTYL.—No. 335,761. Cinematograph films included in Class 8, records for talking machines. Haigasun Barsam Manissadjian, Spalenring 31, Basle, Switzerland, merchant. August 19, 1911.

PARESCO.—No. 336,519. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Wilkinson, Heywood and Clark, Ltd., 7, Caledonian Road, King's Cross, London, N., varnish, paint, and colour manufacturers and merchants. September 29, 1911.

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COLOUR CINEMATOGRAPHY.—In the note of application for patent No. 23,645, by W. J. May, published on page 858 of our issue of November 10, we are informed by Mr. May that the name of Mr. E. Judson should have appeared in the official Patents Journal as joint applicant with him.

THE LONDON SALON OF PHOTOGRAPHY.—The committee have secured the gallery of the Royal Society of Water-Colour Painters, 5A, Pall Mall East, for a corresponding period in 1912.

CANADA.—In reference to recent queries, Mr. H. Squibbs, 51, St. Mary Street, Cardigan, writes :—"If your querist will write me I shall be happy to give him some sound advice on that country in respect to photography—gratis."

GENERAL regret will be felt by photographers in the United States for the tragic disaster that brought death to W. P. Buchanan, of Philadelphia, the well-known manufacturer of "Luxo" flashlight powder. While mixing chemicals in his laboratory, an explosion occurred, and Mr. Buchanan was hurled a distance of twenty feet, and so badly burned that he died on the 20th, aged fifty-one years. Mr. Buchanan has been making flash-powder for many years, and was known to take every possible precaution. He was well known and very popular in photographic trade circles, and his death under such painful circumstances is deeply lamented.

## New Materials, &c.

**Christmas Mounts. Made by W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London, E.C.**

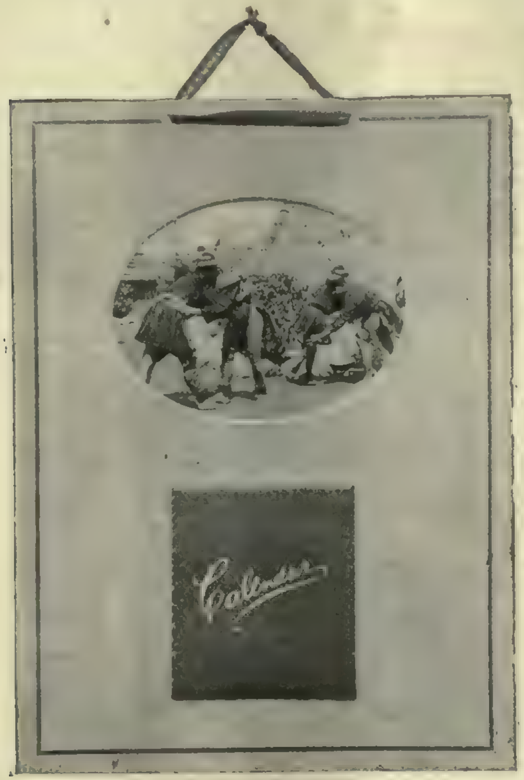
Despite the fire of last May, which wrecked their Copenhagen Street mount factory, Messrs. Butcher are able to offer a large series of Christmas mounts, which, as in previous years, are characterised by extremely good taste throughout, and evidence the firm's long experience in the choice of papers and boards of the quiet tints which are most fitting to photographic originals. Their selection includes quite a number of mounts taking a small size of photograph, a policy which is assuredly a wise one considering the great use which is now made of pocket cameras, whilst even those who work in larger sizes usually find that the print most suitable for a Christmas greeting is obtained from part only of a larger negative. Of these mounts for smaller pictures, one which comes among the three or four of the choicest specimens we have seen is No. 957, a card of real Japanese vellum, with rough milled edge, providing space for a print about 3 x 2 inches, and of the outside dimensions of 6 x 3¾. The greeting is neatly inscribed in embossed gold, and the card is sold, in either light grey or brown, at the price of 2s. per dozen.

No. 957.

Another very tasteful mount of the folder slip-in pattern for quarter-plate or postcard prints is No. 962, a mount of matt paper, measuring 8 x 5 inches, and fitted with tissue overlap. It is issued in white, green, and stone, and for either upright, oblong, or oval pictures of the sizes marked above. This is a Christmas mount very low in price, namely, 1s. 3d. per dozen.

No. 962.

A very substantial mounting board, suitable for prints on heavy papers, is provided in No. 954, a folder mount taking prints up to 7 x 5 inches, fitted with figured tissue and enclosed within a cover of pleasing surface, bearing a neat motto design in gold. The price of this mount is 2s. 6d. per dozen. Another neat design for quarter-plate landscape prints is No. 960, a slip-in folder measuring 6 x 6½, with medallion decoration on the front cover, embossed inscription "Greetings" below the space for the photograph, and provided with silk ribbon. This mount sells at 2s. 6d. per dozen, in either brown or stone.


No. 953.

Of the calendars we may mention No. 953, a stout linen-surfaced board with bevelled opening, strut and silk bow. In the quarter-plate size the price is 3s. per dozen, in postcard 3s. 6d. Each size is made with either landscape or upright cut-out.

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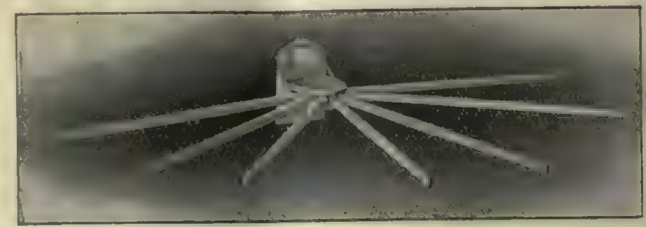
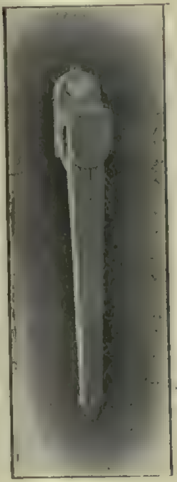
**Photography on the King's Tour.**—Picturesque incidents of the King's travels are to be photographed for an official diary of the journey by Mr. E. Brooks, of Hurlingham. Equipped with five different cameras for long-distance and short-distance snap-shotting, and with a stock of 1,500 plates, Mr. Brooks will have illimitable scope for his art. As stated by the "Evening Times," during the voyages scenes will be photographed and prepared for their Majesties' inspection on the following morning. For this purpose a special dark-room has been constructed on the hurricane deck. In India the tiger-shooting and python-hunting will, it is anticipated, provide some excellent pictures. Mr. Brooks will be with the King in the jungle-machan, a sort of hunter's fortification, towards which a thousand beaters will close their circle, and snapshots of leopards, tigers, and other game springing up to the guns of the Royal hunters will be secured. A specially made collapsible and portable dark-room has been constructed by Messrs. Houghton's for the jungle work. It looks like a portmanteau when not in use, but is really a fully equipped dark-tent. For the first time in the history of a Royal tour photographs in colours will be taken. The historic spectacles and the picturesque fauna and flora of the country will be reproduced in colours in a London illustrated weekly at the end of the tour.

# New Apparatus, &c.

### The "Fan" Print-Drying Rack. Sold by Hood and Co., Ltd., St. Bride Works, Middlesbrough.

This apparatus consists of a set of seven soft wooden rods, each measuring 28 in., and mounted so that they can be spread fan-wise (Fig. 1). and the prints or enlargements readily attached. The mounting of the rods allows of their being extended horizontally from the wall to which the apparatus is attached, whilst, when they are out of use, a single movement causes the apparatus to assume the form shown in Fig. 2, which represents a wall space of only 6 in. by 36 in. The price of this portable rack for drying prints and enlargements is 3s. 9d.





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## CATALOGUES AND TRADE NOTICES.

**Express Enlargements.**—A new list of bromide enlargements, postcards and framed enlarged portraits in various attractive styles at moderate prices, reaches us from the Express Enlarging Co., Longhurst Road, Lewisham, London, S.E., who publish as an appendix to their price list many expressions of satisfaction and approval from customers.

**Process Apparatus.**—The full price-list of appliances and materials for all branches of photo-mechanical work reaches us from M. H. Calmels, 150, Boulevard Montparnasse, Paris. The list is one which will form a most useful reference volume to process houses, not only in the photo-engraving trade, but in lithography, photogravure, and allied crafts. M. Calmels' long association with the process trade is evidenced in the detailed specification of almost every appliance and in the convenient arrangement of the list. Though in French, the volume is so freely illustrated that English readers may quite well employ it when purchasing supplies. Although appealing primarily to the process trades, the catalogue contains a large number of items, such as drying cupboards, filtering appliances, dark-room stoves, draining racks, etc., of interest to the ordinary photographer, and of a kind for hard usage which are not generally found in lists of photographic apparatus.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, November 17.

Cowlairs Co-operative Camera Club. Ozobrome.

### Sunday, November 19.

South London Photographic Society. Excursion to City of London.

### Monday, November 20.

Scarborough and District Photographic Society. "Post-Card Printing." A. E. King.
Leek Photographic Society. "Autotype Carbon Process." E. Bradley. "Printing and Mounting of Stereoscopic Transparencies." J. W. Sutton.
South London Photographic Society. "Visit to Marylebone Photographic Society.' F. C. Boyes.
Bradford Photographic Society. "The Bromoil Process." Alex. G. Naylor.
Bowes Park and District Photographic Society. Holiday Lantern Lecturette Competition.
Dewsbury Photographic Society. "Ozobrome: What Can be Done with It?" W. H. Womersley.
Leeds Camera Club. Musical Evening. The Members.
Marylebone Camera Club. "After Dark." H. Creighton Beckett.
Catford and Forest Hill Photographic Society. Affiliation Portfolio Night.
Southport Photographic Society. "Some Old Halls in Lancashire and Cheshire." Travis Burton.
Southampton Camera Club. Lecturette Competition.
Stafford Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

### Tuesday, November 21.

Royal Photographic Society of Great Britain. "A New Density Meter." W. B. Ferguson, M.A. (Oxon.). "Wedge Screens." F. F. Renwick.
Sheffield Photographic Society. "The Photography of Flowers." F. A. Tinker.
Hackney Photographic Society. "Snow Photography." W. Rawlings.
Halifax Camera Club. Burroughs, Wellcome and Co.'s Lecture. W. Denham.
Birmingham Photographic Society. "Pepys' London." A. H. Blake, M.A.
Leeds Photographic Society. "Nature Hunting with the Camera." Carl Edwards.
Workington Photographic Society. Autotype Carbon Demonstration.
Manchester Amateur Photographic Society. "A Trip through Holland."

### Wednesday, November 22.

West Surrey Photographic Society. Bromide Enlarging and Combination Printing.
Coventry Photographic Club. "Making an Enlarged Negative." Members.
Barrhead and District Amateur Art Club. "The Unity of Nature." William Ferguson.
Borough Polytechnic Photographic Society. "Orthochromatic Photography." Ernest Human.
Sale Photographic Society. "The Choice of a Printing Process." Discussion.
Partick Camera Club. Monthly Lantern Slide Competition.
North Middlesex Photographic Society. "Colour Sensitive Plates and their Screens. J. McIntosh.
Stone Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.
Ilford Photographic Society. "Bromide Printing." F. C. Boyes.

### Thursday, November 23.

Liverpool Amateur Photographic Association. "In Neptune's Kingdom." F. Martin-Duncan.
Photographic Society of Ireland. "Pictures in Devon." W. N. Allen.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Cloud Printing." J. R. Coulson.
London and Provincial Photographic Association. "Four Seasons of Gothic Architecture." A. Bedding.
Bolton Camera Club. "Retouching." W. Bell, for Gevaert, Limited.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, November 14, Mr. W. B. Ferguson, K.C., in the chair.

The fourteenth Traill-Taylor Memorial Lecture was delivered by Dr. W. Rosenhain, in introducing whom the chairman alluded to the wide knowledge of optical matters possessed by the late Mr. Traill-Taylor and the readiness with which he placed himself at the disposal of all those with whom he was brought in contact. Optics had progressed a good deal since his day, but they looked back upon him as one who was a leader in matters of which he had made a special study.

Dr. Rosenhain then delivered his lecture on "Optical Glass." He briefly traced the development of the manufacture of glass specially for optical purposes from about the commencement of the last century, when such methods were introduced, first of all in France, then in Bavaria, then in England, and at a much later stage of the industry at Jena in Germany. Previous to about the year 1804 astronomers and others had to rely on glass which was not specially prepared for optical purposes. It possessed numerous defects, chief among which was the existence of striæ. This want of homogeneity was the result of imperfect mixing and irregular cooling of the complex fluid mixture of silicates which formed liquid glass. Dr. Rosenhain illustrated on the lantern screen the considerable amount of mixing which was necessary to obtain a homogeneous mixture of liquids, even of such fluidity, compared with fluid glass, as hypo solution and water. In a tank placed in the lantern was a strong solution of hypo. Into this was injected from a glass tube a little water, and it was seen that the water formed whole series of striæ in the hypo solution and required a considerable amount of mixing with the glass tube to form an even liquid. Much more was this the case when the liquids to be mixed were heavy metallic silicates in a fused condition. It was in 1804 that a Frenchman named Guignon devised the method of getting rid of striæ by stirring the fluid glass mixture with a fire-clay rod. A further defect in ordinary glass, which had to be removed for optical purposes, was internal strain or tension due to cooling of different parts of the mass at different rates. Such strain in glass caused it to have a polarising effect on light, whilst the refractive index was appreciably different when the strain existed. The lecturer illustrated the existence of strain by projecting specially bad samples of glass in a lantern polariscope, showing the fringes of colour produced by insertion of such glass between the cross Nicols. In the case of glass having a lesser degree of strain the result was to produce only a lightening of the dark ground, but opticians demanded, and manufacturers supplied, glass which showed no trace of strain when subjected to this latter test. When strain was symmetrical in glass it unfitted it for many purposes, but when, as was usually the case, it was unsymmetrical, a lens made of such material acted differently in different parts, and gave no proper image. By means of the process of "fine annealing" glass was obtained with practically no strain whatever: the glass was allowed to cool at a very slow rate, about 1 degree Centigrade per day, starting at a temperature of about 400 deg. C.

Other qualities than homogeneity and freedom from strain marked optical from ordinary glass. Colour, or rather want of colour, was one of these, and the earlier crown and flint glasses of the days before the Jena glass makers were extremely free from colour. The composition adopted for the latter Jena glasses tended to the production of a slight tinge of green, which was of no disadvantage from the photographic standpoint. The lecturer, however, deprecated the use by glass makers of additions (decolorisers) of glass of a complementary colour to neutralise this green tinge. Though the final result was of a more neutral colour, the glass was actually more absorbent of actinic rays, and such methods were ill-advised.

Bubbles in optical glass arose from the fact that the mixture of silicates gave off gases in the melting pot; also the mixtures were themselves fine powders and occluded gases between their particles to start with. In the case of the pre-Jena crowns and flints of thirty years ago, it was easy to obtain complete removal of bubbles, but the newer glasses, such as the barium crowns and light flints, behaved very much like quartz, which when melted at an extremely high temperature to get rid of bubbles itself generated further bubbles, because at a slightly higher temperature it actually boiled. Dr. Rosenhain laid stress on the fact, frequently emphasised by makers of lenses, that bubbles in lenses, unless of considerable size, are without effect on the optical properties of the instruments.

As regards solid particles in optical glass, the lecturer referred to the existence of mineral impurities which remained suspended in the molten "metal." Another form of solid impurity was minute crystals occurring as the result of the glass returning to the true solid state (the process of devitrification). Though outwardly a hard, solid substance, glass was essentially in its constitution a very stiff liquid, and could be shown to possess the properties of fluidity characteristic of a liquid. The question of hardness and durability of optical glass was one which occasioned the lens-maker a good deal of anxiety, since the conditions under which modern optical glasses were made were frequently unfavourable to these qualities. Such glasses should be used between others of harder quality in the construction of lenses, but even in these protected positions were liable to atmospheric influences.

The lecturer then dealt briefly with the modern progress made in producing glasses of abnormal dispersion compared with their refractive index, and in alluding to the possibility of further progress in this direction, expressed a view that it would be achieved by the preparation of mineral crystals possessing such qualities, and the use of these in glass making. In the concluding portion of the lecture Dr. Rosenhain dealt with the manufacture of optical glass, and vividly described the precautions which the glass maker had to take, and the many difficulties encountered in producing a homogeneous fluid mixture, and in allowing it to cool uniformly. Under good conditions, the yield of glass, from a given melting, which could be used for optical work, was not more than one-fifth or one-tenth, and the pot in which the glass was melted (itself requiring great skill and time in its manufacture), could be used but once.

On the proposition of the Chairman, by whom the Traill-Taylor memorial medal was handed to the lecturer, the heartiest thanks of the meeting were accorded to Dr. Rosenhain.

Croydon Camera Club.—Last week the members of this club in large numbers visited the Platinotype Company's Works at Penge. Arriving between 7.30 and 8 they were welcomed by Mr. W. Willis, who, with the works manager, Mr. W. H. Smith, Mr. W. Mansfield, and Mr. E. A. Salt, conducted parties over the premises. The many coating machines were modestly draped in white, and exact details of their construction were not fully in evidence, but the large machine shop was in full swing, and to the uninitiated it is always fascinating to watch steel and iron being cut and shaved as if they were so much cheese. A most ingenious appliance for making glass beads—by the way, not merely for ornamentation—attracted much attention, and a member of enquiring turn of mind, who caught one of the travelling beads in his hand for closer examination, postponed such inspection on ascertaining the globule to be red hot. The various sorting, packing, labelling, and smaller workshops were each in turn examined, together with the chemical department, which had much to interest. A capacious, doorless dark-room, with blackened entrance of Hampton Court Maze design, excited much favourable comment on entry, and the reverse on an attempted exit, owing to the orange lights in the passage mysteriously popping out; but, of course, fuses will go at inconvenient times. The palatial printing-room also formed a great centre of attraction, and members in their own sweet will, over-, under-, and correctly printed in platinotype from negatives brought with them, on paper supplied free by the company. Here mercury lamps entirely supplant fickle daylight, and the blaze of light that came from one battery in operation of twenty-four 2-feet tubes amply demonstrated the power of the illuminant. It was stated that the mercury light gave platinotype prints indistinguishable from those obtained by daylight, and was in this respect far superior to the arc-light. Excluding the tubes themselves, all the lamps were made in the works, and highly efficient they appeared to be. A large "direct" enlargement was developed by Mr. Salt by the glycerine method. The photograph was a landscape of excellent quality, but of the "self-made picture" or "pretty, pretty" order, and acted on the pre-Raphaelite camerists present like the proverbial red rag to a bull, and a verbal contest ensued in which politeness was not allowed to weaken definiteness of expression. Meanwhile Mr. Smith, having got another party into the refreshment department without any difficulty whatever, was faced with the almost insoluble problem of how to get it out again, so as to allow others to enter. The room was large, the buffet ample, but the occupants for the time being were many and merry, for in addition to members of the club they comprised nearly all the young ladies employed at the works. Under the Factory Acts these could only attend as guests by invitation; they were subject to no orders, and had no work to do, and right royally did they rise to the occasion. However, things adjusted themselves at last, and all were served, and it was quite nice to see the great photographic artists chatting and laughing just like ordinary mortals. "There's not a trace of liver in that brand, my boy. Do you good, take my word for it," and similar observations, showed also they were excellent critics on other subjects. A very clever "hand-shadow" entertainment by Mr. Arthur Strode, at a late hour, brought the proceedings to a close. No formal speeches were made of any sort, but judging from the remarks of a select party going home by tram, the evening had proved a most enjoyable one, and much appreciation was expressed at the kindness of Mr. Willis and the excellent arrangements made for their reception by Mr. Smith.

# Commercial & Legal Intelligence.

Acknowledgment of a Photograph.—An action was brought last week in the King's Bench Division by Viola against the Pictorial Newspaper Company (1910), Ltd., for damages for breach of contract in failing to publish at the foot of a reproduction in the "Daily Mirror," of January 24, 1911, of a photograph of a certain model hat, the plaintiff's trade name and address.

As reported in the "Times," the plaintiff, Mr. Otto Franc Viola (trading as "Léonie"), a costumier and milliner carrying on business at 119, New Bond Street, brought out a toque which fastened to the head by a hook-and-eye, without any necessity for hat-pins. In January, 1911, a representative of the defendant's called at the plaintiff's place of business and it was arranged that an employee wearing the toque should be photographed gratuitously at the "Daily Mirror" studios, and a reproduction inserted in the "Daily Mirror." The photograph was taken, but was sent on from the studios to the office of the paper, and published on January 24, 1911, without any accompanying statement of the name and address of the maker. This was alleged to be a violation of an express or implied term of the contract, the considerations given being the permission to photograph the hat and the sending of an employee to wear it for the purpose.

The defendants denied any such agreement, and pleaded alternatively that they had fulfilled it by publishing in the "Daily Mirror" on February 10, among the morning news items, the following:—"The charming toque, fastened with a hook-and-eye, a photograph of which was recently published in the "Daily Mirror," was made by the Maison Léonie, the well-known firm whose premises are situate at 119, New Bond Street."

After hearing the evidence the jury found that there had been a breach of contract in failing to publish the plaintiff's name and address at the foot of the reproduction, and they awarded the plaintiff as damages 10 guineas, which was the sale price of the model.

His Lordship entered judgment accordingly, declining to allow costs.

The first meeting of creditors was held last week, at Cardiff, in the case of George Lazar, photographic artist, carrying on business at 33, Queen Street, Cardiff. Debtor attributed his failure to bad debts due from music-hall artists, whose addresses he was unable to obtain. The liabilities were put at £377. Debtor, who is twenty-eight years of age, came to this country from Russia six years ago, and after remaining in London for twelve months, started business with £30 of his own. He received financial assistance from friends, one of whom now appeared as a creditor for £188. The Official Receiver reported that no proper account books had been kept. Debtor filed his own petition in consequence of having a commitment against him for a personal account. The matter was left in the hands of the Official Receiver.

Legal Notices.—At an extraordinary general meeting of the members of the Midland Camera Company, Ltd., held at 153-5, Leadenhall Street, E.C., a resolution was passed to the effect that the company be wound up voluntarily. Mr. G. H. Fookes, 153-5, Leadenhall Street, E.C., was appointed liquidator.

The partnership between Percie Lorne Moulton and Percy Falkner Tysoe, carrying on business as photographers at 7, High Street, Maidenhead, under the style of Moulton and Tysoe, has been dissolved by mutual consent. All debts due to and owing by the late firm will be received and paid by P. F. Tysoe.

Eastman Kodak Company of New Jersey.—The usual quarterly dividends of $1\frac{1}{2}$ per cent. (being at the rate of 6 per cent. per annum) upon the outstanding Preferred Stock, and of $2\frac{1}{2}$ per cent. (being at the rate of 10 per cent. per annum) upon the outstanding Common Stock of the Eastman Kodak Company of New Jersey, will be paid on January 2, 1912, to stockholders of record on November 29, 1911.

Utocolor Prints.—Messrs. Sanger-Shepherd and Co., Gray's Inn Passage, High Holborn, London, W.C., advise us that they are exhibiting at the above address examples of colour prints made on the new "Utocolor" paper of Dr. J. H. Smith, and are giving demonstrations of the working of the process.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## THE LATE WALTER WILLIAM EVERITT.

To the Editors.

Gentlemen,—Allow me to correct a slight error in your obituary notice of the late Walter William Everitt on page 838 of your issue of the 3rd inst.

His father, Henry Everitt, was most likely with Mr. Charles T. Newcombe, who had a studio in Fenchurch Street, but that was not the London School of Photography, which had been started some years previously by his brother, Mr. Samuel Prout Newcombe, to whom I was apprenticed in my young days, and who had been my schoolmaster before that at the Priory, Upper Street, Islington.

I was working at his studio, at Myddelton Hall, Islington, when a new business was started by Messrs. Turner and Everitt, in Upper Street, nearer the Angel, which is now carried on by Mr. Turner.

Mr. Charles T. Newcombe, of Fenchurch Street, opened a branch studio at 22, White Rock Place, Hastings, and did a splendid business there for some years, for I have the books and the negatives taken there stored away at Hastings. I purchased the lease from his successor, Henry Ashdown. Messrs. Turner and Everitt were at Islington before they had a place in Cheapside; but theirs was not the London School of Photography, which was No. 52, a few doors from the London Stereoscopic Company. I do not know their (T. and E.'s) number in Cheapside, as I think I had left London, and was in business for myself at Hastings before then.

It is not of much consequence, but I should like you to be historically correct, so perhaps you will excuse an old photographer's corrections.—Yours faithfully, H. J. Godbold.

6, Loris Road, Hammersmith, W.
November 12, 1911.

[On referring the above letter to Mr. T. C. Turner, of Hull, to whom we are indebted for the biographical details of the late Mr. Everitt, Mr. Turner replies as follows.—Eds. "B.J."]

To the Editors.

Gentlemen,—The obituary notice referred to gave details which are based upon my late father's own accounts of his early business life. He gave me to understand that he met Mr. Henry Everitt at the London School of Photography in Fenchurch Street, where he was the chief operator and my father printer. The concern was a great success. Professional photography began to "hum," and Everitt and my father went into partnership. The studios at 17, Upper Street and 3, Cheapside, were opened within a short period of one another, Everitt operating at Cheapside and my father at Upper Street.

The early photographs show the Cheapside studio at the top end, looking directly down towards the Bank, and the sign is "Turner and Everitt," not, of course, "The London School of Photography."—Yours, etc., T. C. Turner.

Regent House, Anlaby Road, Hull.
November 14, 1911.

## SHUTTER SPEED MARKING.

To the Editors.

Gentlemen,—In response to the lament of "Krypton," in the correspondence columns of your issue of the 3rd inst., wherein he deplores the fact that there are apparently no manufacturers ready to submit their shutters to the National Physical Laboratory for Speed Testing, we would be glad of an opportunity to point out we do not ourselves come under this category. We guarantee all our shutter speeds to be within 5 per cent. of the fractions indicated. We guarantee further that each speed scale is engraved according to actual tests in the case of each individual shutter, and may be taken as absolutely accurate and reliable. Needless to say, these shutters are not made by the thousand.

We quote the following, which appeared in the "British Journal," on April 22, 1904, in which you refer to an article by Dr. Hans Lehmann, of Munich, on the speed measurement of shutters and the method of testing adopted:—"The table appended to Dr. Lehmann's paper is interesting, as showing the wide difference there is between the index numbers and the actual speeds of some of the most renowned makers in Germany, America, and England; and it is satisfactory to learn that the palm is taken by an English one—Newman and Guardia's."

"Of this the author speaks very highly, which, he says, 'had been in constant use for two years, and the figures given show that it was the only one of those measured that worked to its indicated speeds.'"

Although this test was made some years ago, it should be understood that our shutters are still made with the same care and precision.

We should be glad if you would be kind enough to give this publicity, and beg to remain, yours faithfully,

Newman and Guardia, Ltd.
P. Harris, Manager.

17 and 18, Rathbone Place, Oxford Street, London, W.
November 13, 1911.

## SOFT PRINTS FROM HARD NEGATIVES.

To the Editors.

Gentlemen,—I see in the "Journal" of the 10th inst., in "Answers to Correspondents," a query on "Soft Prints from Hard Negatives," asked by "E. Y. E. N.," with a reply of bromide prints reduced, in a way given, before developed. I think, however, that two other ways of meeting the difficulty may be found of great interest. I think that the following record that I have had five or six years may be useful. I have taken from this instruction a good photograph of the inside of a room with the garden seen in the same photograph through a window, the negative being suitable for any kind of print. To develop all parts of a photograph where there is great contrast:—

| | |
|---|---|
| Pyrogallic acid | ½ grain. |
| Acetone sulphite, 20 per cent. solution | 30 minims. |
| Sodium carbonate 20 per cent. solution | 60 minims. |
| Water | 1 oz. |

Development slow; best covered over in the dark.

There is also a way of changing a negative, after development and fixing, using H. Edmund and Co.'s "Sanzol" as reducer with nitric acid, and cleared with the aid of ammonia. By this the dense parts of the negative get greatly reduced, while those much more transparent hardly show any reduction.—Yours truly, W. L. B.

November 13, 1911.

## A PROPOSED UNION FOR PHOTOGRAPHIC ASSISTANTS.

To the Editors.

Gentlemen,—Your correspondent, "F. J. S.," has struck the right note. The object of any union is to eliminate incompetent men, and to ensure that all workers have spent sufficient time at the business to become experts. If five years' apprenticeship is not long enough in some cases it is evident such a man has missed his vocation, and should start something else before he gets too old. A reasonable minimum wage will weed these men out, as employers will insist on having good men when they are forced to pay good money. At present the professional trade is largely recruited from the amateur class, who will work cheaply, expecting to be speedily advanced because they have turned out a good negative occasionally by accident. We all know good men who have lost good positions, and who find it difficult to find another. The man who has been earning, say, £4 a week, may easily drop to £2 or less, and yet turn out the same quality of work as before.

The many schools and technical classes are also responsible for deluging the trade with half-trained men.

My particular branch is process photography, and I have in mind a worker who earned £7 per week, and refused to join a union, on the plea that a good man can always find and secure his own price. However, he quit his job and had to drop to £2 10s. per week, and work much harder to hold his job. The schools and polytechnics have been mainly instrumental in ruining the process trade, as formerly they would take anyone in, give them a sort of infant school education, and launch them broadcast like a bunch of pirates on the craft. I was personally acquainted with some of these, who offered to work for nothing until such time as they should make good. The loss to the employer through these men was indirectly borne by the competent workman, evidenced by a cut into his wages. The employing photo-engravers in England are in worse condition now (paying low wages) than they were ten years ago (paying high wages). If all employers were forced to pay good wages there would be no such thing as unfair price cutting, though employing cheap labour. I have known a firm to discharge a highly-paid man and take on cheap labour, immediately cutting the prices. These greenhorns from schools, etc., were sometimes taken on at a three to five years' contract, at a miserable wage, to be discharged if they could not earn it, or to make a pile of money for the boss if they turned out trumps.

The prime object of unions is to regulate the number of apprentices and to fix a minimum scale. The scale is only for those who are least competent, but not by any means for "duds." The better workman can always demand money in proportion to his ability.—Faithfully yours, H. J. Haughton,

Secretary Buffalo Photo-Engravers' Union, No. 4.
46, Emerson Place, Buffalo, U.S.A.
November 2, 1911.

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To the Editors.

Gentlemen,—Will you allow me a small space in your "Journal" for a few words *re* photographic assistants, and more so to those that have not made up their minds to join the N.U.O.P.A.? As it was said in your "Journal," London was going to be the head office (was going to be), it doesn't look as if it were, according to what they have done up to now (only on paper). What have they done? Where are all their assistants? Are they in a kind of doze, or are they lying dormant, waiting for Mr. Jarrett to bring forth some more rules to put before the grand jury; or are they wanting some one to give them a helping hand? I think it is the latter. Perhaps they are waiting for the masters' consent? If they are, they will wait for ever. I don't think there is in existence a union where masters have joined. Who would expect them to join, when the very name "union" is enough for them? Until London assistants wake up and get someone to assist them they will surely fall in the pit. I say they must get help from the right source: Mr. Jarrett will never do it, because it is not in his power to do it. It was quite a treat to me to see so many assistants congregated together at a smoker in Manchester last Wednesday evening, and to discuss it amongst one another. There was a good attendance, both lady and gentleman assistants, and I think I can safely say everyone present was in favour of the union; in fact, all wished to become members. We had a good man to give us a few words of advice, which were received with applause, and all went away much impressed by the speaker.

Assistance is what is wanted: never mind masters to join the union, and success will be theirs. As long as masters can get assistants at their own price, so long will the assistants be slaves for a mere existence, and cutting of prices will continue both in wages and in the business. Remember, assistants, unity is strength. Divided, we have fallen.—Yours, etc., H. T.

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To the Editors.

Gentlemen,—In "Scot's" letter of October 27 he speaks of his inability to get good and reliable assistants. I think the chief difficulty lies in the fact that really good assistants are usually engaged, and their employers are loth to part with them. "There is always room at the top," they say, and I know from experience that a clever assistant, in a good berth, frequently receives good offers from other firms.

If he is still unsuited, I would suggest that he advertise in your columns for a good assistant who is desiring a change, letters to be treated as confidential, and I guarantee, provided he pays a fair salary, and has a good reputation as an employer, he will get many replies.

I mention the second proviso, as employers sometimes forget that their treatment of previous assistants debars them from getting applications from good hands—"Forewarned is forearmed." I may say that I know of some firms I would *not* enter, were I offered double my present salary!—Yours faithfully,

"Well-Paid Assistant."

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COPYRIGHT.

To the Editors.

Gentlemen,—Most questions of copyright have been discussed in the "Journal." There is one, however, that has just cropped up in my own work that is quite new to me, and if you can clear up the point I shall be very grateful, as probably will others.

It is in microscopic work. A publisher comes to me for subjects. It is agreed that if I find the originals there is to be one price, and if he supplies the originals there is to be a less price.

It is understood without words that those I supply are my copyright, and those where he supplies the originals are obviously his copyright.

But now comes the difficulty. The publisher asks me for a subject of which I have not yet got a photograph. Often I am at considerable trouble to get an original, but because he asks me for something that I have not already got he says the copyright is his!

The typical case in point is where a portion of a sort of fly was wanted. I had a box full of dried specimens that I had caught at various times, and in looking through there was only one specimen that showed the particular part well. I photographed this piece —it was a difficult subject—and now because I had not the thing in stock ready done the publisher claims the copyright, and not only this but he will not acknowledge the authorship either, just because he asked for it!

Of course, I can easily deal with things in future by having "everything ready done," but it is the few past things about which I am anxious to know, and the case generally. A. E. Smith.

8, Farringdon Avenue, E.C.

[As our correspondent wishes to hear our view of the copyright aspect of the case, we will gladly give it, though, strictly speaking, the case he propounds has little to do with copyright law. If our correspondent supplies a print from a photo-micrographic negative in his possession it follows, from the Copyright Act, that the copyright in such print is his, but if he is making such negative and print to his customer's order it equally follows that the copyright is the customer's. So far as the Copyright Act is concerned, this is the case whether the original be the customer's or the photographer's. The retention of copyright in the case mentioned by our correspondent is purely a matter of mutual arrangement, and in the absence of a specific agreement in writing the customer is claiming no more than his legal rights in allocating the copyright in subjects supplied by the photographer to himself (the customer).—Eds. "B.J."]

◆

**Electric Light in New Zealand.**—The demand for electricity in New Zealand for industrial purposes, such as for factories, mining, tramways, street lighting, and for domestic lighting, heating, and cooking, is increasing constantly. At present, according to the American Consul on special service in New Zealand, 1,320,000 units of electricity are sold annually for electric lighting in Wellington, 742,000 in Dunedin, and 369,620 units in Christchurch. In Auckland electric lighting has just been introduced. The Minister of Public Works estimates that within the next five years, owing to the introduction of cheap electric power, Wellington will have 190 miles of streets lighted with 220 electric arcs and 2,000 electric glow lamps; Auckland, 150 miles lighted with 200 electric arcs and 500 electric glow lamps; Christchurch, 170 miles lighted with 220 electric arcs and 400 electric glow lamps; and Dunedin, 180 miles lighted with 240 electric arcs and 600 electric glow lamps. It is stated, on the same authority, that the demand for electricity as a domestic utility will probably be as great as for electric lighting. It is estimated that within five years' time there will be 4,200 electric stoves and heaters used in Wellington, 3,200 in Auckland, 3,100 in Christchurch, and 3,200 in Dunedin.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to Advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

PHOTOGRAPHS REGISTERED:

G. W. J. Tupper, Victoria Studio, Victoria Road, Guernsey. *Photograph of Brock Road Wesleyan Church, Brock Road, Guernsey.*

J. MacMahon, 27, Academy Street, Inverness. *Photograph entitled "Wearing Harris Tweed." Photograph entitled "Waulking Harris Tweed." Photograph entitled "Spinning Harris Tweed." Photograph entitled "Scouring Harris Tweed."*

W. D. Moss, Gainsborough House, Cirencester. *Photograph, Malmesbury Old Fire Engine.*

H. Lowthian, 84, Welholme Road, Grimsby. *Photograph of Grimsby Town Football Team, Season* 1911-12.

H. N. and others.—In our next.

EFFICIENCY.—We are afraid it is rather late in the day to talk of training, and you can get very little of the knowledge you require from books. The best advice we can give you is to get another berth, where you will have more opportunity to learn.

RUSSIAN JOURNALS.—Should esteem it a very great favour if you could kindly recommend me a journal or newspaper published in Russia for photographers.—J. D.

"Fotograf," published by Anatol Werner, Moskowskaja, 4, Charkow, and "Westnik Fotografii," published by the Russian Photographic Society, Moscow.

PURCHASING BUSINESS.—We must decline to value the outfit. We could only do so as the result of carefully inspecting the goods, and with every desire to be of assistance to our readers, this is one of the things we cannot agree to undertake. We advise you to price the goods at one-quarter to one-third their new catalogue price, and base your offer on this figure.

NATURE PHOTOGRAPHER.—On October 20, in your "News and Notes," you refer to "The Nature Photographer," No. 4. I have since ordered same number from several newsagents, but they have been unable to obtain it for me.—GEO. HOWARTH.

Better address the Editor, Mr. Carl Edwards, Woodlesford, Leeds, direct. The price is 2d. per issue.

PHANTOGRAPHS (?).—I will be pleased if you, or any of your readers, could tell me where I could buy wholesale phantographs. This is a cheap article, made of wood, and sold retail on the street by hawkers at 6d. each.—M. MAKIN.

We can only assume that you mean pantographs, in which case you had better apply to some firm who manufacture mathematical instruments. The question is hardly in our province.

LENS.—I have a Ross No. 5 symmetrical 7 inch, with rotary stops, marked No. 1, 2, 3, 4, and 5, No. 31,146. If the stops and interior was taken out, and it was made open aperture, what size plate would it be supposed to cover to edge?—R. LENS.

This lens is of the portable symmetrical form, and is not constructed for use with a larger aperture than that with which the makers fit it. It would cover about 5 x 4 at full aperture, but the general definition would suffer.

P.O.P. POSTCARD.—Please give me information, through your valuable "Answers to Correspondents" column, re the enclosed P.O.P. postcard. 1. Do you consider it a P.O.P. postcard? 2. Kindly give formula for toning bath for producing similar tone.—TONING BATH.

1. It is certainly a P.O.P. card, but one that shows traces of double tones, which we should not desire to imitate. 2. It is probably a combined bath, and you must experiment if you wish to obtain the same tone, for the result depends a good deal on the brand of paper used. Try the formula given in the "Almanac."

PLATE-MARKING.—I want to plate-mark my own flexible mounts, and propose to put the mount on, say, six sheets of soft blotting-paper, and place a zinc sheet (cut the size of plate-mark required) in position on mount, and place same in dry-mounter under good pressure and heat up to about 180 degrees, leaving for five minutes. Can you suggest a better method? Would it be advisable to wet the mount first?—XERXES.

You can easily make your own plate-marks in the dry mounting press. Five seconds' pressure is nearer the mark than five minutes. It is not necessary nor desirable to wet the mounts, although these should not be bone dry.

MARKINGS ON FILMS.—I have just purchased a Kodak, No. 6. Pony Premo, 5 x 4, with film pack arrangement. On developing the films the majority show markings, not on film side, same as specimen film enclosed herewith. I have tried to remove them with tufts of cotton and clean water after fixing, but they appear to be immovable. This is the first time I have used films of any description, and shall be glad if you can assist me as to how I can remove same and their cause. I may mention that I have taken a lot of photographs on these films, which are disfigured only by these markings.—S. G. MARSDEN.

You have not made allowance for the fact that these are non-curling films, coated on the back with a gelatine film, which requires just as careful washing as the front. See that both sides get the full benefit of washing, and that the back is quite clean before you hang up to dry. Re-washing and the use of an acid clearing bath might improve matters in the case of the films you have already developed.

MIDGET PHOTOGRAPHS.—I should be greatly obliged if you could inform me how the enclosed small photographs are produced commercially? (1) Are they double printed, first the sitter and then the name, or is it done in one operation? (2) Are the negatives singly or several on one plate? (3) If singly, as I prefer, what size plate is used? (4) Is the necessary apparatus made by any firm?—VETERAN.

The small negatives are usually taken in a special repeating back. Bilcliffe's, of Richmond Road, Manchester, Kodak, Ltd., Fallowfield Co., and others supply suitable apparatus. Messrs. Butcher and Sons also sell a little camera, called the Royal Mail Panel camera, with special masks for printing the borders. You can easily take two on a quarter-plate in an ordinary repeating back camera, using a small mask so as to leave a clear margin. The name and border can be put on a thin film negative, placed between the glass and bromide paper, when you will get the print complete in one exposure.

FADED BROMIDE PRINT.—Kindly find enclosed bromide print, which has faded very much. Would you say the cause of same? Print three years old. Developed with amidol, fixed with acid bath (¼ oz. acetic acid and 10 per cent. hypo), alum bath as usual, and washed for half an hour in running water. You will observe whites have remained fairly well; not so the blacks. Might it be the treatment or perhaps too much acid in hypo? Your answer will greatly oblige writer. I may say this bromide is one of the cheap paper which is on the market, and German at that, and it might be the base which emulsion is coated on, which would set up the chemical change on image.—B. G. C.

We should say the most probable cause of your trouble is the use of a quite unsuitable acid fixing bath, containing no sulphite. A bath of hypo and acid alone is certain to deposit sulphur in the film, and this would account for the fading. Use one of the acid fixing baths given in the "Almanac." We doubt if the paper has anything to do with the effect, for, while your suggestion is a feasible one, it does not seem very likely.

STUDIO LIGHT.—On July 21, 1910, you gave me information re studio, with the result that we did not go on as we first proposed. We are now living off the premises, and have two rooms at our disposal—front room, bay, 15 x 14 (see sketch): second room, 15 x 4, square. This latter could be lengthened another 9 feet, but would not care to do so unless absolutely. Would these rooms do for electric studio for postcards and cabinets chiefly? What would the electric lamps cost? Also screens suggested in July?—Isaac Hargreaves.

Fifteen feet is very short for full length pictures, but if you are content with bust and three-quarter length pictures you can manage with it. You would have to use a short focus lens, say, a Dallmeyer 2 B or a Ross No. 1, cabinet. You will find the cost of electric lamps in the maker's lists. Write to Messrs. Marion and Co., Houghtons, Globe Electric Company, Jandus Company, Griffin's, Kodak, or the Westminster Engineering Company. Head screens can be procured from any dealer, and cost about 20s. each.

Various.—(1) Can you furnish me with the postal address of Messrs. H. Dutton and Co., who supplies a petrol light called the Carmien Portable Gas? (2) I have received an order to photograph fifty-six silver cups, shields, trophies, etc., separately, on whole-plate size, and one 12 x 10 print of them altogether for a frontispiece, and mount them in a book, using P.O.P. (burnished). I have had to make two visits, which occupied two whole days, so can you tell me what I ought to charge? I might mention that I depend solely upon the regiment who is giving me the order for my trade; but as a whole-plate has been used for each of the fifty-six exposures, I want to be reasonable to myself as well.—R. M.

(1) We do not know for certain, but try Henry Dutton and Co., manufacturers' agents, 7, Fisher Street, Southampton Row, W.C. (2) We always find it difficult to name prices. You should be better able than we to work out a figure which will pay you. For single subjects taken in or near a studio 5s. is a reasonable price in half-plate size, though photographers are doing them at the cut rate of 2s. 6d.

Studio Light.—I am anticipating having a studio erected, 16 feet long by 8 wide, and glass light to be from half way up side of building and carried over roof and down other side of building, 18 inches wide. Is this sufficient light? The sides of building will be east and west, where glass light is. Is size of building large enough for group work, for cabinet size work? Is an *f*/8 Beck symmetrical lens suitable for studio work and Imperial plates, or should I use a special studio plate? How should it be fitted for flashlight photography? What flashlight do you recommend cheap, or can it be done by gaslight? If so, how should they be arranged?—Inquisitive.

The dimensions given are very small for a studio of any sort, and especially for group work. You might manage three or four figures, but for a greater number you would have to use a very short focus lens, which would produce exaggerated perspective. You do not mention the focal length of the Beck lens, but you can easily test its suitability by taking a picture out of doors within the limits of your proposed studio. Any first-class plate can be used for studio work; you will be quite safe with Imperials. We cannot recommend flashlight for regular work, especially in so limited a space. Incandescent gas, say eight or nine Howellite burners, placed outside the side light, would be more satisfactory, and would not roast the sitter. It is unnecessary to have glass on both sides of the roof and sides. If the east side is glazed half way down and the roof to the ridge, the lighting will be under better control, and the studio will be cooler in summer.

Enlarging.—I have just purchased an enlarging lantern, with an 11 inch condenser, and have attached for the objective a Dallmeyer 2 B patent portrait lens, 8¼ focus, thinking this would be suitable. On trying to get a clear disc before I inserted the negative, I found I could not, but on putting 10 x 8 Smedley Universal lens on lantern *f*/6, 11 inch focus, I found I could get a beautiful clear disc. I only wanted to use a 7-foot enlarging table, hence my trying to use the Dallmeyer, but to get 20 x 16 picture with the 11 inch lens I find I want one 9 foot; in fact, to get a 12 x 10, I want one more than 7 foot. The things I want to know are: 1. As it is an 11 inch condenser does that make it necessary to use an 11 inch objective? 2. Is the Dallmeyer patent 8¼ useless with 11 inch condenser? 3. Would the Dallmeyer be a good lens to use on a lantern with condenser, say, 8 to 8½ inch? 4. If so, my condenser carrier is movable, could I not have another made and use a smaller condenser? 5. I recognise an anastigmat is a good lens for enlarging, but whatever kind of lens is used as the objective, what would be the best focus for the 11 inch condenser?—Enlarger Pro.

1, 2, and 3. If you want to use the full diameter of the condenser for a 1-1 plate, you are fairly certain to meet with trouble if your objective is much under 11 inches, but if only using a part of the condenser for half-plates you will probably find the 8¼ inch lens quite serviceable. For half-plates an 11 inch condenser is, of course, quite unnecessary, and you will get more light through the negative with a smaller one of, say, 9 inches, with which your Dallmeyer should work excellently. An 11 inch condenser is only required for negatives over half-plate and under whole-plate size. 4. Certainly, you can, and we should advise this course. 5. We should say that 10 inches is the minimum, but much depends on the diameter of the lens. The bigger the lens and the larger its aperture the better.

Chemical Poisoning.—For the last six months I have been suffering a great deal from what seems to be chemical poisoning of the fingers. I had never any trouble with my hands until I started using diamidophenol. It attacks the fingers just below the nails, in the form of very small heads, which irritate very much. After a few hours they break and discharge water. The worst of it is, almost any of the chemicals that I use makes them bad now. I was wondering if you know any other cases similar to mine, and if there is any ointment or anything that can be obtained to prevent the trouble. And can you recommend any other developer for gaslight paper that would be safer to use for the hands other than diamidophenol?—H. Sparrow.

It is rare to hear of diamidophenol having this effect, though we have heard of one or two cases. You appear to be particularly susceptible, and yours would seem to be a case for medical advice. However, you may try the following ointment, which has a very beneficial effect in cases of metol poisoning:—

| | |
|---|---|
| Ichthyol | 10 grs. |
| Lanoline | 40 grs. |
| Boric acid | 40 grs. |
| Vaseline | 30 grs. |

Apply two or three times a day, and rub in well before retiring for the night. We suppose metol-hydroquinone would have the same effect on you, therefore we should try eikonogen-hydroquinone, which is a very suitable developer for papers. Formula:—

| | | |
|---|---|---|
| A. | Hydroquinone | 40 grs. |
| | Eikonogen | 120 grs. |
| | Sodium sulphite | 480 grs. |
| | Citric acid | 20 grs. |
| | Water to | 20 ozs. |
| B. | Potass. bromide | 5 grs. |
| | Sodium carbonate | 60 grs. |
| | Caustic potash | 30 grs. |
| | Water to | 20 ozs. |

For use, mix in equal parts.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2690. Vol. LVIII. FRIDAY, NOVEMBER 24, 1911. Price Twopence.

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## SUMMARY.

In a leading article we draw attention to the opportunities which the professional photographer may embrace if he is content to make use of a studio without a top-light, or even to avail himself solely of artificial light. (P. 890.)

The recent suggestion of an accessories' exchange is taken up by a correspondent. (P. 906.)

The advantages of topical dressing of the photographer's window are instanced in a paragraph on page 890.

The old method of reduction, coupled with the softening of contrast, originally published by Dr. Eder, is one which, we find, is rendered of much greater practical service by using a highly restrained and at the same time weak re-developer. (P. 890.)

We refer to the satisfactory behaviour of the mercury physical developer, recently published by MM. Lumière and Seyewetz, as a single-solution intensifier. The preparation has the advantage over silver intensifiers of remaining practically water-white until the end of the intensification process. (P. 889.)

Formulæ for mercury reducers appear on page 906.

In an article on page 894 Mr. F. F. Renwick deals with the practical aspects of halation and emphasises the several causes which may give rise to halation-like effects in negatives. He lays stress upon the production of such effects by lenses of particular type, and especially by lenses the surfaces of which are coated with dust. (P. 894.)

Formulæ for photographing on wood in cutting wood engravings appear, with a note on an American association of photo-engravers, under "Photo-Mechanical Notes." (P. 897.)

Among new books of interest to photographers are "Photograms of the Year," a French treatise on cinematography, "Marvels of Fish Life," by Dr. Francis Ward, and a work entitled "The Advance of Photography,' by Mr. A. E. Garrett. (P. 900.)

Methods of sensitometric measurement by means of gelatine wedge-screens occupied the Royal Photographic Society at its meeting on Tuesday evening last. (P. 903.)

A three-lens type of construction of anastigmat, non-slip printing-frames, colour cinematography, film-development apparatus, etc., figure under "Patents of the Week." (P. 898.)

## EX CATHEDRA.

**A New Mercury Intensifier.** In the paper by Messrs. Lumière and Seyewetz on reversed negatives direct by development after fixing, a translation of which we printed in our issue for November 10, a formula is given for a physical developer described as consisting of the double sulphite of mercury and sodium. The sight of this formula suggested that it might have possibilities as an intensifier for negatives, and subsequent experiment has shown this to be the case. It acts slowly but very efficiently, and has the advantage over the silver physical intensifier that the solution keeps perfectly clean and clear. An hour's action gave a very strong and even effect which appeared to be proportional to the original scale of gradation. We intend, however, to apply photometric tests to determine this matter definitely. What the precise action is we are unable to say, but considering the composition of the solution it would seem that nothing beyond the addition of mercury and possibly the formation of an amalgam can take place. The image has a dull greyish appearance, but this does not appear to be due to the formation of silver bromide, as a long immersion in an alkaline developer had no visible effect on the image. We consider the formation of silver bromide in the presence of the metol very doubtful, and the colour change is probably due only to the formation of an amalgam of silver and mercury. In this case the results should be as permanent as the best of the mercury methods, and the procedure being extremely simple it is one well worth trial.

* * *

**Pseudo Halation Effects.** Mr. Renwick's interesting paper on "Halation" which appears in this issue discusses not merely halation properly so called, about which there is not very much to be said nowadays, but also various other phenomena which tend to give similar effects. The most striking of these is, perhaps, that produced by dust on the lens, and possibly the illustrations given will be sufficiently impressive to induce photographers to pay a little more attention to the cleanliness of their lenses than they generally do now. They can appreciate the fact that a condition which scatters the light to such an extent as to simulate the effect of halation is quite enough to spoil definition, and that this result is produced even when the nature of the subject is not such as to show the halation effect very distinctly. An interesting point in the paper is the explanation given of the bright streamers often seen radiating from the image of a very bright point, such, for example, as the crater of an arc-lamp. These effects are often seen and usually are puzzling to most people. Mr. Renwick's explanation of their origin is no doubt correct, but it is certainly rather difficult to understand why the streamers should be equal in number to the leaves of the iris diaphragm when that number is even, but double the number of leaves when they are odd in number. Another matter of interest is the demonstration that irradiation in the film is greater when a lens is used than with ordinary diffused light. We confess we do not see why it should be so, but evidently the fact is true in the conditions of the experiment. It must, however, be remembered that these conditions are not quite those of ordinary practice, and in the case of printing lantern-slides, for example, the indifferent contact secured with the usual methods of making slides by so-called contact printing tends to reverse the conditions. We believe that all lantern-slide makers are agreed that better definition is secured by printing in a copying camera through a lens than by the use of an ordinary printing frame.

* * *

**Reduction by Re-development.** We have suggested several times that a promising method of reduction would be the bleaching of the image, followed by a developer that gave density slowly and tended to produce a weak result. Some experiments have been made in this direction, and the results being decidedly successful are worth notice. The bleacher employed was a mixture of potassium ferrocyanide and bromide as used for sulphide toning. In our first experiment the re-developer was rodinal of a strength of 1 in 50, with about one dram of 10 per cent. potassium bromide added to every ounce. Development was carried on until the image seemed to be blackened through the back, and then the plate was fixed. The final result was a very thin image full of detail and well suited for enlarging with a weak source of light, but slightly too thin for general purposes. Further experiments showed that stronger results were obtained by developing for a longer period, and half-an-hour with the same developer gave an excellent series of gradations. Prolonging development for some hours failed, however, to produce a result anywhere approaching the original for density, and so it appears that the reducing power of the developer is strictly limited. The final density seems to be limited by the bromide present, for by increasing its quantity the density becomes less and less until a faint ghost of an image is all that can be produced. For general use a developer containing two-per-cent. rodinal and one-per-cent. potassium bromide will probably do all that is ordinarily required with very dense negatives if about half-an-hour's development is given. Negatives not quite so dense will probably require longer development. After ten minutes' fixing the plate can be washed and dried. This process is absolutely safe, whereas the older one, in which it was necessary to stop re-development before the high lights were blackened right through, was distinctly unsafe. Frequently the high lights showed less density than the half-tones owing to the slow penetration and rapid action of the strong developer. The use of a weak, well-restrained developer obviates this difficulty and preserves the whole of the gradations most perfectly.

* * *

**The Topical Showcase.** We often write of the advisability, nay, the necessity, of the photographer keeping his showcase a reflection of the doings of his town as well as a demonstration of his own photographic talents, and we have often instanced the gain in publicity which follows such regular attention to this part of a business. As a particularly happy example of the reward which attends judicious enterprise of this kind we may refer to the recent speech at the Chichester mayoral banquet of the Bishop of Rochester. The Bishop was in a humorous mood, and chaffingly referred to the exhibition of portraits of the Mayor and himself in the window of a photographic studio—that of Messrs. W. P. Marsh and Son. Another speaker jestingly made other suggestions for additions to the photographic show-window portrait gallery, all of which, as reported in the Chichester press, emphasises the wisdom of keeping the show-case or window in touch with current events. We would also say that even when a photographer has not himself photographed a public man or woman who may be speaking in his town, he will not do himself any harm by obtaining and displaying a portrait and so creating the feeling among passers-by that usually it is worth while to stop and have a look at the contents of his window.

## AN ORDINARY ROOM AS A STUDIO.

Reference to our correspondence columns will show that it is often proposed to erect studios in the most cramped and unsuitable positions on the supposition that merely a glass roof is essential to successful working. This idea seems to be most firmly rooted in the mind of the young photographer who has received his training in a glass barn of the orthodox type. Excellent work can be done

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## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

The fifty-first annual issue of The British Journal Photographic Almanac will be published on December 1.

Among other new features in the forthcoming Almanac are articles as follows:—

### Lantern-slide Making. By the Editor.

A complete practical guide to the making of lantern-transparencies by reduction and contact, illustrated with special drawings of apparatus; processes of development for black and warm tones; warm tones by after-toning, and other methods of producing the best results.

### At Home Portraiture. By C. H. Hewitt, F.R.P.S.

Precise directions for indoor and outdoor portraiture without a studio. Illustrated with diagrams and art supplement plates, showing effects of good and bad lighting.

### Hints in Pictures.

A section entitled "How to Do It," helping the beginner to perform such operations as stripping negative films, mounting prints, etc. One hundred and twenty illustrations.

As in recent issues, the systematic review of the practical work of the year under the title "Epitome of Progress" will be a strong feature of the volume.

The lines followed in the previous editions of the Almanac will be maintained in general, but in a number of particulars the arrangement of the volume for 1912 will be modified to make it more than ever the book of universal photographic reference.

### To Selling Agents of Almanac.

Dealers, newsagents, etc., are advised that the greater proportion of the edition is already ordered, and therefore those who wish to make certain of obtaining their supplies are requested to place their orders with Messrs. H. Greenwood and Co. without delay.

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in an ordinary well-lighted room, as witness the successful "at home" portraits of many of our leading workers, using only daylight, while the addition of an arc or mercury-vapour lamp enables the operator to produce effects requiring a high side or top light. It is not our intention to deal with the questions of lighting and posing, but rather to point out the desirability of dispensing with the glass roof when structural or other considerations render its provision difficult or expensive. In the first place a much wider choice of premises is possible, any well-lighted room of suitable dimensions in a desirable position being all that is needed, in fact successful studios have been carried on in basements where electric lighting has been solely relied upon. This is a most important point in many localities, where a good position is a first consideration and where it is impossible to erect or adapt a studio of the ordinary type. We know of one successful business of a good class carried on in an ordinary deep shop, the front being utilised for a show which many bigger firms might envy, while the negative-making is carried on by means of an arc lamp in the back portion.

The room-studio exempts the photographer from many worries; he has not to think of leaky roofs, stained blinds or broken glass, a snowfall does not trouble him, and he need never dread the havoc caused by hail. From the sitter's point of view it is no less desirable, as it usually avoids stair climbing and is altogether more cosy than the glass house. This is especially the case with children, who are often ill at ease in the unusual surroundings of the studio but can readily be made to feel at home in an ordinary room which, by the way, may be easily warmed by an open fire; no small advantage at this time of year, especially when making semi-draped pictures of the little ones.

Care should be taken not to make the electric light apparatus too obtrusive. In an otherwise well-arranged studio we have seen the working space seriously curtailed by a large and clumsy stand, and it struck us that for a moderate-sized room it would be preferable to dispense with a stand altogether, suspending the lamp from the ceiling by means of a fitting made somewhat upon the lines of the "Surprise" pendant now so generally used for gas. This would allow ample range of movement and is more manageable than the heavy stand on castors usually supplied.

For daylight work a false casement fitting might be placed inside the existing window, thus enabling many desirable poses to be obtained with perfectly natural lighting and avoiding the glaring inconsistency so often seen of a figure sitting at a window with the light coming from the interior of the room. It is perhaps unnecessary to caution the photographer against rooms with low ceilings and consequently low windows; even if artificial light is to be used exclusively ten feet is the minimum height which can be effectively used with full-length figures, and with this height it is desirable to use one of the new forms of lamp, which have the regulating mechanism below the carbons.

We may here repeat the hint so often given to be sure, if possible, to arrange for obtaining the electric current at the "power" rate. If the premises are already fitted for incandescent lighting an additional meter and wires will have to be provided, but this is usually done by the supply company or corporation without cost to the consumer. The mercury-vapour lamp can be run from the ordinary lighting installation, but we think few will prefer this form for portraiture to arc-lamps.

# ART AND THE EXACT SCIENCES.

(The presidential address before the Royal Photographic Society, delivered by the Right Hon. Lord Redesdale, G.C.V.O., K.C.B., etc.)

The choice of a subject for his annual address must always be a very difficult ordeal for your President to face. It is, of course, desirable that the address should have some bearing, however remote, upon the aims of the Society. In my case, perhaps, for obvious reasons, the more remote the better. You may imagine, then, how puzzled I was to find for this evening's meeting some topic which might in any sense fulfil those conditions which I deem to be essential. I was in despair; my inventive powers were utterly bankrupt, and I was cudgelling my brains to solve the difficulty, when one morning the news arrived in London of the theft of the famous Monna Lisa from the Gallery of the Louvre.

It was a great burglary, a very notable achievement, which, in the world of art, will be of historic interest for all time. It must be a source of pride to its perpetrator, for it has lifted him at one stroke on to a pinnacle in the front rank of the members of his profession. Beside this heroic triumph the work of his predecessors in the art of commandeering sinks into mere dirty theft. Compared with this great unknown expert, Autolycus himself, the patron of thieves, Colonel Blood, who stole the crown jewels, Jack Sheppard, Dick Turpin, Charles Peace, are degraded into vulgar burglars. The whole thing was a triumph of inventive genius carried out with the utmost distinction and delicacy. There was no shivering of glass, no violence, no alarm. Not a jemmy, not a centre-bit was brought into play. The picture was there on the Sunday: on the Monday it had vanished—that is all. The fairies of King Oberon's Court could not have spirited it away more deftly, more noiselessly, or more discreetly. You will perhaps ask what this burglary has to do with us here this evening. The answer is, as a burglary, absolutely nothing. I could not, however, refrain in the first place from paying my tribute of admiration for an artist of superlative eminence in his craft, even though his peculiar line of art should differ widely from that of the Royal Photographic Society. Besides, I owe him a debt of gratitude, for his most audacious deed led me into a train of ideas which seemed to open up a subject which I thought we might perhaps consider this evening, not without profit.

Do not be afraid, ladies and gentlemen, I do not propose to discuss the merits of that wonderful painting, one of the rare masterpieces which the world has received as the gift of genius. Far be it from me to add one more to the numberless dissertations and controversies upon that mysterious smile, into which the critics have read so many hidden secrets. We are all acquainted with the Moutons de Panurge. When a great æsthete like Theophile Gautier, or a scholar like Waagen gives out an opinion, all the mutton-heads of the dilettante world must not only follow in the same path, but they must bleat in unison, or even try to outbleat the bell wether. It is enough to say that the picture, wherever it may be to-day, is one of the miracles of human effort, even though as one irreverent iconoclast dared to hint, the lady should be a not very conspicuous beauty, and the famous smile only a simper. But our business is not with Monna Lisa or her charms. I want to talk to you about the painter and his many-sided genius. His life has always had a great fascination for me, and I venture to think that it should have a peculiar interest for those who practice your art, and more especially for those of you who make it their special business to penetrate the arcana of science upon which it is based.

Photography is, of course, intimately bound up with optics, with chemistry, with mechanics: indirectly therefore with mathematics. Now these are some few, at any rate, of the many branches of knowledge with which Leonardo da Vinci was more especially concerned, and in their pursuit, together with that of physics, of anatomy and others, his life gave the lie to that famous saying of Schopenhauer's to the effect that genius and the head for mathematics are contradictions which cannot co-exist in the same brain. Other great artists there have been whose work might also be cited in refutation of Schopenhauer's axiom. Albrecht Dürer was certainly a genius—he wrote upon anatomy, upon geometry, and contended that the excellence of painting depends upon measurement, mathematical precision—moreover, he published a treatise upon "Proportion," and, as engineer, an "Instruction on Fortification of Towns, Castles, and Places." Here then was a man endowed with the highest conception of art, who set such a value upon the teaching of exactness, that is to say mathematics, that he constituted himself its professor. Take again the case of Leonardo's rival, Michael Angelo, who as painter, sculptor, poet, stands conspicuous in the domain of imagination. Was he not a genius? Probably no man ever equalled him in inventive art—think only of the Night, Morning, Dawn, and Twilight on the Medici tombs—yet, as an architect and as an engineer, exact sciences in which mathematics play so conspicuous a part, he was the wonder of his age. And Shakespeare; an artist and genius if ever there was one—do his works not teem with evidence of exact observation and measurement of nature?

Schopenhauer has been called the most read of philosophers because he is by far the most readable, and, as Chamberlain says in a great work to which I shall allude presently, one feels almost ashamed to do battle with this man of exuberant genius when in support of his theories he brings forward the argument that Alfieri, who, by the bye, was but a mediocre poet—and we all know what Horace said about mediocre poets—never could master the fourth proposition of Euclid, and an unnamed French mathematician, after reading Racine's Iphigénie, shrugged his shoulders and asked, "*Qu'est-ce que cela prouve?*" If these are arguments one might sum up the matter with equal truth by saying, inasmuch as Coleridge at the age of forty, although he lived in the country, had not realised that tadpoles turn into frogs, therefore no poet is fitted for the observation of nature. The mischief is, as Chamberlain goes on to say, that when a man of Schopenhauer's fame gives out such a dictum it obtains wide circulation, and it is but one step further for men to flatter themselves with the thought that because they do not understand mathematics therefore they are men of genius—an easy step and most comforting.

But we must return to Leonardo, for it is to the less generally known qualities of his mighty brain that I am desirous of calling your attention. I have gone to several sources to try and draw some little store of knowledge for retail consumption to-night. But my most stimulating fountain must be Chamberlain's brilliant monograph on Kant, to my mind one of the first books of the age. It is written in German and has, so far as I know, not been translated, but to those of you to whom German is familiar I commend it as a veritable treasure-house of learning. The scheme of the work is original. Taking the great philosopher of Königsberg as his subject he brings him into contrast with five of the great thinkers of the world—Göthe, Leonardo da Vinci, Descartes, Bruno, and Plato. To each of these he gives a chapter, never losing sight of his principal subject by way of comparison. The last and longest chapter is on Kant himself. Of these the chapter on Leonardo is perhaps my favourite. One rises from its perusal with a feeling of satisfied delight such as one rarely enjoys, and if I can impart to you some of the pleasure which I have derived from it my task will be accomplished. Nay, more. If I succeed you will carry away thoughts which will encourage you to look upon the more mechanical part of your work with all the more satisfaction, in that you will see that its pursuit does not necessarily divorce you from striving for those giddy heights of human endeavour which are the throne of genius.

"There were giants in those days." When one considers the roll of honour of the sixteenth century one is almost staggered by the multitude of great names in every branch of life's energies. At that time monarchs not only reigned but ruled. Henry VIII., Ferdinand and Isabella, Charles V., Francis I., wielded powers far greater than those of a Kaiser or Tsar to-day. Indeed I once heard a great Russian statesman say, "Yes, the Tsar is powerful so long as he obeys the counsels of his ministers—whenever a Tsar has been obstinate means have always been found to get rid of him." In the great century the position was very different; it was the minister, not the Sovereign, who disappeared. Among the statesmen, men like Sir Thomas More, Wolsey, Machiavelli, Leo X., and many others played a great part, shining conspicuous. Christopher Columbus, Magellan, Amerigo Vespucci, were making their great discoveries, little short of miraculous when we think of the means at their disposal. Martin Luther, that spiritual volcano, Erasmus, the friend of popes, emperors, and kings, St. Ignatius Loyola, the founder of the Jesuits, and his fellow-worker St. Francis Xavier, greatest of all missionaries, Colet, dean of St. Paul's, were among the churchmen. In poetry and literature we find Shakespeare, Rabelais, Ariosto, Spenser, Tasso, of whom Balzac said that Virgil was the cause of Tasso not being the first poet, Tasso the cause of Virgil not being the only one. I do but cite a few of the most famous names. But it is in art, perhaps, that the Cinque Cento produced the most egregious phenomena. In Europe we had a Raphael, a Michael Angelo, a Holbein, a Titian, besides many stars of lesser magnitude. But the superlative excellence of art was not confined even to one continent. India in the reign of the Mogul Akhbar was producing her finest wares: Persia, luminous tiles of transcendent beauty; the smiths of Damascus were forging swords which to-day are priceless. In China, under the Ming dynasty, porcelain had reached its zenith, and never after the death of the last of the Lang family about the year 1610, were the Chinese, clever imitators though they be, able to reproduce the glorious colours and deep glaze which came from the furnaces of that race of potters during the sixteenth century. Even more startling is it to find that in far-away Kioto, a then almost unsuspected city, the first artist of the Miyochin family was turning out his masterpieces of metal work at the very moment when Benvenuto Cellini was casting and hammering and chiselling in the service of popes and potentates in Rome and Florence.

Although Leonardo's birth took place in the previous century it was in this marvellously art-favoured epoch that his greatest fame was reached, and it was among the inspired men whom I have cited that he won for himself a pre-eminence which stamped him as the greatest of them all. Had his paintings, of which there are, alas! only too few, been his only claim to fame, they would have sufficed. But he was far more than a painter, far more than an architect or engineer; he was a seer, a prophet gifted with an almost supernatural power of unveiling things that are hidden to the duller vision of the ordinary man. I shall hope to show you presently how he was able with that prophetic eye of his to pierce mysteries, the secrets of which were not revealed for many a long year after his death. For that mighty brain, with its cult for the exact sciences, nothing was too abstruse, nothing too difficult. His whole life was one long contradiction of Schopenhauer's sweeping, and none too wise, saying. For the exact sciences he entertained a love which was almost a religion. But what philosopher, what Schopenhauer, was ever gifted with so glorious a power of original thought? Mathematician as he was, the wings of the boldest fancy carried him soaring through a lofty empyrean of knowledge in wild flights such as no human being had ever attempted.

Through the fairest valley of Tuscany, in the midst of scenery dear to the Italian poets, flows the golden stream of the Arno, bordered by cypresses and stone pines. Its homesteads lie among teeming groves of olive trees, fig gardens, and vineyards—for the nymph of the foaming mountain torrent which bursts out of the Monte Falterona in the Etruscan Apennines, has with the touch of her magic waters conjured up the wealth of a vast and luxuriant garden. Near Empoli, between Florence and Pisa, stood the old castle of Vinci, and here it was, among the most poetical surroundings, that in the year 1452 Leonardo was born, the natural son of Ser Piero Antonio da Vinci. His father was a lawyer, apparently of good repute, a person moreover of some consideration, for he was notary to the Signoria of Florence, filling therefore an important public office. His mother was a peasant girl who afterwards married Accatabriga di Piero del Vacca di Vinci, a man of her own class in the village. Ser Piero soon after Leonardo's birth married a lady of gentle blood, but he acknowledged and did his duty by the boy, taking him to live with him, and giving him the best education. With the father, therefore, his connection until his twenty-third year was unbroken; but I sometimes wonder whether the mother in her day dreams amidst the duties of her humble farm life, harvesting the olives, treading out the grapes in the wine vat, cooking the chestnuts and polenta for the men's supper, or mending her husband's clothes by the blazing winter fire, ever realised the greatness of the eagle that had soared from her nest. Men say that genius is the gift of the mother. The evidence of one of the most illustrious men of our time, one whom some of you may have known, is worth quoting: "Physically and mentally," said Huxley, "I am the son of my mother so completely, even down to peculiar movements of the hands, that I can hardly find a trace of my father in myself." Had Caterina, too, been touched by the finger tips of the gods? Had they breathed upon her ever so slight a whiff of that divine afflatus which was meted out in such full measure to the nursling at her breast? The poor, loving, country lass must surely have a claim to some of the world-fame of her mighty son. It could not have been all inherited from the man of crackling parchment and crabbed law books. Nay, more, Uzielli, who in 1869 traced the da Vinci family history, finds that out of Leonardo's five immediate forbears no fewer than four were notaries; a veritable legal dynasty. This is the despair of his biographers, who would fain have found some trace of artistic or scientific distinction among his father's progenitors, something to which they might cling in support of atavism. They forget that he had a mother. Ser Piero was married four times—the two first wives bore him no child—the third and fourth gave him nine sons and two daughters. Out of the eleven children and their descendants, who still exist, not one ever made any stir in the world. It was the love-child of the humble contadina that by his own glory saved his father's name from being forgotten and unknown. Leonardo must have been thinking of his own mother when he pointed out that you may find fairer forms and greater beauty under the ragged clothes of the hill maidens than among the grand ladies of the Court tricked out in their finery.

In spite of his marriage Ser Piero kept the boy in his own house. Quite apart from his genius, of which he gave early signs, he was physically something of which a father might well be proud. All his contemporaries speak of his great beauty and muscular strength. He was Apollo and Hercules welded into one. He could stop a runaway horse or bend a horse-shoe with his two hands as if it were of lead, and Vasari adds that "the splendour of his appearance, which was most beautiful, was such that it would bring back serenity to every troubled soul." As a mere boy he devoted himself passionately to the fine arts, to mathematics, and mechanics. Music and poetry were a delight to him, and he sang divinely, accompanying himself on his lute, often improvising both words and music. Handsome, gay, witty, charming, full of accomplishments, he was the joy of all who came into contact with him. Princes by birth and princes by talent, all came under his spell—and so he remained to the end of his days.

Even though his father should have been as commonplace and matter-of-fact as seems to be generally supposed, he had appreciation enough to see that his boy's talent was of no mean order. He took his drawings to Andrea del Verrocchio, "goldsmith, master of perspective, sculptor, inlayer of woods, painter, and musician," the man who wrought the Colleone at Venice, the finest equestrian statue in existence. Verrocchio was amazed at the precocious genius which these drawings revealed, and at once took the youth into his studio, where he had as fellow-pupils at least two men of fame—Pietro Vannucci, known as Il Perugino, and Lorenzo di Credi. While working with Verrocchio, as the story repeated by Vasari goes, Leonardo painted the angel in the picture of the baptism of Christ which his master executed for the monks of Vallombrosa, and Verrocchio, put to shame by the fact that the angel, "the work of a mere child," altogether eclipsed his own performance, gave up painting for ever and confined himself to sculpture. It is somewhat remarkable, by the way, that though Leonardo helped Verrocchio with the Colleone, and though he spent sixteen years upon the model of the equestrian monument in honour of Francesco Sforza, with the praise of which all Italy rang, but which for want of funds was never cast in bronze and was destroyed in the invasion of Milan by the French, there is not extant any work of sculpture which can with certainty be attributed to him. The bust of Beatrice d'Este and the bas relief of Scipio Africanus in the Louvre, the Discord at South Kensington, and one or two others are all works of which the authenticity has been disputed. Have we not heard of a certain wax bust the stuffing of which was found to be rags of early Victorian manufacture? Richter considers it probable that Leonardo entered Verrocchio's school in the year 1470. In the June of 1472 we find an entry of his name in the account books of the Guild of Painters as an independent artist. The fees, by the bye, with true artistic carelessness, appear never to have been paid.

*(To be continued.)*

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THE GEVAERT £1,000 PRIZE COMPETITION.—The closing date of this large international competition has been fixed for October 15, 1912. Messrs. Gevaert naturally do not wish to distribute £1,000 in prize money without allowing to workers all over the world an equal chance of sending entries. Also, as those thinking of making entries will no doubt realise, in such an important competition the best work of most of the best workers is likely to be submitted, and it is therefore possible that many who might otherwise have made entries may have been deterred by not having turned out anything during the past season which they care to use for competition purposes. By fixing the date well ahead Messrs. Gevaert allow such competitors every opportunity of thoroughly preparing, revising, or re-making their work. We understand from the organisers that work now ready need not be held back, but can be sent in at any time.

# WHAT IS HALATION?

It will probably strike most of the readers of the *British Journal of Photography* that the query forming the title of this article is one to which everybody acquainted with photographic matters could give a full and satisfactory answer. Some recent experiences have, however, convinced me that the subject is one upon which comparatively few are at all well acquainted with the facts. These experiences have induced me to have some of the experiments of the early workers on the subject repeated in a modified form in the Ilford Laboratories, and to send this note for publication in the belief that it will prove of general interest.

Since the use of backed plates has become common, the idea that any spreading or "irradiation" of the high lights into the surrounding parts of the image can only be due to "halation" seems to have become almost equally widespread, and one constantly finds this defect wrongly attributed to imperfect backing if it happens to appear in the negative when a backed plate was used.

That a bad backing will not stop halation completely is, of course, perfectly true, but the error usually lies in calling something "halation" which is not halation at all, and which cannot be counteracted by the use of backed plates.

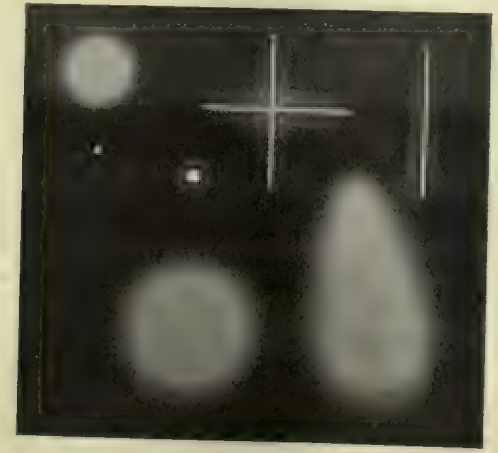


Fig. 1

In this country the word "halation" is unfortunately used very loosely, and is not always restricted to the effects produced by that part of the light which, having penetrated the layer of emulsion, is afterwards reflected from the back surface of the glass or other support. It is, I think, very desirable that other forms of "irradiation" should not be called "halation," both for the sake of clearness and exactitude in expression and also to prevent misconception as to the purpose and limitations of plate-backings.

If we define "true halation" as the form of photographic irradiation that is due to the light which, after being scattered by the emulsion, is reflected from the back surface of the support, then it is true to say that it can be prevented almost absolutely by coating the back surface of this support with any of a considerable number of suitable materials.

The efficiency of any mixture for the purpose and the characteristics of true halation can be demonstrated with ease and certainty in a very simple manner.

In an ordinary printing-frame place first a piece of clear glass with several thicknesses of soft and uniform white blotting paper upon it; next cut out some simple patterns in a piece of thin opaque black paper with a sharp knife or with punches, including among the designs a few intersecting narrow slits and one or more small circles, and place this on the pad of white paper. If now the film of a photographic dry plate is pressed into the best possible contact with this black paper stencil by means of the spring-back of the printing-frame and sufficient exposure is given to a source of white light, the negative obtained on developing the plate will show the effects characteristic of true halation if an unbacked plate is used, while the method is an excellent one for comparing the relative efficiency of two backings when one half of the plate is backed with one and the other half with the other kind.

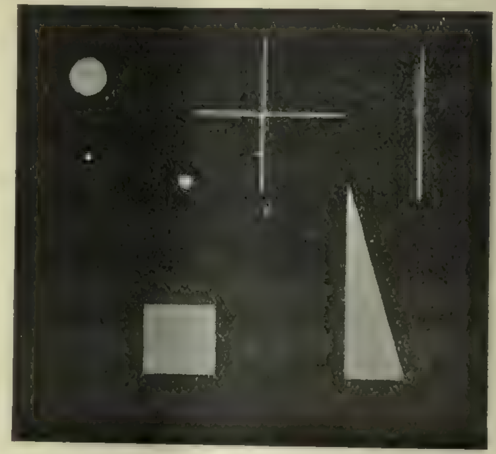


Fig. 2.

The illustration reproduced here (Fig. 1) was obtained from a negative made in this way. It will be seen that true halation takes the form of a circle round a point of light, and separated from the centre by a fairly clear ring where no light action has occurred. The internal diameter of this ring is about 3.6 times the thickness of the glass or other support, and the action does not spread very far beyond this position of maximum effect.

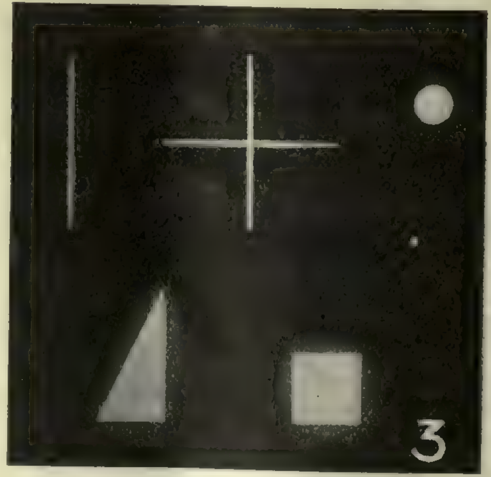


Fig. 3.

It will be seen also that where the bright object is not a mere pinhole in the black paper, but is a continuous line or a surface, the ring of halation round each spot gets confused by the overlapping of the halos due to neighbouring bright points, and consequently the sharpness of the separation of the halo from its centre is more or less completely masked. The trouble also spreads to greater distances because the effect produced by light coming from the outer edges of the area in now reinforced and extended by the large amount of light coming very obliquely or by multiple reflections from further inside the figure. Figure 2 illustrates the curative effect of a good backing upon this defect, exposure and development having been the same in the two cases. Figures 3 and 4 show the relatively small effects produced by variations in development. In the former case development for two minutes only with a strong metol-hydroquinone developer was used, while in the latter a dilute developer was allowed to act for twenty minutes (the time found to be necessary to produce an equally strong image). In very rapid development reduction of the silver bromide is in some measure limited to the upper layers of the film, and consequently very few of those particles which have been acted upon at the bottom of the film by the light reflected from the glass get reduced. In this way halation can be prevented from putting in an appearance in mild cases without having resort to the far more effective "backing." As true halation is pretty generally understood, we will now pass on to consider briefly some other forms of spreading or irradiation which are commonly met with, but are often mistaken for true halation.

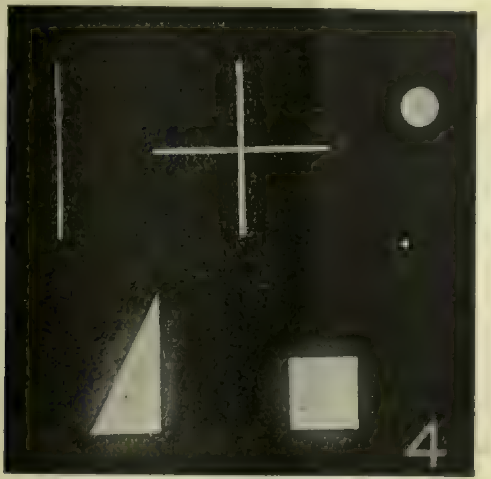


Fig. 4.

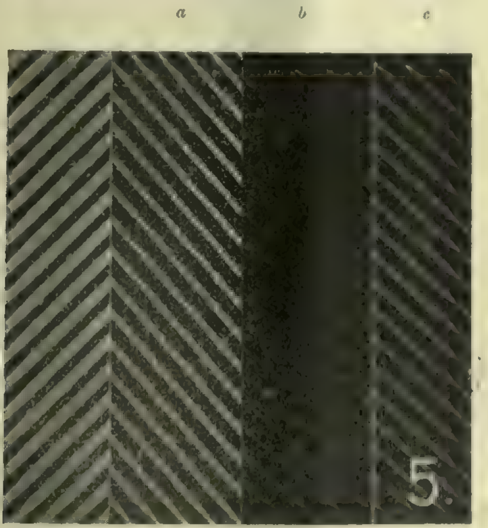


Fig 5.

There is one other type of irradiation which is even more directly connected with the scattering properties of silver bromide emulsions, and we will therefore consider it next, although it is seldom obtrusive and usually quite insignificant in amount.

This type of irradiation presents itself as a loss of sharpness, often called woolliness or fluffiness, at lines or positions of great contrast, and is best known to those who are called upon to produce the clearest cut negatives possible, such as process workers, photo-micrographers, astronomers, and spectroscopists.

The origin of this trouble is the partial diffusion of the light forming the image after it has entered and while passing through the turbid layer of emulsion. The amount of this internal scattering of the light depends a good deal on the character of the emulsion and the thickness of the layer on the support, but excepting in astronomical work, where stars of the first and succeeding magnitudes have to be greatly overexposed to enable the fainter stars to record themselves, it is very rare for this type of irradiation to extend further than one or two hundredths of an inch beyond the borders of the true image, and it is usually quite overshadowed by irradiation due to other causes still to be mentioned.

Internal scatter can be studied almost as easily as true halation, and with equally simple appliances.

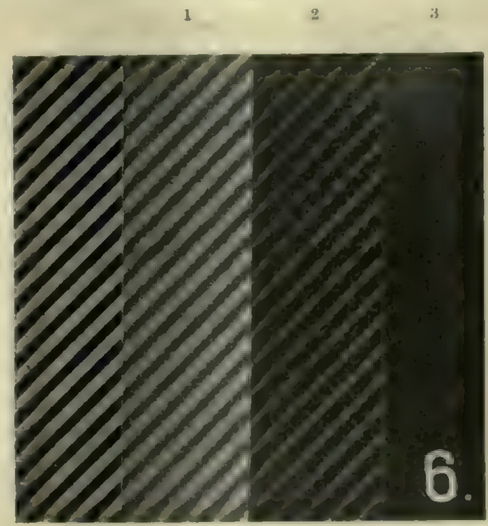


Fig. 6.

It is necessary to use well-backed plates and to give somewhat greater exposures, and instead of the black paper stencil, small sharp-edged patterns in black paper should be attached, at the centre only, to a sheet of thin clean celluloid by a speck of varnish. The patterns must be pressed into perfect contact with the film of the backed plate during exposure, and this is by no means easy to accomplish. An expedient which the writer has found useful is to coat a sheet of stout glass, of a size to fit the printing frame to be used, with a thick layer of non-drying jelly, such as is used for the ordinary copying hectograph. With this composition as an elastic pad between the glass and the celluloid bearing the black masks, good contact between the latter and the film of the plate can be obtained. It is somewhat easier to attach the patterns to a sheet of glass and to use thin celluloid films, thoroughly well backed, of course, instead of the plates, pressing all into close contact by means of a thick rubber pad and the usual spring-back.

Figure 5 shows in one illustration portions from a series of enlargements (20 diameters) of a fine ruled screen having 160 lines to the inch, and obtained in the following way. On the left we have a print from a direct enlargement in a special camera of the original ruled screen, while the parts of the figure marked *a*, *b*, and *c* are enlarged from negatives made by contact in the manner described above on backed celluloid films. The negative corresponding to print *a* received about as much exposure as the highest lights of an ordinary fully-exposed negative of good contrast, while the part *b* is from a negative which had ten times the exposure of *a*. Both lines and spaces in the original screen are 1-320 inch wide, and the increase in the width of the lines shown in *a* and in *b* is due to lateral spreading of the light in its passage through the film of emulsion. As will be noticed in *b*, it has required ten times as much exposure as would ordinarily be given to a plate in its most exposed parts approximately to double the width of these lines, so that it will, I think, be conceded that lateral scatter of light within the film can have no importance with reasonable exposures in ordinary photographic work, though it can cause trouble in work of a very special kind.

Apart from the variations already mentioned which occur with different emulsions, there is no radical cure for this trouble when plates of medium or high speed have to be used for the work in hand; it is less obvious with plates which readily give great density and possess a very short under-exposure curve (such as are used for process work), especially when they are thinly coated, but the only palliative so far discovered in such cases as require a plate of moderate speed is the addition of a red or yellow dye to the emulsion; this has, of course, the great drawback of slowing the plates considerably. The part marked *c* in Fig. 5 shows the extent of the remedial effect of strongly dyeing the emulsion yellow, and is directly comparable with *b*, the difference in speed between the dyed and undyed plates (six times) having been allowed for in making the exposures.

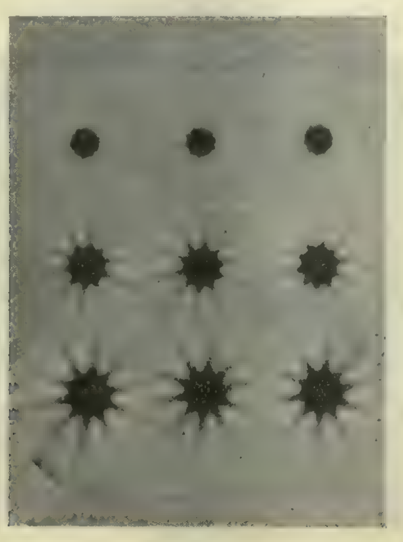


Fig. 7.

When a lens is used for forming the image it is, of course, not possible for all the light to fall vertically upon the plate, every point of the image being illuminated by the cone of rays passed by the diaphragm of the lens, while the margins of the picture are formed by oblique rays entirely; consequently a certain amount of lateral spreading must be attributed to this fact, and it was for this reason that well-diffused instead of parallel light was used in making the above contact copies of the ruled screen.

We will now see the result of trying to reproduce the same line screen by means of a lens and camera instead of by contact.

A first-class lens (Ross-Goerz anastigmat) of 14-inch focal length used at *f*/16 was employed, and to get a strictly fair comparison the copy was made of the same size as the original. In Fig. 6 we again have a direct enlargement of the original on the left for comparison, while the parts numbered 1, 2, 3 are enlargements of the results of three different exposures in the relation 1:6:24 respectively. The important point is that No. 3, which had the longest exposure, received, as near as possible, the same actual exposure (amount of light) as the shortest exposure by contact, viz., *a*, Fig. 5.

To enable us to do this, lantern slides from a negative were first made under each of the two sets of conditions which were to be used for the line screen, and the exposures found, which gave identical results by the two methods.

To get so good a result as that shown as No. 1 is a sufficient proof of the quality of the lens, and the care exercised in making the copy, for as was mentioned earlier, the width of the lines in the original is only 1-320th of an inch, and the subject is, of course, an exceptionally difficult one for equal size reproduction.

The great inferiority of Fig. 6, No. 3, to *a* in Fig. 5, is strong proof of the far greater importance of the effects due to slight imperfections in the lens as compared with internal scatter as a cause of irradiation in the fully exposed parts of a photographic image. With less perfect lenses than that used by us, this factor must become of still greater importance, and as we see in No. 1, Fig. 6, it only disappears with quite short exposures and the very best lenses.

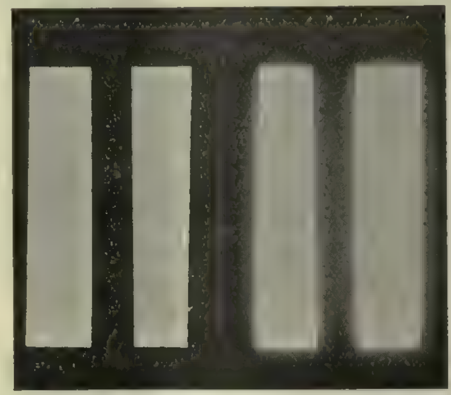


Fig. 8.

Besides this, lenses differ considerably in the amount of general veil which they cause in negatives. This trouble is strongest in the centre of the field, and usually fades off towards the edges, but it may appear as a strongly fogged circle if a small stop is used when photographing a very brilliantly lighted subject. The strength of this veil varies with the number and curvatures of the components of the lens, and is due to reflections from the surfaces of the components. Space does not permit of the reproduction here of the comparative tests carried out on this point with six different lenses.

Again, when prolonged exposures on very brilliant objects are made with a small stop, the edges of the diaphragm itself will give rise to a peculiar type of irradiation due to diffraction of some of the light as it passes through the lens. With a Waterhouse diaphragm it is barely noticeable as a faint diffuse halo round a bright point image, but with an iris diaphragm it displays itself as a number of long, sharply defined, symmetrically placed rays radiating from the point image. The number of these rays always bears a simple relation to the number of leaves in the iris diaphragm. With a triangular stop six such rays appear, four with a square stop, six with a hexagonal stop, fourteen with a seven-sided stop, eight with an octagonal, and ten with a ten-sided stop, and so on.

These appearances are often noticeable in astronomical photographs, and in pictures taken at night, including small brilliant lights in the scene.

Fig. 7 is an enlargement (twenty diams.) of an exposure on three rows of pinholes of different sizes, illuminated by daylight, using a lens with a ten-leaf iris diaphragm and stop *f*/ 45. The effects are independent of the focal length of the lens, but require either very small stops or very long exposures for their production.

The last type of irradiation to be considered here is most important to every camera user. Inasmuch as it closely resembles true halation in appearance to the untrained eye, it has led many workers to doubt, or even to denounce, a perfectly satisfactory backing.

Figure 8 shows on the right hand side a case of this type of irradiation intentionally produced, while the copy of the same object on the left side is quite free from it. The difference is due only to the fact that in the former case the front lens had a dusty surface, and in the latter the lens was scrupulously cleaned before use, all other conditions, including the use of backed plates, being identical.

The essential differences between true halation and this spurious imitation are two; firstly, the absence in all cases of the relatively clear space between the true image and its halo, which we have seen, is typical of true halation round small objects, and secondly, the much more gradual diminution in the strength of the halo in this spurious halation than in the real thing. Generally speaking, it is less intense, but may spread further than in a case of bad true halation; occasionally it is really difficult to distinguish one type from the other.

While none of the matters here treated of are new, I hope that this discussion of the various forms of irradiation in one short article may be of interest and use to those who were unfamiliar with the facts. Those who wish to know more will find many references to the earlier literature of the subject, as well as a fuller account of the phenomena of true halation, given in Eder's Handbook (Vol. II., p. 90, et. seq., and Vol. III., p. 603), while Mees' and Scheffer's papers on "Internal Scatter" (vide "B.J.," 1909, p. 989, and 1910, pp. 24, 453, 576, and 678), will be found most interesting.

F. F. Renwick.

# Photo-Mechanical Notes.

## More Information Concerning Photo-Engraving.

The American "Printing Art," following the example of the "Inland Printer" and the "American Printer," has commenced a photo-engraving department. This month it gives a long, detailed account of the new sheet-feed rotary press of C. B. Cottrell Co. for printing simultaneously colour work up to four colours, and also an account of a new moulding press for making electrotypes from lead moulds. The press covers work up to 25 in. by 25 in. at one impression, and is capable of exerting a pressure of 3,000 tons.

### Objects of the American Photo-Engravers' Association.

The following is quoted from the "Printing Art":—

The objects of the International Association of Photo-Engravers are to—

First of all: Establish a friendly feeling amongst the men who have their money invested in the engraving business.

Second: To encourage the use of illustrations and engravings made by the photo-engraving process.

Third: To create a sufficiently large number of skilled workmen to fill the demand, which at present is greater than the supply.

Fourth: To encourage the installation of modern cost-finding systems and familiarise our members and all others with the business side of our industry. Our ability to make photo-engravings is well established. Our ability to make photo-engravings and sell them at a profit is not so well established. The Association must teach everyone connected with the photo-engraving business how to conduct it upon a profitable basis. It must go further. The Association, through its organised efforts, can and will eliminate vicious and costly competition caused by ignorance.

Fifth: The International Association will acquaint its members with the various so-called advertising schemes which cost photo-engravers thousands of dollars yearly and net them no results whatever.

Sixth: The International Association of Photo-Engravers will enlist in the general promotion of all that is good for photo-engravers, and protect its members against all that is bad and harmful. One of our most powerful organising agents will be the "Photo-Engravers' Bulletin," our official journal.

## Photographing on Wood for Engravers.

"What are the best formulæ for photographing on wood? We are having some difficulty with our method, which is as follows:—First we pumice the block, then give it a couple of coatings with gelatine After this we coat it with a mixture of zinc oxide and albumen. When this coating is on good and smooth, we sensitise it with silver nitrate and, after exposure, tone with gold and fix in hypo." A querist asks advice on the above matters of the "Photo-Engraving" column of the "Inland Printer." In reply, Mr. S. H. Horgan writes:—

"The 'best' formulæ for photographing on wood would fill a book. The carbon process has been used; making a lantern-slide and transferring that to wood is another method; while some blacken the surface of the block with Higgins' waterproof ink and transfer on it a negative film that has been bleached with mercury. Probably the best procedure is as follows:—The sides of the block are rubbed with heated wax, and the surface with rubber solution, this to keep moisture from the wood. Three solutions are kept in stock ready for use:

"1. Gelatine, 16 grains to the ounce of water.

"2. Nitrate of silver, 80 grains to the ounce of water.

"3. Citric acid, 40 grains to the ounce of water.

"The white of an egg is beaten to a froth and left standing overnight. Now to sensitise the wood block take—

| | |
|---|---|
| White of egg | 1 dram. |
| Gelatine solution | ½ dram. |
| Best zinc white | ¼ ounce. |
| Ammonium chloride | 5 grains. |

Rub these into a paste in a glass mortar, and while rubbing drop slowly into the paste thirty minims of the citric-acid solution and thirty minims of the nitrate-of-silver solution. Paint this on the block, dry in the dark and print as usual. Tone and fix if you wish, though many simply fix and wash off the hypo. Dry the moisture from the block with soft chamois. This method gives a brilliant print, prevents the wood from being injured by moisture, and leaves scarcely any film to interfere with the graver; all of which are requisites in the best procedure."

## FORTHCOMING EXHIBITIONS.

November 27 to 30.—City of London and Cripplegate Photographic Society. Sec., F. W. Gardner, 135, Vaughan Road, Harrow.

1912.

March 12 to 16.—Sheffield Photographic Society. Sec., James W. Wright, 30, Oakhill Road, Sheffield.

May 3 to 11.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

◆

Houghtons, Ltd.—Owing to the expansion of the professional department of Houghtons, Ltd., two new representatives are now travelling for the firm. Mr. R. J. Ibbs will be calling on professional photographers in London and the suburbs, and Mr. Harry Hunt is representing the firm in the Midlands, South Wales, Devon, and Cornwall.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between November 6 and 11 :—

DAYLIGHT-CHANGING.—No. 24,813. Daylight-changing packs of sensitive layer carriers. Johann Georg Schneider.

CAMERAS.—No. 25,015. Photographic cameras. Thornton-Pickard Manufacturing Co., Ltd., and Arthur Gray Pickard.

PHOTOGRAPHIC MINIATURES.—No. 25,018. Production of photographic miniatures for pendants, buttons, ornaments, and the like. Leopold Brooks.

GLAZING PRINTS.—No. 25,079. Solution for stripping or glazing photographs. Montague Sydenham Fowler Dixon.

PROJECTION.—No. 24,917. Method of presenting projected images. Albert Oswald Buechner.

CINEMATOGRAPH ENLARGEMENT.—No. 24,751. Means of producing an enlargement from a cinematograph positive film. Arthur Shephard.

COLOUR CINEMATOGRAPHY.—No. 24,643. Production of cinematograph pictures in colour. John Campbell and Thomas Thompson.

COLOUR CINEMATOGRAPHY.—No. 24,644. Production of cinematograph pictures in colour. John Campbell and Thomas Thompson.

COLOUR CINEMATOGRAPHY.—No. 24,645. Cinematograph apparatus and films suitable for the production of cinematograph pictures in colour. John Campbell and Thomas Thompson.

COLOUR CINEMATOGRAPHY.—No. 24,646. Production of cinematograph pictures in colour. John Campbell and Thomas Thompson.

COLOUR CINEMATOGRAPHY.—No. 24,921. Coloured screens for use in colour cinematography. John Campbell and Thomas Thompson.

CINEMATOGRAPHY.—No. 24,992. Appliances for rewinding cinematograph films. Alfred Wrench and William Engelke.

CINEMATOGRAPHY.—No. 24,841. Cinematograph operator's pocket film repairer and slide-writer. John Fleming.

CINEMATOGRAPHY.—No. 24,809. Apparatus for photographing and projecting cinematographic views. Rodolphe Berthon and Maurice Audibert.

CINEMATOGRAPHY.—No. 24,855. Taking and exhibiting cinematograph pictures. Ferdinand Fissi.

MOVING PICTURES.—No. 25,029. Device for the rapid and economical production of moving or animated portraits. Donald Owen Straton Kidd.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

THREE-LENS ANASTIGMATS.—No. 4,714, 1911 (February 24, 1911). The invention relates to a modification of a well-known type of photographic lens in which three separate single lenses are employed, the two outer ones being positive and the inner one negative, the latter having a focal power approximately equal to that of the two outer ones.

By this modification with the old types of glass a lens is obtained with a much larger field of good definition than heretofore with such glasses.

This lens might have been made with the glasses in common use fifty years ago.

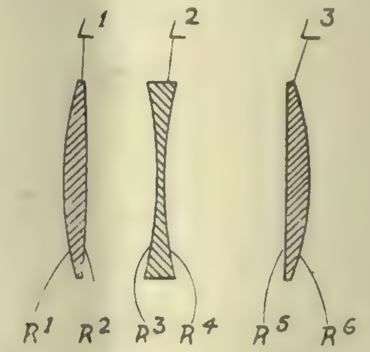
The complete combination consists of three separated lenses, two positive placed one on either side of one negative.

The two positive lenses are made of a glass of low or moderate refractive index and low or moderate dispersion, and are plano-convex or double convex : the negative lens is made of a glass of higher refractive index and higher dispersion, and is double concave.

The individual lenses have in no case a focal length shorter than one quarter that of the complete lens, thus allowing the curves of the lenses to be so flat that a number can be ground and polished together in a block.

The new lens, in spite of the flatness of the curvatures, does not require great separation between the individual components which would render it unsuitable for transmitting a wide angle of light and inconvenient for use on small cameras.

The total central distance between the external surfaces does not exceed .275 of the focus of the complete lens, and in some forms is very much less.



It is thus possible to construct an astigmat lens of high quality, at a price lower than has before been possible, and suitable in every way for modern requirements.

The drawing shows a lens of aperture $f/6$ according to the invention, and the data and particulars of a lens of 10in. focal length are as follows :—

| | Radii of Curvature. | Refractive Index. $\mu$ D | Dispersive Ratio. $\nu$ value |
|---|---|---|---|
| Lens I | $R_1$ + 3.33 inch | 1.5289 | 58.9 |
| | $R_2$ + 14.6 inch | | |
| Lens II | $R_3$ − 3.74 inch | 1.5745 | 41.1 |
| | $R_4$ − 3 74 inch | | |
| Lens III | $R_5$ ∞ | 1.5289 | 58.9 |
| | $R_6$ + 2 714 | | |

Central distances of $R_1$ to $R_2$ .18 inch
" " $R_2$ to $R_3$ .67 inch
" " $R_3$ to $R_4$ .07 inch
" " $R_4$ to $R_5$ 1.08 inch
" " $R_5$ to $R_6$ .2 inch

Aperture of lens I 1.75 inch
" " II 1.75 inch
" , III 1.75 inch

The lens is used for photography with Lens $L_1$ nearest the view.
Conrad and Horace Courthope Beck, 68, Cornhill, London, E.C.

NON-SLIP PRINTING FRAMES.—No. 14,189, 1911 (June 15, 1911). The invention consists in forming the part *b* of the back of the frame with a lip or projection $b^1$, either as shown, or extending part of the way from each side towards the centre, the back

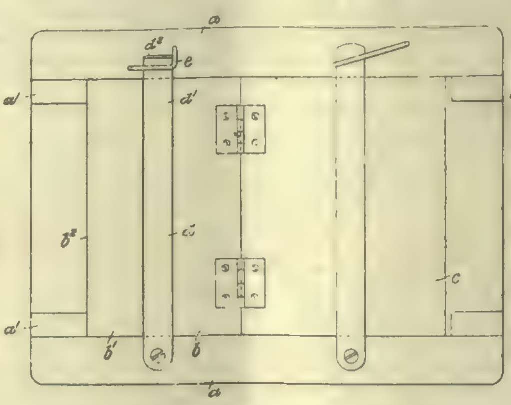


Fig. 1.

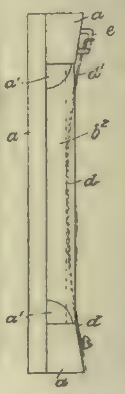


Fig. 2.

portion or edge, $b^2$, of this projection pressing against blocks $a^1$ fixed on or forming a part of the frame $a$, and the projection $b^1$ of the exact width that when the compression spring $d$ is closed, the projection $b^1$ will be rigidly secured between the spring $d$ and the blocks $a^1$, the part $b$ of the back being thereby rendered immovable when the spring $d$ is closed, and the paper by these means retained relatively with the negative when the hinged portion $c$ of the back is required at any time to be opened.—John and Alfred Wilkinson, St. Oswald Street, Rochdale Road, Manchester.

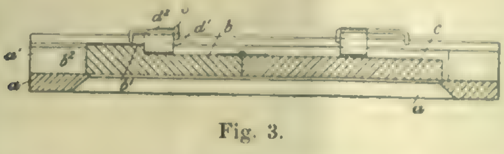


Fig. 3.

**Changing Bag and Focussing Cloth.**—No. 16,406, 1911 (July 17, 1911). The invention consists of an oblong, light-proof bag, A, with a long, wide sleeve, B, and a short sleeve, C. This attached to camera tripod by hooks, tape, or other means at F F, the other end of bag suspended by a stretcher, G.

The bag is converted into a focussing cloth by laying it out flat, and attaching to camera by folding bottom edge of bag around back of camera by means of a strap, D, and the sleeve B looped around frame of focussing screen, and fastened under strap D E.

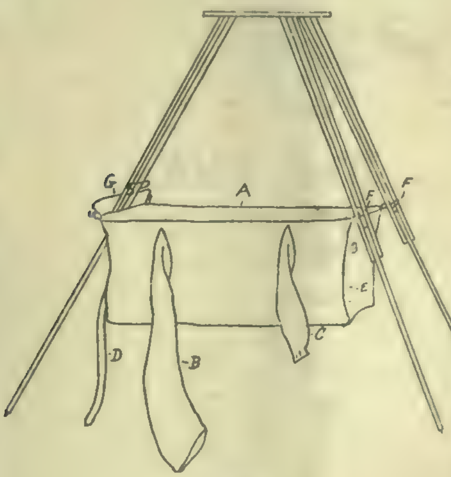


Fig. 1.

When used as a changing bag, the photographic plates and dark slide are passed into the bag by means of the long, wide sleeve B, one hand is placed through the sleeve C, and the other hand through sleeve B, the necessary changes are made in complete darkness. When used as a focussing cloth the head of the operator is placed under bag A, Fig. 2, the long sleeve B fitting under the chin, when a distinct and uninterrupted view is obtained on the focussing screen. Percy William Teasdale, 36, Heath Road, Harrow, Middlesex.

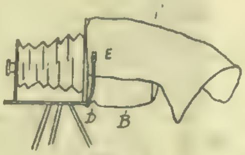


Fig. 2

**Film Developing Apparatus.**—No. 28,364, 1910 (Dec. 6, 1910). The invention relates to improvements in what is known as daylight developing apparatus as used in photography, such as that described in Patent No. 12,605 of 1909 ("B.J.," Feb. 18, 1910, p. 122), in which the apparatus takes the form of an oblong shallow box or receptacle (the box or trough), provided with a spool chamber at its open end, and a detachable cap furnished with means for accommodating a feeding slide, which is used for the purpose of feeding the sensitive film into the developing solution contained in the box.

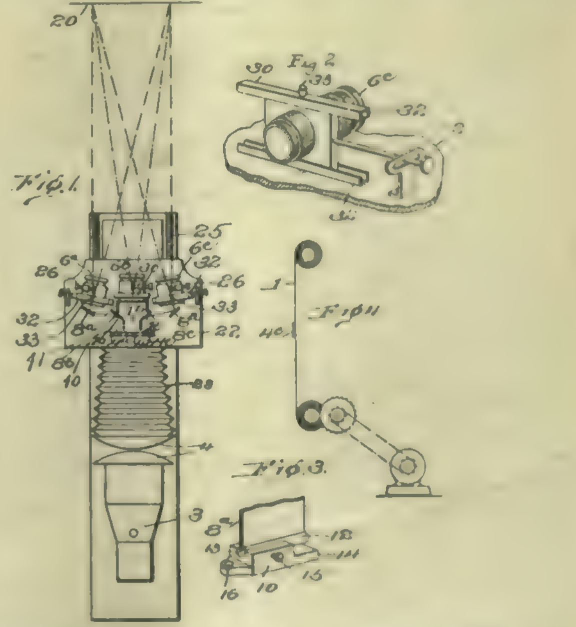
As described in the above patent, the feeding slide is provided, on its inner extremity, with a clipping device for the purpose of holding the outer end of the sensitive film and its backing paper during the unwinding of the same and during the process of development.

The main features of the present invention embody an improved clip for attaching the film to the feeding slide, a novel method of constructing the feeding slide which enables the film to be immersed into the developing solution in a double layer, thereby reducing the length of the developing box to a very considerable extent, and the provision of a fluid way to admit of the changing of the solutions without the necessity of removing the cap of the box.—Magnus Niéll, Djursholm, Sweden.

**Cinematograph Mechanism.**—No. 24,822, 1910 (Oct. 25, 1910). The invention relates to cinematographs of the duplex and dioptic kind, wherein two travelling photographic film bands are employed in conjunction with two lenses and two rotary shutters. These latter are so arranged, and the movements of the film bands are so timed relatively thereto, that the pictures of one band are projected and exposed on the screen for a comparatively long period of time, and the pictures of the other band are projected and exposed on the screen for a comparatively short period of time, the band that is exposed for the short periods operating to substitute for the picture on the screen another identical picture during the time that the other band is screened, and moving its next succeeding new picture into position ready for exposing.—Thomas Percy Middleton, 25, Devonshire Chambers, Bishopsgate, London, E.C.

**Colour Cinematography.**—No. 24,779, 1910 (October 25, 1910). According to this invention, in place of prisms heretofore employed for transmitting the rays from the side films to the side lenses, mirrors exclusively are employed.

The light rays passing through the central record are transmitted by the lens 6b and projected directly upon the screen. As is known, it is necessary that the rays passing through the side records should converge in order to coincide with the image projected through the central lens, and for practical reasons it is also necessary that the rays of the outer or side records should be displaced laterally, inasmuch as the width of the three lenses is considerably greater than that of the tri-part record tape.



In order to avoid diminution in the light energy transmitted through the outer record parts, it is preferable to employ highly polished reflectors, and thereby obtain a divergence laterally and a change in direction of the light, with practically no appreciable loss in the light intensity as might occur with mirrors. These reflecting surfaces are arranged in pairs, $8^a$, $8^b$, $8^c$, $8^d$, one pair for each side lens. The reflectors are mounted in a frame 10, provided with means for universal adjustment as shown in the detail view, Fig. 3. The rock-shaft 12 is adapted to swing forward or backward in a vertical plane, and may also be moved laterally in the socket 13 of the base member 14, the parts being locked in any position by the set-screw 15. The base 14 is angularly adjustable in a longitudinal plane upon the pivot-screw 16. By means of these adjustments the light rays transmitted through the outer records may be accurately centred upon the optical axis of the corresponding lens in any position of the latter. Provision is made for the accurate super-position of the three focal planes at whatever distance the apparatus may be placed from the screen. The rough adjustment of the light focus upon the screen 20 may be made in the usual manner, by mounting the box or hood containing lenses, etc., upon a baseboard or platform 22, attached to the outer end of the bellows 23, and adjustable longitudinally upon the supporting racks 25. The finer adjustment of the focus upon the screen is effected by a forward or backward movement of the lenses in their casings by means of the adjusting screws 26.

The reflecting surfaces which are employed to diverge the rays of the two outside colours are placed between the picture film and the lenses, and closely adjacent to the film, in order that they may receive the fullest illumination from the light issuing from the condensing lens, since the intensity of the light diminishes with the square of the distance. The reflectors receive the incident parallel rays extending across the entire image of the film. The light-rays are then focussed in the lens and project a sharp and distinct image directly upon the screen with the full illumination of the lens. William Edward Oliver, 401, Seventh Street, N.W., Washington, U.S.A.

## New Trade Names.

UTOCOLOR.—No. 337,083. Paper for use in colour photography, or in ordinary photography. Société Anonyme Utocolor, 21, Rue de la Pointe, La Garenne, Colombes, Department of Seine, France, manufacturers. October 23, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Pumice Powder.

I HAVE not seen any reference to "pumice powder" (writes Mr. T. T. W. Sands, in "Photography and Focus" for November 21), a light greyish powder which can be obtained from any chemist who keeps a varied stock, and which I find very useful in many ways. For instance, if a negative can be improved by the application of a little work with the black lead pencil, the pumice powder will give the gelatine surface just the tooth that is necessary. A little of the powder, which may be kept for the purpose in a muslin bag, is dusted on to the part to which the pencil is to be applied, and then, with the tip of the finger, the powder is gently ground against the gelatine with a circular motion until the surface is roughened sufficiently, and the powder may then be dusted off. Another use to which it can be put is to give a print a fine matt surface instead of a glossy one. This can be done even after the print is mounted, by dusting on the powder and then gently grinding it in the way just mentioned. The pumice powder can be applied to any glossy print with a gelatine surface—P.O.P., bromide, gaslight, or even to a carbon print. It is very effective with prints on semi-matt or "carbon" surface papers, and gives quite a distinctive character of matt surface to the prints treated with it. If this treatment is applied to a print that has got soiled it will be found that the powder incidentally removes the dirt, and leaves it with a clean, fresh appearance. A little of the powder may be intimately mixed with powdered black lead, and then applied, with a stump or with a little pad of cotton wool, to a mounted bromide enlargement, to tone down parts that are too light. A great improvement can often be carried out in this way, shading down parts more or less by the use of mixtures with different proportions of the pumice and black lead. If the shading is carried over any parts where it is not wanted, it may be removed in a moment by using a pointed piece of india-rubber. I think pumice powder one of the most useful things an amateur can have on his shelves, and am surprised not to see it referred to more often.

### Renovating Leather Bellows.

During the damp weather (writes "P.N." in the "Amateur Photographer and Photographic News") leather bellows of cameras frequently suffer from damp, and stick together. If so, expand them very carefully, because if the folds are stuck and they are forcibly pulled apart, some of the outer coating may become removed, and light may gain access. The best plan is to separate the folds very gently, and then allow them to rest with the bellows, but slightly extended. After remaining in a warm, dry atmosphere for a couple of days, a leather renovator can be well rubbed in until the bellows feel soft and pliable to the touch. A good leather reviver suitable for the purpose is made as follows:—Sperm oil, 6ozs.; white of five eggs; acetic acid, 6 drs.; glycerine, 6 drs.; oil of turpentine, 1 oz.; methylated spirit, 5 ozs.; water, to 30 ozs. Beat the eggs thoroughly with an egg-beater. Mix the oils, acid, and glycerine, and add gradually to the eggs, using the beater all the time; transfer to a bottle, and add the spirit diluted with its own volume of water; finally, make up to measure.

## New Books.

The Advance of Photography. By A. E. Garrett, B.Sc., London: Kegan Paul, Trench, 1911. Price 12s. 6d. net.

We gather from the preface to this work that it is based upon the volume by the late Dr. H. W. Vogel, published in 1883 in Messrs. Kegan Paul, Trench's "International Science Series." It does, in fact, contain the historical chapter written by Dr. Vogel, which, as a popular account of the early days of photography, calls for no particular criticism. We could wish, however, that the present author had made such revisions as later historical inquiry has justified. For example, the late Mr. Litchfield showed that Davy merely acted as the editor of Wedgwood's photographic work, and was in no sense a collaborator with him, though writers of text books, Mr. Garrett among them, continue to represent him as such. Again, the story of the fortunate accident by which Daguerre is said to have discovered the method of mercurial development might reasonably, in a work of this kind, be given the place which it deserves in the history of the Daguerreotype process; while it may easily be true, there is no actual evidence that Daguerre's success was the result of this fortunate chance.

But to proceed from this opening historical chapter, the remainder of the volume may be best described as a series of somewhat disconnected notes and paragraphs dealing with processes or applications of photography which, in the writer's judgment, appear to be deserving of the title of "advance." Yet, if the reader is to judge, for example, from the chapter on lenses, photographic optics is practically where it was in 1883. An author, we think, who is seeking to discharge the task of recording photographic advances can hardly afford to neglect the enormous improvements in photographic lenses which followed the introduction of the newer types of glass by the Jena glass makers. But, beyond a reference of a couple of lines to Abbe and Schott on page 117, we can find nothing on the modern anastigmatic objective. Here, as in other parts of the volume, the author appears to have been ready to obtain much of his information from trade sources, and the pages in which he deals with the telephoto lens is a pretty good example of his habit of giving particulars of one or two commercial articles in place of dealing with the principles and generalities of the subject. And even when the subject of his notes is the commercial article, the author betrays an ignorance of the photographic market which leads him to convey a wrong impression to the reader. Thus we find him, when referring to roll films, making reference to the form of spool which enjoyed a brief popularity some years ago, and is now forgotten—the film in which sections of translucent paper alternated with the film proper, in order to allow of ground-glass focussing. While he mentions this obsolete pattern, he says nothing about film-packs, daylight-envelopes, and other systems of film photography in wide use. And when we come to practical photographic processes we question such statements as "the ferricyanide reducer is composed of a dilute solution in water of potassium ferricyanide"; "There is absolutely no control with the platinum paper"; or again, when describing the making of wet-collodion negatives, "The negative is developed with ferrous oxalate." If there were a broad and lucid treatment of photography as a whole, one might readily pardon such errors which can easily be made by anyone not familiar with the minor details of photographic work; yet we cannot credit the writer with even offering a clear, well-ordered survey of modern achievements. In the chapter on colour photography he refers (on page 239) to the invention by Du Hauron of the colour screen-plate and its commercial application by Joly and McDonough. But when he comes, on page 248, to deal with the Autochrome plate, he fails to connect this with the paragraph of nine pages previously, the relevance of which would seem to be misunderstood. And even when dealing with commercial screen-plates, he describes the Warner-Powrie plate as on the market, and omits any reference to the Dufay or "Dioptichrome." A merely industrious compiler could have done better than this.

The most interesting and valuable chapter is that dealing with astronomical photography, a field in which the author appears to be more at home. The chapters, too, on photo-micrographic photography and projection deal somewhat more adequately with the subject.

"Photograms of the Year 1911-1912." Edited by H. Snowden Ward, F.R.P.S. London: Geo. Routledge and Sons, Ltd. 2s. 6d. net.

When this annual arrives we look forward to an enjoyable half-hour. Its literary contents are varied and amusing, particularly the naïve admissions and enthusiasms of the Continental contributors. This year, however, we miss the strain of humour. The contributed articles are fewer, shorter, and less unconventional. Either they have been made to toe the editorial line or the writers have grown perfunctory. The keenest and smartest article is by M. Demachy, who opens the series with an account of pictorial photography in France. He seizes upon the alleged slump in pictorial photographs, and makes a masterly examination, coming to the conclusion that the popular noise of twelve years ago was but "froth and swirl" caused by the agitation of the useless organisms who had no right to pose as champions of art, but found it profitable for their reputations to do so. Since then, he says, "there is less noise around pictorialism, yet there is sounder work, for hard workers are mostly silent workers. They have no time to quarrel or blow the trumpet." This is probably a true statement of the case. We learn that in Paris the oil-print shows a notable increase, with no bromoils except those from England. Carbon is dying out and platinotype is scarce; but transfer oil-pictures are becoming popular. Reading between the lines one may see in all this how far pictorial photography in France depends upon the activities and the talent of M. Demachy himself. He tells of a new method of treating oil-prints with ether, by which they lose the greasy shine that is their characteristic.

Mr. Geo. E. Whiting deals with South Africa, and regretfully announces the discontinuance of the "South African Journal of Photography," but chronicles the formation of two new societies. The former fact is probably the most eloquent sign of the times, since two or even twenty societies could not support a journal if they were no larger than the "Johannesburg Photographic Art Circle," with its roll of six members—not a very sleek circle, but possibly an immaculate hexagon. It "still lives a healthy life, and has recently held its second annual exhibition with marked success. Although the selecting committee only hung framed and approved works, the gallery was well filled" (whether with pictures or spectators Mr. Whiting does not say). "The Cultivation of the Photogram in Germany" is the title of a paper by F. Matthies-Masuren. It is an activity we do not seem to have heard of before. The phrase has a bacteriological smack, but in reality the article treats of an old theme, namely, the recent decline of amateur work and the rising successes of professional portraitists. The author suggests a circulating exhibition of about a hundred selected examples from both Germany and England, for the mutual benefit of both countries. We commend the idea to the Professional Photographers' Association. Walter Burke is jubilant about Australia. The great event of the year there has been the International Exhibition of the Photographic Society of New South Wales, which included 106 examples from England. The writer mentions the names of Mortimer, Marshall, Hoppé, Cocks, Barton, Lewis, Keighley, Annan, and Job, and he quotes approvingly a local critic who wrote, "The English workers are but little, if anything, better than our Australasian craftsmen." We therefore, together with Mr. Burke, "look forward with great hopes and ambition to the future of art photography in Australia."

Right in the middle of these foreign and colonial contributions comes Mr. Snowden Ward's own literary matter—a perfect marvel of expansion. Only those who know what it is to have to fill a number of sheets with comment upon sterile matter can appreciate the arduousness of his task and the cleverness of his accomplishment. Here are thirty-seven pages of kindly, optimistic commentary, interspersed with compliment and enthusiastic admiration and the merest soupçon of gentle, qualified fault-finding. It is all well-oiled, and runs with a beautiful smoothness.

The book is, as usual, copiously illustrated, and many of the pictures have not seen the light before in this country. It is this fact that, together with the foreign articles, makes "Photograms of the Year" a book of value, and gives it a permanent interest. The most successful of the half-tone reproductions are "The Sunshine Boy," by Marcus Adams, a delightful piece of honest work; "La Ville Close," by Chas. L'Hermitte, the son of the famous painter and etcher; "Chartres," by F. H. Evans; "Nude in the Woods," by Clarence H. White, which has effective lighting; P. Bale Rider's "In Clovelly"; "Falaise," a romantic street scene by R. Demachy; "Waterloo Bridge," by A. H. Blake; and "Pomegranates," by Mrs. Keene. Those that are printed in an honest black are invariably the most effective, and it is difficult to see the gain in using extra printings in which the pictures show to less advantage. We notice that, as a rule, the subjects that deal with or include nude ladies or young persons airily clad come from puritan America, and we should like to know upon what authority the very charming figure of Melisande is represented unclothed by H. Y. Summons. The nude in photographs, as well as on the "boards," is a growing passion with us, and is no longer the prerogative of the painter. Even Mr. Snowden Ward himself, who is, like Cæsar's wife, above suspicion, says of Miss Smith's "Cool Stream," "Without the draperies it would have been just as simple and as innocent." Altogether, "Photograms" is an entertaining book.

"Marvels of Fish Life: as Revealed by the Camera." By Francis Ward, M.D., F.Z.S. London: Cassell. Price 6s.

Dr. Ward, like many another of the modern school of writers on natural history, is in the happy position of not merely relying upon descriptive language in the treatment of the subject, but of being able to make use of the camera for the purpose of actually passing on to the reader his own observations. In fact, the modern method of calling in the aid of photography goes further than the ocular observation of even an experienced naturalist, and records phases of animal life and incident which by their swiftness escape the eye, even of the trained observer. And in thus calling the camera to his aid, the author of the present volume has taken the most thorough-going measures to ensure its records being as full and as precise as possible. The photography of fishes in their natural element involves many difficulties, due chiefly to the reflection of rays of light from the surface of the water. Dr. Ward has surmounted most of these by constructing an experimental tank to accommodate himself and his camera, and fitted with a glass window facing the much larger artificially constructed pond, in which his subjects are confined. As a result he has secured an immense number of photographs which admirably show the habits of fishes, their behaviour under various conditions, and the means which they take in expressing the emotions. Written throughout in an easy conversational strain, the volume is without a dull page for anyone having an inclination towards the study of natural history, and we cannot too highly commend the truly graphic view of the conditions of fish life which Dr. Ward's photographs, in conjunction with his text, supply. The volume is quite a notable addition to the newer literature of natural history which has been created of late years by the use of the camera.

"La Technique Cinematographique." By Leopold Löbel. Paris: Dunod et Pinat. Price Fr. 10.

A volume dealing comprehensively with the technical and practical sides of the cinematograph is one which the importance of this branch of industry has long justified. In this country the history of the subject has been well treated in "Living Pictures," by Mr. Hopwood, whilst the practical details of cinematograph operating and projection have been the subject of several excellent manuals. But no author has yet dealt so fully and comprehensively as M. Löbel in the work before us, which is a large volume of 324 pages, and deals with the mechanism of cinematograph cameras and lanterns, with the sources of light for projection, with the taking and printing of film negatives and with the colouring, toning, and tinting of the positive films. M. Löbel, as director of the Lux Company of cinematography, has a first-hand experience of his subject, and has written freely of the endless technical details connected with the manufacture and projection of cinematograph pictures. The volume is very freely illustrated by upwards of 300 drawings and photographs, and should assuredly be welcomed by the large number of persons connected with the trade, both in this country and on the continent.

"Die Photographischen Objektive." By Dr. J. M. Eder. Halle: W. Knapp. Price Mks. 12.

This volume of over 300 pages forms the fourth part of Vol. I. of Dr. Eder's encyclopædic "Ausfuhrliches Handbuch," and is a third and revised edition of the volume which last appeared in 1891. It is not a treatise on the optics of photographic lenses on the lines of other volumes, mostly by German writers. It is more correctly described as a record of the optical properties and construction of the many types of photographic lenses past and present. It includes also chapters dealing with methods of testing lenses as well as others dealing with optical accessories for the lens, such as diaphragms, light-filters, etc. In this task of passing in review the great progress which has been made within recent years in the manufacture of photographic objectives, the author has had the assistance of Dr. R. Steinheil, of Munich, by whom the introductory chapter on the general properties and aberrations of a photographic lens has been written. The numerous diagrams of lens constructions, and the equally numerous references to original sources, such as patent specifications, etc., make the volume an extremely useful one to those who have occasion to study the subject from either the scientific or commercial standpoints.

Outdoors with the Camera.—In the latest number of the "Photo-Miniature" (No. 117), methods of handling special subjects in the fields of landscape, seascape, street photography, etc., are dealt with, whilst the advice given is well emphasised by an excellent series of reproductions. The amateur worker, who is at times apt to think that the camera must be laid aside on the return from a holiday tour, should derive much encouragement and information from a study of this brightly written monograph. The "Photo-Miniature" is at present obtainable only direct from the publishers, Messrs. Tennant and Ward, 122, East Twenty-fifth Street, New York. Price 25 cents per copy.

The Oil Process.—A recently issued volume of the "Encyklopædie der Photographie," published by W. Knapp, Halle a/S, deals with the oil printing process. The author, Dr. F. Fuhrmann, after briefly tracing the process from Poitevin to its application by Rawlins and Demachy for pictorial purposes, deals with the materials and equipment in the way of papers and brushes with the commercial inks suitable for pigmenting and with the formulæ and manipulations for practical work. The volume is illustrated by a number of useful diagrams and photographs, showing the manipulation of brushes in applying the pigments. It contains, also, a few supplemental plates, reproduced from oil prints, which perhaps scarcely do full justice to the oil print as a means of pictorial representation. The volume is, however, a most satisfactory guide to the process, and should be appreciated by readers of German. Its price is 2 Mk. 80.

Flashlight Photography.—A new edition of the handbook on flashlight work by Herr Hans Schmidt has just been issued by W. Knapp, of Halle, under the title "Das Photographieren mit Blitzlicht." The author deals very thoroughly with commercial instruments for magnesium light, both by means of ribbon and powder, the latter blown through a spirit flame. He emphasises, however, the superior method of burning a flash-powder in a suitable tray, and describes the various means, mechanical, electrical, etc., for igniting the powder. The influence of the shape of the tray, etc., on the size and speed of burning of the powder is the subject of a chapter, whilst a considerable number of pages are devoted to means of avoiding the smoke nuisance in flashlight work. The practical use of flashlight in studio and at-home portraiture is dealt with in a series of diagrams, and the volume concludes with instruction in the exposure of plates and the choice of lenses, etc., for flashlight work. The price is 3 Mk. 60.

## New Materials, &c.

Noctona Christmas Postcards.—Messrs. Griffin's point out that for the profession they supply these cards in lots of 100, and, without extra charge, include one set of the greeting designs.

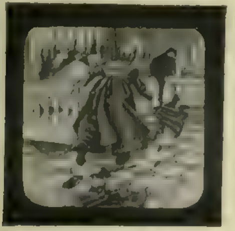
A Fixing Accelerator.—The Lumière N. A. Company, 89, Great Russell Street, London, W.C., have just issued a new preparation under the name of "Fixing Accelerator." It is a substance in the composition of which ammonium chloride is used, and advantage thus taken of the use of this material in hastening the fixing action of hypo. In certain branches of work, such as press photography and portraiture of the "while-you-wait" order, such an addition as this to the fixing-bath is an undoubted convenience, and the preparation supplied by MM. Lumière has proved itself in our hands efficient in reducing the time of fixing very considerably. The accelerator is supplied in packets containing sufficient for addition to 35 ozs. of fixing-bath at the price of 3d. each.

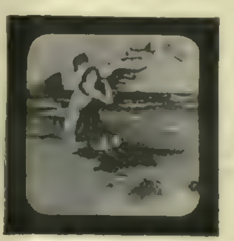
Dry-Mounting Tissue.—Under the name of "Adhesive Papers" MM. Lumière have placed on the market, through their London firm, the Lumière N. A. Company, 89, Great Russell Street, London, W.C., a tissue for the dry-mounting of prints which, so far as we can judge from its appearance and behaviour in use, is prepared by the now well-known method of saturating a tissue paper with a preparation of shellac and other resins. The paper is supplied in sheets of almost all sizes, from 24 x 20 inches down to the 60 x 45 mm. of the now popular vest-pocket cameras. The following are the prices in one or two of the more generally used sizes:—10½ x 8¼ inches, 11d. per dozen, 5s. 6d. per 100; 7 x 5 inches, 6d. per dozen, 3s. per 100; 4¾ x 3¼ inches, 4d. per dozen, 1s. 3d. per 100.

Bromide Black.—Under this name Messrs. Wallace Fidler and Co., Carnarvon Road, Barnet, N., supply a specially prepared black powder of extreme fineness for delicate work with the stump, etc., on carbon, platinum, and smooth-surface bromide prints. The powder is readily applied with the stump, chamois leather, or a bit of linen drawn over the finger, whilst its easy removal with rubber allows of high-lights and other parts of the subject to be accented being put in with the greatest readiness. In the case of bromide enlargements a simple treatment with pumice powder applied on cotton-wool provides an efficient surface for the subsequent work. The black is supplied at 1s. per packet, or with a set of background stencil-designs, at 2s. 6d., post free. The designs provide a guide to the operator in putting in cloud backgrounds, clouds of various shapes in landscapes, and, in conjunction with the black, should be appreciated by those having to work up prints or enlargements or apply treatment to the backs of negatives.

**Screenolene.**—The Vanguard Manufacturing Co., Maidenhead, have just issued under this name a preparation giving an absolutely opaque coating on glass, on which titles, announcements, etc., may then be written with a fine stylus or needle. Such announcements —in white letters on a perfectly black ground—are preferable as a rule to those in black lines on a clear ground, since there is less labour involved in cleaning the glass and cover-glass, and defects of draughtsmanship or handwriting are perhaps less noticeable than when a clear ground is used. The preparation is simply applied with a soft brush to the warmed glass: it dries within a minute or two in a warm place, and the coating is of a soft and yielding, though firm, nature, which allows of fine writing being done without any raggedness of the lines. A most useful preparation for the lantern lecturer, science teacher, or any persons having to make use of the lantern for business or educational purposes. "Screenolene" is supplied in tins at 1s. each, sufficient for a very large number of lantern-plates.

**Lantern-Slides of the "Water Babies."**—Messrs. W. Butcher and Sons, Ltd., Camera House, Farringdon Avenue, London, E.C., have just added to their "Junior" series of lantern-slides a set illustrating Charles Kingsley's story, reproduced in colours from the drawings of Warwick Goble. The slides, although prepared by a lithographic method, are remarkably transparent and free from grain. The set of 24, complete with reading, is supplied in neat cloth carrying case at 10s. 6d.





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### CATALOGUES AND TRADE NOTICES.

**Meyer Lenses.**—A full, large, and very handsome illustrated price-list of the lenses manufactured by Messrs. Hugo Meyer, of Goerlitz, has just been issued by the English agents, Messrs. O. Sichel and Co., 52, Bunhill Row, London, E.C. Messrs. Meyer are makers of all series of anastigmat, portrait, and telephoto lenses, as well as of casket sets and light-filters. The list very clearly describes the properties of the objectives, and points out the types most suitable for any given class of work. As the agents offer to send any lens on an eight-day trial, the new list should be of interest to professionals requiring a new objective for particular work.

**Lantern-Slides.**—Messrs. Newton and Co., 3, Fleet Street, London, E.C., send us their supplementary list of lantern-slides for the season 1911-12. The catalogue runs to 54 pages, and includes large numbers of new sets of slides of religious subjects, travel, art, and natural history. We note that Messrs. Newton have now ready a set of 47 slides from negatives by Professor R. W. Wood illustrating photography by ultra-violet and infra-red rays; also a set dealing with the marvels of modern photography. The list amply justifies Messrs. Newton's leading position in the lantern world.

**Graflex Cameras.**—Two handsome price lists reach our table from the Folmer and Schwing division of the Eastman Kodak Co., 12-14, Caledonian Avenue, Rochester, N.Y. One deals with the many types of "Graflex" reflector camera and the accessories manufactured by the company for use with them. The second is devoted chiefly to a large series of reproductions of photographs illustrating forcibly the use of a high-speed shutter in securing pictures of moving objects, as well as of the range of power which is granted to the practical photographer employing a camera of the reflex type. No one, we think, can study this latter list without being convinced that the conveniences and facilities which attach to this form of camera outweigh the drawbacks of bulk and weight which are inherent in the reflector method. The lists are fully deserving of a careful study. They may be obtained on application to the Folmer and Schwing Company.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, November 24.

Cowlairs Co-operative Camera Club. General Meeting.
Hampshire House Photographic Society. "Egypt and the Holy Land." W. A. Brown.

### Saturday, November 25.

Huddersfield Naturalist and Photographic Society. Exhibition of Radiographs of Shells and Photomicrographs W. H. Sikes and H. G. Brierley.
Bowes Park and District Photographic Society. Annual Dinner of Societies Affiliated to the R.P.S.

### Sunday, November 26.

United Stereoscopic Society. "How the U.S.S. See Life." A. T. Mole.

### Monday, November 27.

Bradford Photographic Society. "Bromide Enlarging." J. R. Redfearn.
Bowes Park and District Photographic Society. "Ways and Means in Photography." Burroughs Wellcome and Co.
Dewsbury Photographic Society. "Holiday Rambles." Alfred Darley.
South London Photographic Society. "Amateur Photographer and Photographic News" Prize Slides.
Bath Photographic Society. "Peru and the Country of the Incas." H. E. Blackett.
Marylebone Camera Club. Annual General Meeting.
Scarborough and District Photographic Society. "Photography and Focus" Prize Slides.
Leeds Camera Club. "Making and Finishing Prints." W. Thomas.
Southport Photographic Society. Outing Print Competition and Members' Slide Night.
Southampton Camera Club. "Odds and Ends in Photography." F. H. Burr.

### Tuesday, November 28.

Royal Photographic Society of Great Britain. "Rambles around Zermatt and Arolla," partially illustrated with Autochrome slides. Dr. H. Roger-Smith
Dumbarton, Denny Institute Photographic Society. "Negative Retouching." John Currie.
Hackney Photographic Society. "Telephotography." E. Marriage.
Sheffield Photographic Society. "With Cycle and Camera in North Wales." Arthur Black.
Nelson Camera Club. Autotype Carbon Demonstration.
Leeds Photographic Society. "Wells—its Cathedral and Neighbourhood." A. E. Hasse.
Manchester Amateur Photographic Society. "Borrowdale." W. Sinclair.
Halifax Camera Club. "Retouching." W. Bell, for Gevaert, Limited.

### Wednesday, November 29.

West Surrey Photographic Society. "Photography" Prize Slides.
Huddersfield Naturalist and Photographic Society. "From Chester to Holyhead." Adam Houghton.
Croydon Camera Club. "Carbon Printing." H. P. C. Harpur.
Lyceum Club Photographic Circle. "Bromoil Process." C. H. Hewitt.
Borough Polytechnic Photographic Society. 1911 Affiliation Slides.
Coventry Photographic Club. Exhibition of R.P.S. Affiliation Prints.
Sale Photographic Society. Portfolio Night.
North Middlesex Photographic Society. Technical and Lecturettes. Print Competition—Night Outing, Hyde Park.
Partick Camera Club. "An Irresponsible Causerie." Peter Mitchell.
Ilford Photographic Society. "Some Bye-Paths of Architecture." F. G. Emler.

### Thursday, November 30.

Chelsea and District Photographic Society. "Olla Podrida." Members.
Photographic Society of Ireland. "Enlarging." F. J. Prideaux.
Liverpool Amateur Photographic Association. "Glimpses of Life and Scenery in the Alps." Percy Lund.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Flower Photography." W. H. Atkinson.
Sutton Photographic Club. A Discussion on Orthochromatic Plates.
London and Provincial Photographic Association. "Bichromate Printing." A. E. Smith.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, November 21, the president, Lord Redesdale, in the chair.

Mr. W. B. Ferguson, K.C., read a paper describing the use of a neutral graduated gelatine screen as a means of exposure and density-measurements in sensitometric work. When Dr. Goldberg published his method of preparing a wedge-form screen of neutral colour, he (Mr. Ferguson) at once wrote to the firm of Berlin opticians who were stated to be able to supply the screens. But he was informed that if he would write again in six or nine months he might perhaps be able to obtain a screen. However, he was quickly placed in possession of one of the wedge-screens by Messrs. Ilford, Limited, to whom, and to Mr. F. F. Renwick, of that firm, he was greatly indebted for much assistance. Mr. Ferguson then described the arrangement of a wedge-screen for giving a series of graduated exposures, increasing in a definite ratio, to a photographic plate. This exposing machine consisted of a long, narrow box, at one end of which was placed a standard light, and at the other a dark-slide, in which both the wedge-screen and the plate to be exposed were placed. Mr. Ferguson dealt on the blackboard with the calculations necessary for determining the places along the screen at which a series of exposures of, say, 1, 2, 4, 8, etc., would be given to a plate. He then turned to deal with the construction of the instrument in which the wedge-screen was used for the measurement of densities on developed test-plates produced in the exposing-machine. Without the numerous photographs and diagrams of the apparatus a brief description of it would be of little service, but Mr. Ferguson explained the method of reading off densities from a calibrated scale attached to the wedge-screen.

Mr. F. F. Renwick followed with a paper in which he dealt with some other applications of the wedge-screen, particularly for the reading off of the development factor of a plate without recourse to density-measurements. The method was based on placing the developed strip of plate (exposed behind a wedge-screen) again in contact with the screen, and turning it until it showed an even density, the angle being a measurement of the development factor of the strip. Mr. Renwick showed how this method could be used for development factors of various magnitudes.

In the subsequent discussion Mr. Sanger-Shepherd referred to Warnerke's early use of a wedge-screen for sensitometric measurements, and to the difficulty of preparing even screens when using lamp-black. It was much easier to make wedge-screens with Indian ink, but in manufacturing density-measuring instruments closely resembling that described by Mr. Ferguson, he had found it sufficiently accurate to make use of a developed plate as an exposing medium.

Mr. Alfred Watkins said that one drawback to Mr. Ferguson's instrument was its inability to measure low densities, but for a great deal of sensitometric work he could see that it was a most useful instrument. In regard to the method which Mr. Renwick had described, it was evident that they had both quite independently lighted upon the same idea, but he thought he was perhaps entitled to any credit of priority, as he had briefly described the method in the handbook on "Photography," recently published by Messrs. Constable.

Dr. C. E. K. Mees strongly dissented from the reference made by Mr. Sanger-Shepherd to the inferior accuracy of polarising photometers. If, as was stated, Hurter and Driffield used such photometers, they must have been of a very imperfect type; at the present time polarising photometers were the most accurate and convincing of all density-measuring instruments. He thought Mr. Ferguson's apparatus would be improved by using, in place of the Albrecht rhomb, a bi-prism, which would give a much sharper image of the two fields to be compared.

Mr. Ferguson, in reply, said he was aware that his apparatus was not suitable for densities less than .25, but in practical work the densities which commonly required to be measured were well within the scope of the instrument.

Mr. Renwick, in reply to Mr. Watkins, said that he was aware of Mr. Watkins' publication of the method, and had duly acknowledged it in his written paper. He had, perhaps, gone a little further than Mr. Watkins in measuring development factors greater than 1.

On the proposition of the chairman, a hearty vote of thanks was accorded to the readers of the papers.

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**Croydon Camera Club.**—Mr. E. E. Hill, representing Messrs. Chas. Zimmermann and Co., last week demonstrated "Agfa" flashlight photography, and succeeded in interesting as well as amusing the large audience present. The lecturer has a most incisive way of dealing with his subject, and a freshness of thought concerning theoretical principles underlying photographic procedure, which was most invigorating.

The Agfa powder, he said, as packed with its two constituents separate was perfectly harmless, and equally so when mixed ready for use; moreover, it would keep in good condition almost indefinitely, if stored in a dry place. Notwithstanding all the safety involved, the lecturer persisted in alluding to the powder as an "explosive," and its combustion as an "explosion," emphasising his remarks by a continual shaking of a bottle of the mixed powder. Indeed, the words "explosion" and "explosive" and the aforesaid shakings were so often repeated, that a nervous, and generally silent member sprang to his feet, and in agonised accents implored the lecturer to stop waggling the bottle about. The member was justified in expostulating, for Mr. Hill was well illustrating the way *not* to handle the compound. Flashlight powders, whatever their make, or however safe they are claimed to be, should be handled with care at every stage, and no unnecessary, even if extremely remote, risks be run. In all respects the powder appeared to be most satisfactory, possessing high actinic value and quickness of ignition (about 1-30th second with an average charge), with a minimum of smoke. An ingenious contrivance for lighting the powder was also shown in operation, acting on the old flint and steel principle, which, the lecturer said, on contact emitted a frictional electric spark, and so caused ignition, a beautiful illustration of how modern electrical views are chasing away old and erroneous notions. Hearty laughter was occasioned by an innocent question of Mr. Hill's, as to whether any present had considered the question of "filters." There is no outward or visible sign of the Panchromaniac, but the lecturer, quite unawares, was surrounded by them. However, when Mr. Hill said "filters," he meant diffusing screens, which obviously could be used to advantage in softening a somewhat harsh illuminant. A capital group of the company was then taken on an Agfa isolar plate, developed with the ever-handy, and always active Rodinal, and fixed in a special ultra-rapid fixing-bath, supplied by Messrs. Zimmermann. It is claimed for this bath that all traces are removed from the film with five minutes' washing, which seems to point to the use of an ammonium salt, whose relative advantages and disadvantages, speaking from memory, were investigated by Messrs. Lumière some years ago.

It was in reference to this fixing-bath that Mr. Hill achieved a feat unparalleled in the history of the club. Quite gently, but very decidedly, he, so to speak, simultaneously laid Dr. Mees and Mr. E. A. Salt to rest, and the bewilderment of the defunct was delightful to behold. It occurred in this way. In the discussion these two members were rash enough openly to express more than a doubt about the complete removal of the hypo in the time named. "The negative is completely and thoroughly washed in five minutes," repeated Mr. Hill, sententiously, and put the matter beyond cavil by adding in tones which did not brook contradiction, "I know it, I say so, and it is so." "What test did you apply?" came a feeble question. "A negative washed for five minutes and dried shows not the faintest trace of adherent powder," was the crushing reply. By this time the members, appreciating the real joy of the situation, refused the erring, and now fast-expiring couple, a further hearing. "Not to the point!" came in shouts, as Mr. Salt tried in vain to evolve something in favour of the joint contention, based on the extreme delicacy of the test just mentioned. Altogether, quite an instructive and entertaining evening, which terminated with a hearty vote of thanks to Mr. Hill.

**North Middlesex Photographic Society.**—Recently, Mr. Chas. H. E. West gave before the North Middlesex Photographic Society an interesting lecture on his travels in Sicily and the old City of Pompeii, illustrating the descriptive matter with about 140 lantern views from photographs mostly taken by himself. After showing some fine slides on the chief edifices in Palermo, the lecturer gave a vivid description of the old temples at Girgcuti, notably those of Concord, Juno Lacina, Hercules, and so on, then numerous views of one of the grandest vistas in Europe, namely, that from Taormina, showing Mount Etna in the distance through the African marble column of the Græco-Roman Theatre. From here the audience was taken to Messina, the seat of the appalling disaster on December 28, 1908. The views depicted the enormous havoc done to the city by the earthquake. Then gliding across the Straits of Messina to the city of Pompeii, Mr. West placed before his hearers a set of views, which were subsequently described by the mover of a vote of thanks as the finest set he had seen on the ancient city. Photographs were shown of old streets, showing the cart ruts worn by chariots in the days of the first century, old houses, delightful Autochrome slides of the dancing girls at Herculaneum, typical bits of architecture, and so on. The lecture concluded with views of Vesuvius.

# Commercial & Legal Intelligence.

Ilford, Limited.—The directors' report for the year ended October 31, 1911, to be presented at the fifteenth ordinary general meeting on Tuesday, November 23, is as follows:—The directors report that, after making allowance for depreciation and provision for doubtful debts, the net profit for the year is £35,809 18s. 2d. This amount, with £4,648 18s. 3d. brought forward from last year, gives £40,458 16s. 5d. for appropriation. The directors have paid the dividend on the 6 per cent. preference shares amounting to £11,400, leaving a balance of £29,058 16s. 5d. From this balance the directors recommend that £12,000 be set aside for writing down goodwill, investments, plant, etc., and that a dividend of 6 per cent., amounting to £11,400, be paid on the ordinary share capital for the year ended October 31, 1911. This will absorb £23,400, leaving £5,658 16s. 5d. to be carried forward. The articles of association of the company have been rendered obsolete by recent legislation. New articles have been prepared with a view to bringing them into line with existing law and custom, and a special extraordinary general meeting will be held at the termination of the ordinary general meeting for the purpose of considering, and, if thought fit, passing the new articles. The new articles make no alteration in the present voting power of the preference or ordinary shareholders.

Colour Photography.—At the London Bankruptcy Court last week, before Mr. Egerton S. Grey, Official Receiver, the first meeting of creditors was held under the failure *re* Edwin Alexander Turner, lately residing at Cambridge House, Mayow Road, Forest Hill, S.E., and now residing at Bedford Hill, S.W.

After dealing with the proofs of debt lodged, the Chairman stated that the debtor formerly carried on business in Glasgow in connection with a colour photography business. The bankrupt had been engaged in that process since 1904. He had also been interested in the Hubbard Range and Oven Co. Prior to 1902 he lived in Australia, and when he came to this country he was worth about £28,000. He estimated his actual loss in connection with the Hubbard Range Co., at £9,000. He had also lost large sums of money in connection with the process of colour photography. During 1909 and 1910, he endeavoured to develop the Fellbridge Place Estate, East Grinstead, but his interest in that estate had now expired. The petitioning creditor's debt was incurred in connection with that matter, the petitioner being a moneylender. He had also lost money in connection with a Cold Storage Company, which did not go to allotment, and in regard to which litigation was now pending against the underwriters. The debtor had not yet prepared his statement of affairs, but estimated his unsecured liabilities at £1,500 and no assets. He had previously failed in 1906, when he was adjudicated bankrupt in the Greenwich County Court, and had never applied for his discharge. However, he believed a dividend of 12s. in the £ was paid to the creditors under that failure. His present failure was caused through losses in connection with the various enterprises with which he had been connected. The Official Receiver added that there was no proposal of composition before the meeting, and it was a "very" summary case, inasmuch as if the debtor had any assets they would be claimed by the trustee under the previous bankruptcy.

Eventually the estate was left in the hands of the Official Receiver for summary administration in the usual manner.

South-Coast Winter Travel.—A prospectus of the many places in the South and West of England possessing great attractions for the winter holiday-maker, and speedily reached by the South-Western Railway, comes to our table from the Tourist Department of the Company, Waterloo Station, London, S.E. Along the coast, from Southampton to the towns on the north and south of Devon and Cornwall, the business man, be he photographer or in need of change from the business of photography, can choose from a score of places where he can find sunshine, soft refreshing air, and the opportunities for recreation. Week-end tickets to these Hampshire, Wessex, Devonian and Cornish resorts—a true English Riviera—are issued by the London and South-Western Railway Company at very moderate rates.

# News and Notes.

Photographic Exhibition in St. Petersburg.—A prospectus of the exhibition to be held in June next year in St. Petersburg has been published in German, and may be obtained from the organisers of the exhibition, the "Photographische Neuheiten," 5, Kasanskaja, Str., St. Petersburg.

Mr. Drinkwater Butt, F.R.P.S., has this week removed from his former address at Cathnor Road, W., to 2, Margravine Studios, Baron's Court, W. (lately occupied by Mr. Elwin Neame), where he will continue to carry on his business as a designer of studios and instructor in and adviser on photographic matters in more convenient and favourable surroundings.

Among Mr. Butt's recent plans are those for a studio and photographic premises at St. John's Wood for Miss B. Belton, a former pupil of Madame Lallie Charles, which have just been approved by the L.C.C., and he is also announced to lecture on "The Fitting-up of the Studio," on December 12, at the R.P.S.

Ensign Competition.—Mr. H. J. Brett, 38, Woodville Road, Bexhill-on-Sea, is the winner of the "Ensign" Roll Film Competition for November. Houghtons, Ltd., offer a four-guinea camera every month for the best negative on "Ensign" film. It is interesting to note that during the winter months the entries for this competition are much lower than in the height of the summer, when cameras are being used everywhere. Intending competitors are advised to send their negatives in during the winter if they want to increase their chances of winning the prize camera. The entries close on the third of the month. Entrance is free, and a competition form is enclosed with every spool of "Ensign" film.

The Late Mr. J. W. Thomas.—We regret to record the death of a well-known professional photographer of Colwyn Bay, Mr. J. W. Thomas, at the age of sixty. Mr. Thomas was a native of Preston, and spent the greater part of his life in North Wales. When quite a young man he went to Llandudno as assistant to Mr. Edge, then the leading photographer in the district, with whom he remained twelve years. In 1877 he started business on his own account at Colwyn Bay, at that time a mere hamlet. During a life-long residence in the Welsh watering-place, Mr. Thomas took an active interest in its public affairs. He was Chairman of the Technical Education Committee, and also for many years actively connected with the Wesleyan Church.

Photo-Electric Cells.—The potassium photographic cell is extremely sensitive to light, and is being used (writes the "Times") by Professor Rosing for experiments in tele-vision in place of selenium, its resistance when it is illuminated falling, owing to the emission of electrons by the potassium cathode. It has recently been used for measuring the luminosity of terrestrial bodies, there being a direct relation between the resistance and the intensity of light falling upon it. Some important work has been done recently by Geitel and Elster in increasing its sensitiveness, this having been accomplished by passing an electric current for a short time through the tube. The tube containing the potassium is filled with hydrogen, and the effect of the current is to cover the potassium with a greenish film, which parts with electrons very readily under the influence of light. This film, and the extra sensitiveness due to it, are not permanent, but permanence has now been obtained by replacing the hydrogen, after the formation of the film, with argon.

Panoramic Camera.—In the July number of the Tokio "Sugaku-Buturigakkwai Kizi" (as recorded in an abstract in "Nature"), Mr. S. Nakamura describes a panoramic camera by means of which the whole horizon (360 degrees) can be photographed on a stationary film, which is bent into a cylinder and suitably supported inside the camera wall. In order to get the image on the film it is necessary to have two reflecting surfaces parallel to each other and inclined at an angle of 45 degrees, with the vertical axis of the camera, the one above the camera to receive the light from the view, and the other within to receive it from the upper mirror and reflect it to the film. The lens may be horizontally in front of either of the reflectors or vertically between them, and in making an exposure the complete optical system revolves on its vertical axis. The chief optical condition necessary in all such apparatus is that the second nodal point of the objective must be at the centre of rotation, and in this case in the centre of the camera. With ordinary photographic objectives, in which the nodal points lie within the objective itself, it is difficult, if not impossible, to fulfil this condition in these circumstances. The author therefore uses a lens which consists of a negative as well as a positive combination, as in telephotographic lenses, so that the nodal points are thrown well outside the objective; it is then only a matter of construction to fulfil every necessary condition. The camera may be compared to a large pill-box, but the lid, which carries the rotating optical system, is as deep as the box within which the film is held by two rings, one notched or marked to indicate on the photograph the azimuths of the objects on the picture. A right-angled prism is preferred for the upper reflector, and the rotation is done by hand by means of a toothed wheel and endless screw.

Two Useful Reducers.—In a communication before the Swadlincote Photographic Society, Mr. F. W. Edwards, who was recently awarded a research scholarship in photo-chemistry, tenable at the Derby Technical College, gave two methods of reducing negatives, which processes he claimed to be very efficient, uniform in action, and non-staining.

The first and easiest method was to reduce the dense negatives in a bath, composed as follows:—

| | |
|---|---|
| Mercuric (or mercurous) nitrate | 1 oz. |
| Water | 20 ozs. |
| Strong nitric acid | 20 drops. |

The negatives require half an hour's washing after reduction in this bath. A weaker mercury bath serves as a clearing solution.

Another method of reduction which Mr. Edwards advocated consists of bleaching the negative in a 5 per cent. solution of mercuric sulphate (not chloride), and blackening in the following solution, which is merely the ordinary "No. 2" or soda solution used in the "Ilford" pyro-soda developer, but diluted with water:—

| | |
|---|---|
| Sodium carbonate | ½ oz. |
| Sodium sulphite | ½ oz. |
| Water | 1 pint. |

Mr. Edwards also pointed out that if the negative was bleached in mercuric chloride and blackened in the above dilute soda solution intensification would result, but if sulphate of mercury was substituted for the bichloride of mercury in the bleaching-bath the negative would be reduced, the reduction being attributed by Mr. Edwards to the formation of a certain amount of sulphate of silver in the bleaching process, which substance is one of the few silver salts soluble in water.

Rytol in Press Photography.—Mr. H. Baldwin, war correspondent of the Central News, who has just returned from Tripoli, succeeded in obtaining some excellent snapshots, and his success in getting through news and photographs, during a period when strict censorship was making such things scarce, has brought him fame. He used "Tabloid Rytol" as his developer, and has forwarded to the manufacturers, Messrs. Burroughs, Wellcome, the following interesting report on his experiences:—"I have just returned from Tripoli, where I was despatched by the Central News to do the war in news and photographs, and I am sure you will be pleased to hear that 'Tabloid Rytol' developer was of invaluable assistance to me out there. In the whole course of my experience I have never had to develop under such adverse conditions, most of my developing being done at night in my hotel bedroom, with only a very scanty supply of water, and no facilities for washing, having to leave the films soaking all night in what was by the morning lukewarm water, but am glad to say I never had one case of frilling after giving them a bath in your alum hardener. One point I should like to emphasise is the great rapidity with which 'Tabloids' dissolve. I had to use the butt-end of my tooth brush to stir them up, and empty soda bottles as measures. On one occasion I developed in the open air at night by the side of a well, with equally good results. I would not, on any account, go on similar work without a full supply of 'Tabloids,' as I consider them invaluable for such expeditions, especially for a hot climate like North Africa." The photograph reproduced is one of a large number by Mr. Baldwin which we have had an opportunity of examining.

## Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

### CHEMICAL POISONING.

To the Editors.

Gentlemen,—I can sympathise with your correspondent, Mr. Sparrow, as I have suffered all the summer from the same complaint. But I believe I have fared worse than Mr. Sparrow, as it has also attacked my right wrist and my forehead, and the itching is something intolerable; it really has to be felt to be believed.

No doubt the forehead and wrist have been infected from the hands. I have found the best remedy to be an ointment composed of one dram carbonate of zinc, 8 grains salicylic acid, 2 drams lanoline, and vaseline to make one ounce.

There is no doubt the complaint is caused by the diamidophenol, but once troubled any chemical seem to affect you. I should recommend any worker with diamidophenol to wear rubber gloves. I have had some very pliable white rubber gloves from Gamage, and they are very inexpensive, and answer the purpose admirably, even for the hot hypo-alum bath.—Yours truly, C. N.

November 18, 1911.

### AN ACCESSORIES EXCHANGE.

To the Editors.

Gentlemen,—In reference to your remarks in "Ex Cathedra" column of the "B.J." issue, November 17, 1911, re accessory exchange, having had long and varied experience in photographic dealing, as also professional studio work, I have for some time past contemplated establishing an exchange, conducted on similar lines to those suggested in the paragraph in question, charging a nominal commission, say 10 per cent., minimum 2s. 6d., to defray cost of advertising, printing, stationery, postage, ledger work, etc.

Should you consider that this scheme would meet with the requirements and approval of the brethren, I should esteem it a favour if you would insert an announcement in your "Trade Notices" column to the effect that I invite correspondence from those desirous of disposing of their surplus accessories, backgrounds, etc.—I am, gentlemen, yours faithfully, H. Harcourt.

The Accessories Exchange, 82, Mawson Road, Cambridge.

# Answers to Correspondents.

**** All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C." Inattention to this ensures delay.*

**** Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

**** Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., *24, Wellington Street, Strand, London, W.C.*

**** For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**Photographs Registered:**

J. V. Thomas, "Langley," Lordswood Avenue, Southampton. *Photograph of R.M.S. "Olympic" in mid-ocean.*

J. E. Stutter, 11, Errington Road, Colchester. *Photograph of the Drum Horse of the 20th Hussars.*

**Anne, and Others.**—In our next.

**H. C.**—Fallowfield, 146, Charing Cross Road, London, W.C.

**Sheldon Braithwaite.**—The late M. Antoine Lumière, whose death took place some months ago, was the founder and head of the firm of dry-plate manufacturers of Lyons. The A. and L. Lumière, joint authors with M. Seyewetz of numerous papers, are his sons.

**Sale of Ammonia.**—Would you kindly send me particulars of the future sale of ammonia solutions which contain more than 5 per cent. of free ammonia?—H. Smith.

For full particulars we advise you to apply to the Pharmaceutical Society, Bloomsbury Square, London, W.C.

**The "Nature Photographer."**—I sometimes see mention of the "Nature Photographer" in the "B.J." Kindly say where published. Have inquired of W. H. Smith, etc., but they do not know.—Interested.

The editor, and, we believe, publisher, is Mr. Carl Edwards, Woodlesford, Leeds.

**Colonial Photographic Journals.**—Would you very kindly inform me the names of papers (photographic) similar to yours published in Australia and South Africa?—E. Bonnett.

There is none in South Africa. In Australia, the "Australian Photo-Journal," 386, George Street, and "Australian Photo-Review," 379, George Street, both of Melbourne.

**Gurtner Colour Process.**—Can you tell me where I can get information about Gurtner's two-colour process of colour photography? Is it described in your "Journal," and if so, will you kindly let me have the number, in order that I may send for the same?—P. G. Bull.

In brief, November 1, 1907 ("Colour Photography" Supplement, p. 88).

**T. W. V.**—The camera which you have sent is evidently an old piece of apparatus for the making of midget photographs; but the use of these separate small plates and dark-slides has been practically supplanted by the more recent repeating-backs, sold by Billcliff, of Manchester, Fallowfield, and others, which allow of these small photographs being taken on plates of the standard sizes.

**Colouring Photographs.**—Can you tell me the best method of colouring photographs? I have tried ordinary dyes, but find they fade after a short time in a strong light. I have also tried coloured pencils, but cannot get smooth enough surface. What would you advise me to use?—C. Wrate.

Either oils (for the heavier effects) or water-colours for the average run of prints, particularly platinums. Write to Winsor and Newton, Rathbone Place, for particulars of colours and handbooks.

**Flashlight.**—What amount of Agfa powder would be necessary to take a photographic group of about 1,000 people in room, and also the best lamp for the purpose, not too expensive?—Nightlight.

For such large work as this you will want a large dose of powder. We cannot say how much without knowing more of the dimensions. We advise you to get the full size Agfa flashlamp from Messrs. Chas. Zimmermann and Co., 13, Bartlett's Buildings, London, E.C. They also, if you will give them particulars, will be able to advise you as to exposure.

**Book on Colour Photography.**—Could you inform me through the medium of the "Journal" of a good, recent work on the subject of colour photography? I do not mean the sort that professes to treat on the subject, but which are glorified reprints of screen-plate makers' formulæ and instructions.—Geo. L. Stevens.

We fear the book we recommend may come within the category you condemn; but is, nevertheless, the only really recent work on colour photography. It is "Photography in Natural Colours," by Dr. E. König,, translated by E. J. Wall. (Routledge. 2s. 6d. net.)

**Printing Patent.**—I noticed a specification of patent for printing greetings, etc., on photographs by means of a strip of celluloid with title printed on it in last week's "Journal." This is a method which I, with many others no doubt, have used for years in printing titles on photographs. Do you think the patent will hold good? I think I have seen the method advocated in the "Journal."—W. E. Sorrell.

It is a wise saying that no patent is worth much that has not been fought out in a Court of Law. Without a good deal of examination of past literature we could not pronounce an opinion on the probability of the specific claims being upheld in an action.

**Use of Chalk in Toning-Bath.**—I notice several times lately in the "B.J." that "French chalk" is recommended as an addition to toning-baths to keep them neutral. You must have overlooked the fact that "French chalk" is a silicate of magnesium, and is insoluble in strong H.C.L., so it is not likely to do much good in a combined bath.—R. L. Boyd.

We presume you refer to the query on page 868, in which we overlooked the fact that French chalk was referred to by our correspondent. Of course, the facts are as you state, and French chalk is of no use in a toning-bath. Common chalk or carbonate of lime is the right material to use.

**Toning Lantern-Slides.**—Please let me know if there is any objection to following bath for toning lantern-slides:—

| | |
|---|---|
| Water | 2 ozs. |
| Acid acetate | 2 drams. |
| Ammonium molybdate | 10 grs. |
| Potass. ferricyanide | 4 grs. |

It appears in "The Practical Photographer," No. 3, under the Rev. F. C. Lambert's name. I do not think it is well known, but gives the most beautiful tones, from brown to a lovely golden yellow. Do you think the slides would be permanent or not?—R. L. Boyd.

We should say they would be permanent. Even uranium toned slides, when varnished and bound, are reasonably permanent.

**Studio Lens.**—I am at present using a 3B Dallmeyer Patent Portrait Lens in my studio, which is 30 feet long, but the disadvantage is the undue stopping down required to get, say, a cabinet portrait sharp. Is there a remedy for this, or can you recommend me a lens that would be more useful; would a Ross 3A or a Dallmeyer 3A be more satisfactory?—H. N.

With the length of studio which you have at your disposal, either a Ross or Dallmeyer 3A will be preferable to the lens you are using. You should, however, be able to get good cabinet portraits with your 3B without undue stopping down. Do you make the best use of your swing back in focussing? For full length figures one of the rapid Tessars would be very useful, but would be no better than the portrait lens for head and bust pictures, or three-quarter sitting figures.

**Colour Prints.**—1. Is it possible to produce a coloured positive from a monochrome negative? I think I remember reading in the "B.J." of some American who claimed to have discovered a process for same. And, in addition, several advertisements in the "B.J." columns give one the idea that some such process is in vogue. 2. If such a process exists, can you describe the methods of working same? 3. Mention is made of the "Heinman" process of colouring. Can you give particulars of this process also?

1. Yes, certainly. Multi-colour carbon tissue produces this result, and has been the subject of patents. Such tissue is, or was, manufactured and sold by the Berlin firm of Dr. Adolf Hesekiel. 2. We would refer you to the particulars given in our issue of June 30, last, page 500. 3. We do not know the method.

GELATINE FOR LITHOGRAPHIC PROCESS.—Will you please give me a formula for a thick, hard solution of gelatine, not insoluble? I wish to coat an aluminium plate with it, and then to form image on same, as in oil printing; then to be used, if possible, on lithographic machine. If you can give me any information on the subject, I shall be grateful, as it means a lot of work for me if it can be worked successfully.—D. MURRAY.

We are afraid this will be a little more difficult than it appears at first sight. Apparently what you want is a form of collotype, with a metal base instead of the usual glass one. We should advise you to consult any of the books on collotype, for example, Fithian's "Practical Collotype," published by Iliffe's; also different formulæ will be found in the "Photographic Annual" for 1911, under "Collotype," and Fritz's "Photo-Lithography," translated by E. J. Wall, might be useful.

COPYRIGHT.—I should be glad if you could tell me what course to take under the following circumstances:—A client has given a copy of his portrait taken by me to a magazine for reproduction. I claimed a reproduction fee, and the editor replies that the copyright of the portrait is with the owner who ordered the photographs and paid for them. What is the position of the photographer in such a case? Must not his consent be obtained and a fee paid to him, or are the sole rights with the customer who ordered and paid for the portrait?—F. A.

We are amazed that anyone should still be ignorant of the most elementary fact of a photographer's position in such circumstances. We can easily tell you what course to adopt. Write to the paper apologising for your application, and regretting that at the time you were unaware that the copyright in a portrait is the property of the person who employs or commissions the photographer.

CHANGE OF BERTH.—(1) I am in a very decent commercial situation, with the usual prospect of the average good assistant. Do you consider that there are better prospects in business (photography) abroad, say in Canada or Australia? (2) Do you believe it advisable for me to give up my studio portrait work, etc., to obtain higher remuneration by going into press work? If so, would you let me know of the best mode of procedure, as to approaching photographic press firms, etc., also the general prospects of the work? Thanking you gratefully in anticipation.—G. G.

(1) Undoubtedly there are better prospects for anyone in business for himself either in Australia or Canada. It depends chiefly on one's commercial instincts. (2) We regard the press field as more uncertain; certainly, it is more tempting, and the prospects better for a successful man. But the penalties for failure are liable to be heavier than in the more prosaic, less responsible routine of studio portraiture. Many of the most successful have shown their aptitude as freelances, and in default of any experience in press photography it will be little use for you to write to the press photographers or newspapers.

FLASHLIGHT, ETC.—(1) I want to use a small workroom for the purpose of taking photographs at night by flashlight. Should I be able to get fully-exposed negatives by the aid of a flashlamp with stop F/8 and plate speed 350 H. and D. (head and shoulder, ¾, and full-length portraits)? (2) I am in a position to purchase some odd lengths of cinematograph films depicting sports, industries, etc., and from some of the small positives I thought of making negatives and then prints or postcards for sale. Should I be infringing the copyright in any way, or doing anything illegal by so doing? Who would really hold the rights of reproduction if I were to make negatives as suggested?—LEN.

(1) Certainly, for such portraits it is not a difficult matter to get full exposure. The exposure of the plates is regulated by the weight of flash powder which is burnt. A few trials should put you right. Your only trouble will be in getting rid of the magnesia fume, for which purpose you will probably find it necessary to rig up some sort of a combustion chamber connected with the outside air. (2) Certainly you have no right to copy and multiply the photographs. As in the case of any other photograph, they are the copyright of those producing them, or of those commissioning the actual producers.

BACKGROUNDS IN ANIMAL PHOTOGRAPHS.—I enclose two reproductions of photographs of horses, and should be glad if you would kindly inform me how the backgrounds are obtained. I have the opportunity of photographing prize animals, and wish to avoid the usual unsightly background of brick buildings, etc.—A. G. HALL.

The particular reproductions you send have the appearance of having been made from photographs which have been blocked out (on the print) in white opaque, and details then put in roughly with a brush. To get similar results, for reproduction only, it would be best to block out the background in the negative with Photopake, and put in detail on the white ground thus produced in the print. But for obtaining a natural ground (from a suitable photographic negative) in the print, the usual methods of double printing must be used. One such is to block out the background from the horse negative, then print from this latter on to albumen and collodion paper, and on the still sensitive paper carefully cover the image of the horse with opaque gamboge water-colour. When thus dry, the print is placed under a background negative, and the latter printed in as deeply as appears desirable, the composite print being then finished off as usual. From it a new negative may be made in the camera if a number of prints are required.

ENGAGING A CANVASSER.—I have a small but high-class business, and have all the trade I want to keep myself going continually, but am confident trade could be increased if the district was worked by canvassing, as is frequently done in this part by strangers, who foist cheap and nasty work on the public and pass along to the next county. Now, I wish to stop this and increase my trade into the bargain, and think of engaging a canvasser for the same, as I have no time to work both ends myself. What would be a fair salary and commission to a capable man? The district is good, plenty of villages, large and small, and my prices are good. Good pay for good work is my motto. Also, is it usual for a canvasser to sign an agreement not to open a business within a certain radius of my own? This would be advisable in any case. Any advice on the subject would be welcome.—FAIR AND SQUARE.

While we are never favourable to canvassing in the photographic business, we are quite with you in recognising that it can be made the basis of an honestly conducted business. Unfortunately, it is so often found that canvassers embezzle moneys paid to them by customers, and for such fraud the proprietor of the studio suffers in reputation, as well as cash. Where, as in your case, there is a business of repute, it is most essential to be satisfied with the bonâ-fides of the canvasser, whose earnings, partly salary and partly commission, will be from 20s. to 30s. per week. We should certainly draft and stamp an agreement to the effect that the canvasser does not represent another photographic firm over the same ground on leaving your employ.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2691. Vol. LVIII. FRIDAY, DECEMBER 1, 1911. Price Twopence.

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## SUMMARY.

The "B.J. Almanac," 1912, is this day on sale throughout the United Kingdom.

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The intensely interesting address, delivered before the Royal Photographic Society by Lord Redesdale and concluded in this issue, will be read with pleasure by all photographers who, like the subject of the address (Leonardo da Vinci), base their work on the application of science to art. Lord Redesdale's emphatic preferences for delicacy and refinement in photographic pictorialism should go far towards discouraging the opposite tendencies in present-day photography. (P. 911.)

Formulæ past and present for combined development and fixing are given in an article by M. V. Crémier (p. 915), whose formulæ, however, as applied to English dry plates, we are not able to confirm. (P. 910.)

Preventive and remedial measures in cases of chemical poisoning are dealt with by ourselves on page 909, and by a correspondent on page 922.

The Lumière mercury intensifier, according to our recent measurements, is well adapted for improving the weak lower tones of an under-exposed negative. (P. 909.)

In Russia, so Mr. F. G. Aflalo writes to the "Times," hand-camera photography is not permitted without a licence, the terms of which forbid the holder from photographing anyone against their will. (P. 922.)

The use of resin as a substratum in making photo-engravings is the subject of a paragraph under "Photo-Mechanical Notes." (P. 918.)

Dark-room lamps, cinematography in colours, fireproofing fabrics, etc., figure among "Patents of the Week." (P. 920.)

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### "Colour Photography" Supplement.

M. L. Benoist, in a recent paper before the French Photographic Society, has described experiments showing that the use of a white backing-card, when exposing Autochrome plates, has no evil effect on either the definition or the colour-rendering, while it allows of reduction of exposure to about two-thirds. (P. 65.)

Dr. Novak gives a formula for the Autochrome light-filter when making flashlight exposures. (P. 68.)

The process employed at the Dover Street Studios of preparing colour prints is officially stated to be based on the use of bromide paper. (P. 68.)

## EX CATHEDRA.

**New Methods of Intensification and Reduction.** Last week we described the use as an intensifier of Lumière's mercury physical developer and also a modification of Eder's process of reduction, in which a re-developer is used that is incapable of carrying the process of reduction too far. Since writing those notes we have made measurements of the effects produced, and in the case of the intensifier we find that the result is not proportional to the original scale of gradation, but shows a far greater effect in the lower tones than in the upper ones. Graduated test slips were used, and the densities measured and plotted before and after intensification. In the straight portion of the curve, which resulted in one trial, the lowest density was increased three times, from .377 to 1.17, and the highest density twice, from 1.52 to 3.21. The two densities in the under-exposed portion of the curve were increased from .08 and .15 to .67 and .75, which involve increases of 8.4 and 4.9 times. The process is thus well adapted to improve the weak lower tones of a slightly under-exposed negative. The silver intensifier gives a similar effect, but in a smaller degree, and it seems that any process of physical intensification is likely to produce a proportionately greater effect in the lower tones. On the other hand, processes that involve bleaching and an after-blackening, such as mercury and ferrous oxalate, or the chromium process, tend to give a result that is proportionate throughout the scale. Only one intensifier so far as we know—Monkhoven's—tends to reduce the lower tones while it increases the upper ones, and so this appears to be an exceptional type of intensifier. The method of reduction by re-development was also submitted to measured tests, and the results in all cases showed that the reduction was as nearly as possible proportional throughout the whole scale. Re-development for half an hour at a temperature of about 55 degrees F. with the formula given (2 per cent. rodinal and 1 per cent. potassium bromide) lessened the density by about 40 per cent. If this is too much reduction the bromide can be lessened, or if more reduction is required the time can be shortened or the bromide increased. Some practical tests showed this process to be of great service, and we can unhesitatingly recommend it as safe and certain.

* * *

**Metol Poisoning.** This is a subject which figures almost every week in our answers column and has often taken up space in the pages devoted to correspondence. After many years' exemption from any trouble of the kind we have ourselves had experience of it and also of an effective treatment, and so we are now possibly in a better position to offer advice than we were before. The first symptom appears to be a violent irritation in the fingers, more especially between them, and this irritation is accompanied by the appearance of minute red spots so small that they may be easily overlooked. The next stage is the cracking of the skin; deep ruts appear, the skin scales off, and the irritation is then succeeded by great soreness. The remedy we applied was the ichthyol and resorcin ointment given in the Almanac, and a few applications speedily brought relief. Ichthyol soap, obtainable at any chemist's, we also found to be an excellent and very pleasant aid in the cure. When, however, the first symptoms have subsided, the process of skinning goes on for a long time, a month or so, and during this period hazeline cream seems to be a most satisfactory ointment and far more agreeable than the odorous ichthyol compound. Plenty of the cream should be used, and at frequent intervals. If at work the hands can be wiped free from grease, and still the effect will last for some considerable time, so long as the hands are not washed. The first attack of poisoning we had was not recognised. The irritation and skinning was a nuisance, but as we had dropped developing for a period of about three months matters righted themselves without any treatment. The moment, however, we got back to the dark-room the trouble came back in a worse form and was then recognised.

* * *

**Dark-room Precautions.** Our advice to readers is to take steps on the first appearance of the irritation, which may be taken as an infallible first sign. Use the ichthyol ointment at night and whenever it is convenient, use hazeline when the other is inadmissible, and ichthyol soap at all times for washing. At the same time the fingers must be kept out of the solutions; not only metol but all the others are bad for them while the skin is broken, and we are inclined to think that of these other solutions the usual acid fixing bath should be as carefully avoided as any. Rubber gloves should be looked on as essential if work must be continued, and care must be taken that these do not get torn. If they do they should at once be patched on the inside with thin rubber and some rubber solution. While wearing them the finger-nails must be kept trimmed very close, otherwise they will soon penetrate the finger-tips and let in the solutions under the nails, which is one of the worst places for it to act. If taken in time two or three months' care should see a perfect cure, but once the trouble has been experienced it is always likely to recur, therefore if metol cannot be dropped rubber gloves must be looked upon as a permanent necessity. The use of the ichthyol ointment should be kept up so long as any irritation, rash, or inflammation is felt, but afterwards, when the only trouble is the perpetual skinning of the fingers, the evil-smelling ointment can be dropped in favour of the hazeline, which has no objectionable features. This must be kept up until the skinning has ceased.

## COMBINED DEVELOPMENT AND FIXING.

The paper on this subject by M. V. Crémier, a translation of which we give on another page, contains an interesting summary of the various methods of combined development and fixing that have been advocated from time to time, and also a new method put forward by the author himself. This method merely involves the addition of hypo to a diamidophenol developer, and while M. Crémier seems to have been successful with it in the case of certain plates of Continental make, we have failed to secure perfectly fixed images with English rapid plates, even when the action was prolonged for an hour or more. In every case we had finally to resort to an ordinary fixing-bath to finish the fixing operation, and, therefore, the process can hardly be considered to have worked quite satisfactorily. The final results, however, showed little or no difference from others produced by developing for a few minutes only in the ordinary fashion with the same developer *minus* the hypo, from which it would appear that this salt acts as a strong restrainer when added to the diamidophenol developer. Apparently it reduces the speed of development to about one-fifteenth that of the plain developer; but it does not seem to produce fog, as it usually does with other reducers. We are unable to confirm the suggestion that the process tends to give greater contrast in the case of over-exposure, for it was evident that the amount of contrast obtained depended on the time of development. Greater contrast was secured by the combined method at the cost of greater fog in the unexposed parts of the plate, while when we so moderated the time as to produce results with equal fog, the ordinary development method gave the greater contrast. We are just as unable to follow M. Crémier's theoretical arguments in regard to the effect of combined development in cases of under-exposure as we are to prove them in the case of over-exposure, and we

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## THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC FOR 1912.

Edited by George E. Brown, F.I.C.

The fifty-first annual issue of The British Journal Photographic Almanac is published to-day, December 1.

Among other new features in the forthcoming Almanac are articles as follows:—

Lantern-slide Making. By the Editor.

A complete practical guide to the making of lantern-transparencies by reduction and contact, illustrated with special drawings of apparatus; processes of development for black and warm tones; warm tones by after-toning, and other methods of producing the best results.

At Home Portraiture. By C. H. Hewitt, F.R.P.S.

Precise directions for indoor and outdoor portraiture without a studio. Illustrated with diagrams and art supplement plates, showing effects of good and bad lighting.

Hints in Pictures.

A section entitled "How to Do It," helping the beginner to perform such operations as stripping negative films, mounting prints, etc. One hundred and twenty illustrations.

As in recent issues, the systematic review of the practical work of the year under the title "Epitome of Progress" is a strong feature of the volume.

Also, as in previous years, the Novelties in photographic apparatus which have recently come upon the British market are fully reviewed as the result of personal trial or inspection. Formulæ for the photographic processes likewise occupy a large space in the volume, and give perhaps the best insight into the latest approved practice which is obtainable.

The line followed in the previous editions of the Almanac is maintained in general, but in a number of particulars the arrangement of the volume for 1912 is modified to make it more than ever the book of universal photographic reference.

fear that he will eventually find, as he is now prepared to admit is quite possible, that his hypotheses indeed contain errors.

As we have said, the solution failed to fix the plates perfectly, and it appears evident that more hypo is required for the plate we used. This, however, would mean greater restraint and less density, and so we doubt if at the best the final result would be satisfactory. M. Crémier's formula is, perhaps, the best and most promising yet suggested; but, still, its trial does not seem to us to prove that combined development and fixing has any material advantages. In any case, it has a serious disadvantage in point of time. Assuming the solution to fix and develop perfectly in half an hour, that is twice the time necessary for separate development and fixing. Even the twenty minutes given by M. Crémier with the plates he used is longer than the ordinary time. We must, however, admit that the process, if perfectly adjusted to the plates in use, might be of service to the careless worker who is liable to over-develop his negatives at one time and under-develop them at others. It might, therefore, be worth while to experiment further with English plates, and see if such adjustment is possible. We are not, however, inclined to think that diamidophenol is suited to all plates, as it is certainly rather liable to produce foggy results in some cases. We may add that low temperature was not the cause of the failure of the process in our hands, for in one case the solution was used at a temperature of about 90 degrees F. without any favourable result.

# ART AND THE EXACT SCIENCES.

(The presidential address before the Royal Photographic Society, delivered by the Right Hon. Lord Redesdale, G.C.V.O., K.C.B., etc.)

## II.

Here as artist we must leave Leonardo. Volumes have been written upon his works; more volumes will probably yet be written. This evening I wish to confine myself to the other side of his character. It is as the exponent of the exact sciences and as a genius of almost universal powers that I wish to bring him before you. Of the first forty years of his life very little accurate knowledge is available—indeed, not much more than I have sketched in above. He was thirty-two years of age when he left Florence for Milan. There is some reason to suppose that in the meantime he had spent at least three years in Eastern travel, during which he visited Egypt, Constantinople, and Armenia. Richter ingeniously brings forward in support of this story the numerous allusions to the East which are to be found in his writings. In a manuscript in the British Museum there is an allusion to the eruptions of Etna and Stromboli; in the library at Windsor Castle a description of the Island of Cyprus; one of the MSS. in the Institut de France has the design of a bridge to unite Pera with Constantinople; the Codex Atlanticus at Milan bears a still more convincing testimony in the shape of a draft letter to the Diodario (the Deratdar) of Syria, in which he recites the work undertaken for the Sultan of Babylon, the name often given in the Middle Ages to Cairo. "Here am I," writes Leonardo, "in Armenia to carry out with devotion the work with which you entrusted me when you sent me hither. To begin with the districts which appear to me most suitable, I went to the town of Chalendra. It is a town close to our frontier at the foot of the Taurus range," etc., etc. Again, "I do not deserve the charge of idleness, O Diodario, as your reproaches seem to suggest; but rather as your kindness which is boundless has created the office entrusted to me, I felt bound to make experiments and to make researches into the reason of such considerable and stupendous effects"—the allusion being to the damage done by a hideous earthquake, the "grande e stupendo effecto" of which the Sultan had himself witnessed on a journey in 1477. In the face of this evidence one would think that there could be little doubt that Leonardo did actually undertake this journey, and that he was employed as an engineer by the Sultan Kait Bai. It is but fair to say, however, that writers so eminent as Müntz, Séailles, and Govio, hinting that the letters were part of a romance which Leonardo projected but never finished, receive the story only with the greatest reservation; for myself I have thought it to be at least of sufficient interest to be mentioned this evening, especially as it concerns the scientific and mechanical side of our hero's capabilities—the object being nothing less than the reconstruction of a city which had been flooded by the collapse of a mountain damming up a river.

Florence at the end of the fifteenth century was a fitting cradle for the development of Leonardo's special scientific genius. Art, industry, commerce, and finance flourished amazingly, and the acquisition by purchase of Leghorn from the Genoese gave the Florentine merchants and manufacturers facilities for the inlet of raw materials and the export of their finished wares. Cloth factories, the weaving of gold and silver brocade, dyes the secrets of which were a jealously guarded state monopoly, were among the chief industrial products. Machinery at work everywhere, a fever of commercial activity—what a stimulus must these surroundings have been to such a mind as Leonardo's! It was, as Hermann Grothe says, "the age of Pericles returned once more." The rattle and din of machinery were dear to Leonardo's heart—mechanics were to him, as he said himself, "the Paradise of sciences by the aid of which we reach the fruit of mathematics," and so we find him scheming, planning, inventing. At one moment he is designing a light-house—at another he is deeply absorbed in plans for making the Arno navigable, for converting it into a sort of Manchester Ship Canal. Hydrostatics, water, the waves of the sea offer problems which enchant him. He perceives the power of steam, and tries to apply it as a motive power to boats and pumps: he constructs a steam gun, the invention of which, for some unknown and perfectly mythical reason, he attributes to Archimedes: he turns a roasting-spit by the hot air of the chimney: he invents an instrument for planing and another for boring wooden pipes: his saw is still used at the quarries of Carrara: he makes cranes, levers, a weaving machine, a rain gauge: he discovers the topsyturvydom of the camera obscura: his studies in artillery, including a movable breech, are marvellous: optics engross him. He does not invent the telescope, but he sees the moon through a lens. Nothing is too great, nothing too small to occupy his attention. But perhaps his most absorbing experiments were those upon aviation, and in view of the progress which within the last few years has been made in that direction they are of supreme interest to-day. For thirty years, at Milan first and then at Rome, he laboured at making a flying machine. He invented a parachute, and although the Montgolfier balloon was not invented until the end of the eighteenth century he had discovered the principle—for Vasari tells us that he was in the habit of making figures of animals in a thin waxen film which, when he had inflated them with hot air, floated about aloft to the great amusement of his friends. But Leonardo was much too keen-sighted not to perceive that it was not by using a machine lighter than itself, not by balloons or parachutes, that the air was to be conquered. If he did not succeed in his great endeavour, he at any rate perceived that if man is to fly it must be by some means similar to those with which the bird is endowed. The flight of the eagle poised in the air, the arrangement of the joints and feathers in the wing, all these were carefully observed and imitated, all that was wanting was the motor: he had only the muscles of the flying man himself upon which to depend, and so he failed. But with what a frenzy of excited interest he would have watched the evolutions of an aeroplane of to-day. The goal of his dreams, of the long endeavours of thirty years, reached at last. Man the Master of the Air.

It would not be possible, within the limits of the time that I must give myself, to go more deeply into Leonardo's mechanical work. He invented many things and made many improvements in the work of others. Whatever he did was distinguished by delicacy and lightness far ahead of the clumsy work of some of those who followed him.

Leonardo was thirty years of age when, in 1483, Lorenzo the Magnificent sent him to Milan with a present of a lute for Lodovico Sforza il Moro, who was at that time at the height of his power. There are several versions of the story of his mission. We need not concern ourselves with them. It is enough for us that he went, and that he afterwards offered his services to the Duke in a letter which is of the greatest interest, as giving his own estimate of his capabilities. Here is Richter's version:—

"Having, most illustrious Lord, seen and duly considered the experiments of all those who repute themselves masters in the art of inventing instruments of war, and having found that their instruments differ in no way from such as are in common use, I will endeavour, without wishing to injure anyone else, to make known to Your Excellency certain secrets of my own as briefly enumerated here below.

1. "I have a way of constructing very light bridges, most easy to carry, by which the enemy may be pursued and put to flight. Others also of a stronger kind, that resist fire or assault, and are easy to place and to remove. I know ways also for burning and destroying those of the enemy.

2. "In case of investing a place I know how to remove the water from ditches and to make various scaling ladders, and other such instruments.

3. "Item: If, on account of the height or strength of a position, the place cannot be bombarded, I have a way for ruining every fortress which is not on stone foundations.

4. "I can also make a kind of cannon, easy and convenient to transport, that will discharge inflammable matters, causing great injury to the enemy, and also great terror from the smoke.

5. "Item: By means of narrow and winding underground passages made without noise, I can contrive a way for passing under ditches or any stream.

6. "Item: I can construct covered carts, secure and indestructible, bearing artillery, which entering among the enemy, will break the strongest body of men, and which the infantry can follow without any impediment.

7. "I can construct cannon, mortars, and fire engines of beautiful and useful shape, and different from those in common use.

8. "Where the use of cannon is impracticable, I can replace them by catapults, mangonels, and engines for discharging missiles of admirable efficacy, and hitherto unknown—in short, according as the case may be, I can contrive endless means of offence.

9. "And, if the fight should be at sea, I have numerous engines of the utmost activity both for attack and defence, vessels that will resist the heaviest fire: also powders or vapours.

10. "In time of peace, I believe I can equal anyone in architecture, and in constructing buildings, public or private, and in conducting water from one place to another.

"Then I can execute sculpture, whether in marble, bronze, or terra-cotta, also in painting I can do as much as any other, be he who he may.

"Further, I would engage to execute the bronze horse in lasting memory of your father and of the illustrious House of Sforza, and if any of the above-mentioned things should appear impossible and impracticable to you, I offer to make trial of them in your park, or in any other place that may please Your Excellency, to whom I commend myself in utmost humility."

This letter, as one critic, Mrs. Heaton, shrewdly observed, could only have been written by a genius or by a fool. The writer was certainly no fool. Those were stormy times, and the promise of all these death-dealing instruments probably carried great weight with Lodovico, who had, moreover, already been captivated by Leonardo's musical powers and by the charm of his conversation. His wit was proverbial. May I give you an instance of it related by Geraldi?

Leonardo was a very dilatory worker; for whole days he would remain in contemplation of his picture of the Last Supper, doing nothing. The Prior of the Convent of the Madonna delle Grazie was at last so angry that he complained officially to Duke Lodovico of the painter's slowness in finishing his great fresco. The head of Judas alone remained to be painted, and so it had been for more than a year, during which time he had not once put foot inside the convent. Lodovico sent for Leonardo, who answered—"The fathers know nothing about painting. It is true that I have not been inside their convent for a long time, but they are wrong when they say that I do not spend at least two hours every day on the work." "How can that be," said the Duke, "if you do not go there?" "Sir," replied Leonardo, "Your Excellency knows that there only remains to be painted the head of Judas, the greatest villain that ever lived: it is meet that his wickedness should be reflected in his countenance. For a year and more I have been going night and morning to the Barghetto, where, as Your Excellency knows, all the rascaldom in your capital congregates. I have not found a single face suitable. I can only suggest that the Prior should himself give me a sitting: he is admirably adapted for the part. My only hesitation has been owing to unwillingness to turn him into ridicule in his own convent."

Leonardo having entered the service of the Duke remained at Milan for nearly twenty years, which probably represented the period of his greatest activity, even though they could not be reckoned as the most fruitful in artistic work. His duties appear to have been chiefly concerned with engineering and with the more frivolous business of devising entertainments and pageants for the court whose darling he was. In Art, "The Last Supper" and the great statue of Francesco Sforza were his principal achievements; alas! centuries of damp and cruel neglect have all but obliterated the first; and the second, as I said above, died still-born in war.

Marvellous indeed were the speculations of this god-like man in every branch of natural science—speculations upon which he brought to bear the exactitude of the study of mathematics which were to him a religion. "Non mi legga chi non e matematico," he exclaims—"Let no man read me who is not a mathematician," and again, "No human investigation can be called true science unless it passes the test of mathematical demonstration," and "The man who despises mathematics nourishes himself with confusion." This, with the addition of experience which he called "the common mother of all sciences and art," was the law which he laid down for himself in the conduct of his thoughts and experiments. But in order to appraise at their true value the scientific intuitions of this inspired brain, it is necessary that we should bear in mind the state of knowledge, and the conception of the universe which was the doctrine—nay, more, the religious belief—of those days. The earth was a flat surface, ocean-girt, traversed by rivers and divided by seas, lakes, and mountains, created by Jehovah in seven days. Above the earth, separated from it by the air which we breathe, was Heaven, the abode of God Himself, where, surrounded by worshipping angels and saints, He was waiting to welcome the souls of the righteous into eternal happiness. Below the earth were Hell and the Devil. You may perhaps remember how nearly the great voyage of Christopher Columbus came to an end, because his crew, being mutinous and at the same time deeply religious, were convinced that they were approaching the rim of the earth, and that one fine day they would topple over and be hurled, ship and all, into the flames of Hell. Of a solar system, still less of many solar systems, there was not an inkling, for the discoveries of Copernicus were not made known to the world until a quarter of a century after Leonardo's death; and then what a stir the "De Revolutionibus Orbium" raised among the orthodox when it was sent out from the death-bed of its paralysed author! Martin Luther with his sledge-hammer oratory denounced the heretic who dared to propound a theory contradicting divine revelation. Melanchthon, the most learned of Luther's helpers, called upon the lay lords of the earth to suppress it. The Roman Catholic Church was less intolerant; but it is remarkable that though Copernicus dedicated his book to Pope Paul III., it was not until the year 1882 that books denying the revealed truth that the sun goes round the earth were removed from the Index Expurgatorius.

Leonardo's writings were copious and all-embracing; unfortunately, though he appears to have meditated their arrangement and "publication in substantive book form," this was never done, and they remained as aphorisms—disjointed thoughts of the deepest significance scribbled, as they occurred to him, in note-books, one of which he always carried with him, or jotted down hurriedly on the margin or on the back of some drawing upon which he was engaged, staying his pencil in mid-course to record a fleeting thought. On the first sketch for the "Last Supper" is a geometrical problem with its solution in cyphers; on another sheet of paper, with studies for the heads of the Apostles and our Lord, is the plan of a machine with explanatory remarks (Chamberlain). These note-books and sketches are scattered among the museums of Europe, the chief part in England, and of these a vast collection in Windsor Castle. Some of the notes have not yet, so it is said, been deciphered. And, indeed, the deciphering is no small labour; for Leonardo, who by the bye was left-handed, for some secret reason wrote in the Eastern fashion from right to left, so that the quickest way of reading him is to hold the sheet up to a looking-glass. Possibly he adopted this method to puzzle would-be pirates; possibly, as it seems to me, since his views were anything but orthodox, to avoid falling into the clutches of the Inquisition. It is true that the Holy Office was by no means so bloodthirsty in Italy as it was in the Spanish Peninsula; still it was a terror.

Pregnant indeed were some of the thoughts thus jotted down. *Il sole non si muove:* the sun does not move. Here in seven syllables is the kernel of the Copernican system. Again—"The earth is not in the centre of the sun's orbit nor in the centre of the world." He goes a step further—"There are many stars which are many times greater than the star which is our earth." He sees that the moon has no light of its own, but only light reflected from the sun, and that our earth seen from the moon must have the same appearance that the moon has to us. He argues that the earth must be almost spherical and revolves upon its axis.

So much has been written about this wonderful Leonardo, notably by Séailles, Muntz, Richter, Arsène Houssaye, Goethe, and above all by Ravaisson Mollien, who with infinite pains has deciphered and translated his manuscripts in the library of the Institut de Paris, that it needs no more than mere scissors-and-paste work to show you how they forestalled the discoveries of following centuries.

His eye, *finestra dell' anima*—the window of the soul—as he called it, was ever at work. "Seeing," he said, "is the noblest of the senses"; and he saw. He more than guessed at the secrets of geology. He recognised the power of water carving out mountains and depressing valleys. He reasoned out the stratification of rocks, and traced the evidence of prehistoric seas in the marine shells and deposits among the hills. The fossil plants teach him new and unsuspected lessons in the world's history—was he not the creator of Geology?

The botanists of the latter half of the seventeenth century have been accredited with the discovery of the laws of phyllotaxy, that is, the arrangement of the leaves on their stem. Leonardo had described it and carefully drawn it a hundred and fifty years earlier. Hear what he says. "Nature has disposed the leaves of the last twigs of many plants in such a fashion that the sixth leaf is always over the first. This is doubly to the advantage of the plant. First, inasmuch as the new twig or fruit is born in the following year at the juncture of the leaf, the water which falls upon the twig can travel down and feed the bud. Secondly, when the new growth takes place in the following year the new twigs do not cover one another, for the five twigs are borne turned in five different directions, the sixth being borne above the first at a considerable distance." In the same way he saw that the concentric rings on the cut stem of a tree showed its age—a discovery not made public till the seventeenth century.

"Anatomy," says M. Séailles, "occupied him during his whole life." Showing thereby what he had endured himself; he warned the student that he must face much that is disgusting and terrible. It was by autopsy and dissection that he penetrated many of the secrets of life and death. His greatest discovery was the circulation of the blood, which he noticed just a century before William Harvey delivered his famous lectures. His anatomical studies, illustrated by careful drawings, show with what pains he analysed that most complex of all machines, the human body. The bones, the muscles and tendons, the veins, arteries, and viscera. The eye, the *finestra dell' anima*, was always searching, probing, discovering. To comparative anatomy he gives special attention—he compares man with the ape; the lion, the tiger, and other felines with the cat; and the bull with the buffalo, the stag, the buck and the roe; the horse, his special favourite among beasts, with the ass and the mule. He shows where the distinctions between different genera and species lie; he traces the points of similarity between the arm of the man and the wing of the bird. He shows how all the animals of the earth are constructed upon one homogeneous plan. Muscles, bones, and nerves are common to all, varying only in length and size.

In an age when black magic was an article of faith, and every pope and king had his adept in league with the Prince of Darkness hunting for the philosopher's stone, it would be strange indeed if Leonardo, with his encyclopedic curiosity, had not investigated the claims and the powers of the sorcerers and alchymists. His mathematical mind quickly disposed of them. Palmistry and the line of life he dismissed in these words, "If you take the markings of the hand to predict the future, you will find that great armies and numerous equipages have succumbed at the same hour, and that nevertheless the markings were absolutely different in each individual." Further, "Of all human opinions we must regard as the most foolish the belief in necromancy, the sister of alchemy." It was pretended indeed by some persons that Leonardo had himself given encouragement to these impostures. If he did have aught to do with them, it was obviously only for the purpose of exposing their falsehood.

Upon the last years of Leonardo's life I will not dwell. Evil days had fallen upon Milan, where he would fain have remained to cast the mighty statue of Francesco Sforza, and gather together in one vast encyclopædic work the voluminous notes which he had made during so many years. If that could have been done, the world's knowledge would have been advanced by an immeasurable time, for it was not till centuries had elapsed that the scattered wisdom of the man was deciphered, but, alas! never put together. The fates had willed it otherwise. Many a man earned fame, and justly earned it, by the discovery of facts new to science but which had been known to, or suspected by, Leonardo, buried rather than recorded in the secrecy of his cryptic and disjointed writings.

He became a wanderer. He travelled in Central Italy and returned to Florence, and became attached to Louis XII. He went to Rome and worked for the great Medici Pope Leo XII., who treated him somewhat shabbily, but left that city to join Francis I., at Pavia, and after once more visiting Milan, the scene of so many triumphs, so many memories, and so much disappointment, he followed the king to France in 1516. Francis gave him as his home the Château de Cloux, near Amboise, where the Court often went. Here he lived peacefully for three years, but the end was not happy. Prematurely aged, for he was only sixty-four years old, crippled by paralysis, worn out by the vast energies of his genius, the great handsome man, the profound thinker, the prophet of science, the incomparable artist, commending his soul to the Virgin Mary, to St. Michael and all the Saints, passed into eternity. Two men wept for him: his friend, pupil, and executor, Melzo, and the great king who loved him dearly.

I am afraid that I have sorely tried your patience, and yet I must ask you to bear with me for a few more minutes, in order that I may show you why I have chosen this subject for our consideration this evening, and what are the lessons and the encouragement which, unless I am mistaken, the photographer may derive from it.

Photography has been reproached with being a mere mechanical process. In a sense that is true; and yet, in spite of that, it is capable of being inspired with such poetic grace and beauty that it may well claim the right of entrance into the holy of holies of Art's temple. Only think how Leonardo, the man to whom mechanics were "a Paradise," would have revelled in this "mere mechanical process!" What imagination, what divine poetry he would have pressed into its service. Yet, grandly as he would have turned it into account artistically, we may be sure that it is the mechanical perfection, the mathematical sincerity of your art, its high value as the helpmeet of science, that would have appealed to him. Penetrated as he was by the artistic aura it would have been impossible for him to have approved those recent methods by which the photographer tries to trespass upon the province of the painter, and in which he so signally fails. He would most surely have recognised and welcomed those powers which are the monopoly of the photographer—such, for instance, as the reproduction of the fleeting and evanescent forms of clouds, the structure, shape, and movements of waves, upon which he thought and wrote so much, the motion of trees, or of the cornfields under the action of wind (another subject which occupied his busy pen). He would have acknowledged the assistance which those powers may render to the painter, but he would have shuddered at and sternly rebuked the degradation of an art, the essence of which is truth, by plagiarisms which out-Herod the vilest falsehoods of the incompetent limner. Above all, he would have driven home the value of perspective. That was to him, as to Albrecht Dürer, the first and foremost essential in all art. "Perspective," he said, "is the bridle and rudder of painting." Here is a passage which might have been specially written for the benefit of the photographer: "Among all studies, natural causes, and reasons, light is that which the most delights those who contemplate it. Among the grand effects of mathematics it is the certainty of demonstration which above all other things elevates the mind of the investigator; for this reason perspective is to be placed above all human studies and disciplines, because in it the line of light is combined with mathematical demonstration"—and he ends with a characteristic prayer: "May the Lord who is the light of all things, deign to give me light that I may treat of light." What would he have said to the wilful violations of the laws of perspective which we see in so many photographic exhibitions? Ships cut off at mid-mast in order that a great ladder of distorted ripples all out of focus may drag out a meaningless and hideous reflection—a poor trick indeed, torturing the old Greek poet's lovely image of "the countless smiles of the sea" into the vulgar grins of a circus clown. In another frame we see a delightful old ruin—castle or monastery—perched up in miniature at the top corner of a picture, the bulk of which is eaten up by a Brobdingnagian expanse of gravel, or by a field of grasses which look like sugar canes and castor oil plants. In portraiture we are shown mere faces, flat and without any sense of the subtle mysteries of aerial perspective—faces all blotches and scars that might well serve as charts to illustrate some medical book on skin diseases. And yet, in this very room, on these walls, what delicate, refined work we have seen in landscape, seascape, and portraiture; work in which the secrets of nature have been recorded with loving truth and enthusiasm—genuine triumphs of skill and of the appreciation of the beautiful—showing what are your capabilities. Can we doubt for one moment to which of these methods a Leonardo would have given his blessing?

I cannot help thinking that his advice to the photographer would have been "the cobbler to his last." The photographer has at his command powers which are of the highest value and which no painter possesses. See from one last quotation how Leonardo would have appreciated instantaneous photography. "If a battle is to be represented," he says, "the poet would have worn out his pen, dried up his tongue with thirst, exhausted his body with want of sleep and hunger, before having described what the painter with his science shows in an instant." How much more rapid and accurate for such work is the photographer! He can teach the painter much: many truths the depth of which few artists have sounded. From the painter he has little to learn beyond the elements of composition. His school is elsewhere. It is to Nature herself that he should go, and not to any copy, however skilful. That, indeed, was Leonardo's advice to all artists. A painter, he says, will produce but poor stuff if he takes as his guide the paintings of others; and that came with no small force from the master who so rendered the foreground of his great picture, "La Vierge aux rochers," that, as Richter puts it, "each flower is given with such exquisite truth that to classify it botanically is an easy matter." The true artist, he again says, is the son of Nature—the copyist only her grandson."

This is a subject which might be drawn out at great length, but I hope that I have said enough to show you that a study of the life and achievements of this great artistic genius, in some respects indeed the greatest that ever lived, may well serve as an encouragement to you to follow his teaching, by practising in your art all that is most truthful, most beautiful, and most satisfying to the *finestra dell' anima*, to the eye that sees as Leonardo's saw. Above all, his example and doctrine bring ample comfort to the photographer, who never need blush when it is cast in his teeth that he is dealing only with machanics. "With mechanics," he may reply, "yes! with the Paradise of Leonardo da Vinci."

# COMBINED DEVELOPMENT AND FIXING.

[The following is a series of articles which we translate, with some abridgment, from the "Photo-Revue." The subject is one which of recent years has attracted a number of experimenters, and doubtless also the experimental departments of photographic firms catering for the amateur worker. Yet, so far, no really satisfactory method of simultaneous development and fixation has been worked out for gelatine plates. Even M. Crémier, so far as we can judge from experiments described in an article on another page, has not gone much further in solving a problem which some day will be solved. He has, however, brought to light one or two interesting facts connected with the diamidophenol developer, and we may hope that his experiments will suggest more successful methods to other experimenters.—Eds. "B.J."]

The combination of two photographic operations into one is familiar in the combined bath used for the simultaneous toning and fixing of prints, and similar methods of simultaneous development and fixing of plates and papers have, from time to time, been the subject of experiments. The following paper is the result of studying certain of these later methods, that is, of combined development and fixing and of development after fixing. The practical results which have been obtained have afforded the writer no little interest and some considerable surprise. Although the two methods do not seem to be capable of replacing those in current use—at any rate, this applied to development after fixation—an account of experience with the many formulæ which have been recommended will, it is thought, be of general interest to the amateur worker, who should be encouraged to pay more attention to these modern forms of photographic development.

The first experiments on combined development and fixation date back more than ten years. In the "Bulletin" of the French Photographic Society for 1898, page 283,* we find some record of preliminary experiments in this field. At that time ortol had just made its appearance as a new developer, and it was with the object of discovering the effect of adding small quantities of hypo to the ortol developer that Mr. Milton B. Punnett noticed that the edges of the plate, treated in a bath containing this addition, fixed out in the course of development. Experiments were then made on simultaneous developing and fixing plates of the lantern class with a view of obtaining warm tones. The following formula was used:—

| | | | |
|---|---|---|---|
| A. | Potass metabisulphite | 2 gms. | 35 grs. |
| | Ortol | 4 ,, | 70 ,, |
| | Water | 400 ccs. | 10 ozs. |
| B. | Caustic soda | 4 gms. | 60 grs. |
| | Potass bromide | 4 ,, | 60 ,, |
| | Water | 500 ccs. | 16 ozs. |
| C. | Hypo | 25 gms. | 1 oz. |
| | Water | 500 ccs. | 20 ozs. |

These solutions were used in the proportions of—

| | |
|---|---|
| A | 1 part. |
| B | 1 ,, |
| C | 2 parts. |

The images thus obtained differed from those developed and fixed in the usual way only in being somewhat harder.

The following year the question came up again with the appearance of a new reducer, which, like all other new developers in the view of its makers, possessed remarkable qualities, among them that of not being affected by hypo, in contradistinction to ferrous oxalate, a developer largely in use at that time. There was then given a formula for a combined developer and fixer, which one frequently finds in the photographic periodicals of this time. The stock solution is made as follows:—

| | |
|---|---|
| Soda sulphite cryst. | 30 gms. |
| Caustic potash | 7 ,, |
| Kachin | 7 ,, |
| Water | 75 ccs. |

For plates which have received the ordinary exposure the makers recommended a developer as follows:—

| | |
|---|---|
| Stock solution as above | 10 ccs. |
| Hypo, 20 per cent. solution | 17 ,, |
| Water | 26 ,, |

The "Photo Gazette" gave a somewhat different formula, namely:—

| | |
|---|---|
| Stock solution | 1 part. |
| Hypo, 15 per cent. solution | 2 parts. |

Development and fixing are complete at the end of a few minutes. In the course of the article on Kachin some data are given, of which the following may be quoted:—

"Provided that the plates have not been under-exposed, excellent results can be obtained, and, further, after the appearance of the image, development can be completed in a feeble white light, such as that of an ordinary gas burner."

"For plates requiring a longer time of fixing the hypo can be increased up to 35 gms."

"The time of exposure is the same as when plates are developed and fixed separately."

"Development proceeds regularly and without stains: the mixed solution can be employed twice in quick succession, but after that should be thrown away."

"In case of great over-exposure development can be restrained by using more water and by adding potassium bromide."

"In the case of under-exposure there is a tendency to reversal of the image and the method of combined development and fixing is then not advisable. The method is a good one only for correct or over-exposures."

"By combining the processes of development and fixing more brilliant results are obtained, the method being an excellent remedy for over-exposure and giving a large amount of latitude in exposure."

In the photographic journals of this period one does not find comments on this method of combined development and fixing with kachin, except in conjunction with certain qualifications as regards its use for plates which have been incorrectly exposed. Moreover, kachin as a developer enjoyed fame for only a short time, and is not now prominent among developers. However this may be, it certainly proves that development and fixing may be done together in a single solution satisfactorily. In the year 1901 further new methods of combined development and fixing were published. In April of that year the "Photo-Revue," quoting from the Italian

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From "B. J.," Feb. 25, 1898.

"Dillettante," give the following formula of Dr. L. Gioppi, with which it was stated most satisfactory results were obtained.

| | | |
|---|---|---|
| A. | Soda sulphite anhydrous | 15 gms. |
| | Caustic soda | 7 ,, |
| | Pyrocatechin | 7 ,, |
| | Water | 75 ccs. |
| B. | Hypo | 20 gms. |
| | Water | 100 ccs. |

To mix the developing solution take—

| | |
|---|---|
| A | 4 parts. |
| B | 7 ,, |
| Water | 10 ,, |

It is to be noted that the "Photo-Revue" points out that this formula is suitable only for plates which have been correctly exposed. It will be noted also that the formula of Dr. Gioppi resembles that previously given for kachin. The figures for the normal bath have simply been rounded off, but the proportions are absolutely the same.

In 1903 the "Photo-Gazette" quoted a further contribution to this subject by T. Thorne Baker, by whom it was stated that edinol, differently from other developers, was not affected by hypo and that a formula could be given in which development and fixing proceeded together. This method being too automatic could not be advised for the development of negatives, but could be advantageously used for lantern plates where it was not difficult to obtain correct exposure. The formula was:—

| | |
|---|---|
| Hypo | 30 gms. |
| Potass metabisulphite | 40 ,, |
| Soda carbonate | 120 ,, |
| Potass bromide | 1 gm. |
| Water | 1,000 ccs. |

To 100 ccs. of this solution 2 gms. of edinol were added before use.

In a later number of the "Photo-Revue," Feb. 25, 1906, reference was made to a note by the late Horsley Hinton in the "Revue Suisse." A film, which had been overlooked, was left in an alkaline developing bath (weak) and was perfectly developed and fixed a week later. It was assumed that the soda sulphite used as preservative had fixed, or dissolved out, the silver salts unexposed to light as would have been done much more rapidly by hypo. The author commented on this to the effect that it might be possible to combine the ingredients of a developer so that fixing and development would be complete within a much shorter time.

In the "Photo-Revue" for Sept. 26, 1909, M. R. Raymond gave a formula for combined development. The stock solution is:—

| | |
|---|---|
| Hydroquinone | 8 gms. |
| Metol | 4 ,, |
| Soda sulphite cryst. | 60 ,, |
| Soda carbonate | 80 ,, |
| Hypo, 20 per cent. solution | 25 to 30 ,, |
| Water | 1,000 ccs. |

With this review of the formulæ which have previously been given we must pass to later experiments of our own, all of which have been done with one developer only. We may refer, however, to the article in the "Photo-Gazette" of Feb., 1910, in which are given some notes on the method, likewise with this same developer diamidophenol.

We have chosen this reducer for the reasons that we used it almost exclusively for the development of all kinds of plates, negative and positive, warm and cold tone, also that of all reducers it is almost the only one which works without an alkali, and thus allows of a combined fixing and developing bath being rapidly prepared. A further reason is as follows:—The various formulæ for combined development hitherto given have a tendency to yield negatives which are too hard. Diamidophenol, being a developer which tends to softness, should be of advantage in this particular process. This we have found to be the case in practice.

We commenced first of all by adding increasing quantities of hypo to the following solution, which is the normal diamidophenol developer.

| | | |
|---|---|---|
| Soda sulphite anhydrous | 3 gms. | 260 grs. |
| Diamidophenol (hydrochloride) | ½ gm. | 44 ,, |
| Water | 100 ccs. | 20 ozs. |

In order to have a greater latitude in making the additions of hypo we used hypo in 20 per cent. solution. We commenced with the addition of 1 cc. of 20 per cent. hypo solution to the above quantity of bath.

The method of combined development was first tried in the case of negative plates. We placed in the bath a "Blue-Label" Lumière plate which had received an exposure of 1/15th second at f/6.8 in good winter light. The image came up after about half a minute and development was continued until sufficient density was obtained. The image was not then completely fixed, the bath containing insufficient hypo. The test was repeated, but with a bath containing 5 ccs. of hypo. In this the image, which had received the same exposure as before, appeared after about a minute, and the operation was complete in about forty minutes, the plate being completely developed and fixed. This being an excessive time of development we then used the following formula, in which the proportions of hypo and reducer have been doubled, the quantity of sulphite being somewhat increased.

| | | |
|---|---|---|
| Soda sulphite anhydrous | 5 gms. | 1 oz. |
| Diamidophenol | 1 gm. | 88 grs. |
| Hypo | 2 gms. | 180 ,, |
| Water | 100 ccs. | 20 ozs. |

In this bath plates which were practically correctly exposed gave an image in about thirty seconds and were completely developed and fixed in twenty minutes. When the image appears it first becomes more intense when viewed by reflected light, and then this effect appears to stop. In fact, the action continues in the substance of the emulsion film, as may readily be seen by examining the plate by transmitted light. Gradually, however, the image shows less and less, then becomes practically invisible, and the fixing action then begins to make itself felt. The image then appears to fall away, then to fog, the plate appearing hopelessly spoilt, though in reality it is not so. A few instants later, on viewing it by transmitted light, a faint positive is seen, somewhat resembling a colour screen-plate after some moments' immersion in the reversing bath. The positive gains strength a little and then disappears. At a certain instant the plate is partly positive and partly negative. Under the action of the hypo the negative gains ground, and at the end of about twenty minutes there is no longer any trace of silver bromide unreduced by the developer to be seen on the back of the plate. It is then found that we have a negative of exceedingly good quality without any trace of the dichroic fog which one might suppose to be readily produced in consequence of the addition of hypo to the developer.

In the case of plates other than the Lumière "Blue Label," or Ortho, it is convenient to increase the hypo up to 2½ gms. in order to make certain of complete fixation. Such greater quantity of hypo is particularly necessary for ultra-rapid plates. The 2½ gms. may indeed be used with the Lumière "Blue Label" which then tend to give very fine somewhat thin negatives, well suited for enlargement.

The time of development being still somewhat long, our next experiment was to immerse the plate in the combined developer and leave it to itself, it being frequently inconvenient to wait twenty minutes for the completion of development. A quarter-plate was placed in 100 ccs. of the bath given above, gelatine side up. As the result no doubt of want of rocking of the liquid, a somewhat longer time was necessary for the completion of the process. Plates which had received the normal exposure required treatment for about half an hour at a temperature of 18 deg. C. This was with the Lumière "Blue Label": other makes, and also the Lumière "Violet Label," required a still longer treatment. We have not noticed any stain or marking of the gelatine as might be supposed almost inevitable as the result of not rocking the developer. It is true that filtered water was used for making the solution, which was perfectly clear at the start. There is, of course, no objection to using the developer in a vertical tank, but even when a dish is used the slight deposit on the surface of the plate is at once removed by gently going over the surface with a tuft of cotton wool. There is, therefore, no need, in using the combined method, to watch the process, nor, as we have said, to trouble about rocking the dish. This feature of the method should particularly recommend it to the amateur worker.

Further, in place of the sulphite of soda in the developer, one may use an equal weight of the Lumière chryso-sulphite, which gives a coloured developer, in which the plate may be handled in full (weak) light, the image being examined as it lies in the dish, although towards the end of development it may be removed from the solution and without danger examined by holding it up to a moderate light. Since, however, combined development can so easily be done simply by slipping plates into a tank by means of a changing bag, or other device, there would seem little occasion to make use of a coloured developing solution. There is no need to remove the negative as soon as it is finished. It will come to no harm if it remains a considerable time after complete development and fixing. Nevertheless, it is well to realise that if the negative remains for several hours after its complete development and fixation it may readily gain in density, with a tendency to yield hard results. This feature of the process may at times be used to advantage in the case of negatives which, after fixation, are seen to be somewhat too soft.

It is sometimes stated that combined development and fixing can be done perfectly well in full artificial light, but such, in our experience, is not the case. From numerous tests which we have made it is found that the action of the light is fatal to the negative as long as there remains a trace of bromide of silver unreduced by the developer, or undissolved by the hypo. If there is extreme need of allowing the light to enter the dark-room towards the end of fixing, this may be done when one is working by the separate method of development and fixing, but an absolute rule must be made in the case of the combined process of allowing no actinic light to reach the plate until it has been perfectly fixed. The least defect which can result from improper exposure to light is dichroic fog, which is difficult to remove, and which particularly affects the shadows since these latter are the last to fix. The fog may, however, be removed by immersing the negative, after washing, in a 1:1,000 solution of potass permanganate for two minutes, then in a bath of soda bisulphite (the commercial solution with an equal bulk of water) for five minutes, finally washing for a quarter of an hour.

If light gains access to the plate at a still earlier state than that which gives dichroic fog there is great risk of forming a more or less intense grey fog over the negative. This is the inevitable result of unreduced and undissolved silver bromide being further affected by light and then reduced by the developer.

Lastly, if one leaves the dark-room about the middle of development there is great liability of obtaining a plate in which certain parts are negative and others positive: at other times, though very rarely, such brief exposure to light about the middle of development will give a perfect positive, although somewhat flat and grey. The practical conclusion of all this is that it is absolutely necessary to conduct the combined development and fixing from first to last in absolute darkness, or in the "safe" light of the dark-room.

The developer should be used in ample quantity for the plate: not less than 2 ozs. for a quarter-plate, 3½ ozs. for a half-plate. If, indeed, the plate is left to itself without rocking it is well to use a larger proportion than the above. In developing plates of large size, or a number of smaller plates together, proportional quantities of bath should be used if it is wished to obtain complete action in the same time.

Although it has been said that combined developing baths can be used several times over, at least twice, we do not advise that this should be done. The bath is always more or less turbid after one use, and its energy is greatly reduced. Since it is a very cheap solution no reluctance should be felt in renewing it for each plate or batch of plates. On removal from the developer the plate is washed as usual in running water and put to dry. It is found that it increases a little in density on drying. In the case of the extra-rapid plates, such as the Lumière "Blue Label," normal density is obtained with the diamidophenol bath given above and 2 gms. of hypo. It is, however, possible to modify this density if desired. If less dense negatives are required sodium bisulphite in the commercial 40 per cent. solution is added. This has a great restraining action on the developer, though it is without effect on the fixing action of the hypo. Care should be taken, however, not to add too much of it, 1, 2, or 3 drops having a sufficient restraining effect. But the addition of soda bisulphite, even in this small quantity, can disturb the proper course of the process when we are dealing with plates which have been under-exposed, a condition, of course, which is unfavourable to the use of any restrainer. For this reason we advise, for obtaining a lesser degree of density, to commence by adding 2½ gms. per 100 ccs. of hypo before adding the few drops of bisulphite.

Those, on the other hand, who find the density given by the normal bath insufficient for their purpose, are advised to increase the proportions of sulphite and diamidophenol, rather than to reduce that of the hypo, the quantity of which, as given above, is necessary for complete fixation in a reasonable time. To use less is only to endanger the permanence of the negatives. As we have said, with some classes of plates at least 2½ gms. of hypo are necessary for complete fixation.

The anti-halo "Simplex" plates of Lumière will be found to lose their colour in the combined developer without the need of their after-bath. Should they, however, retain a little colour on removal from the bath, it is only necessary to place them in a 5 per cent. solution of soda bisulphite for a few minutes. Most rapid emulsions yield excellent results by combined development. They differ only by the greater or less degree of softness, or the shorter or longer time of treatment which is necessary for completing the process. Thus, the "Blue Label" and Ortho plates of Lumière are those which are finished in the least time and tend most to softness.

The objection has been made in respect to combined development that a formula devised for normal exposures can only give inferior results in cases of under- or over-exposure. With under-exposure the plate would be fixed before it was sufficiently developed, whilst with over-exposure the negative would, on the other hand, become very dense, the developer acting considerably more rapidly than the fixer. At a first glance this criticism seems feasible, but a little reflection will show that it does not possess its apparent weight. When under-exposed plates are treated by the ordinary method of development it is, of course, well known that the developer not only causes the image to appear slowly and to require time to reach sufficient density, but likewise the fixing bath acts more slowly in dissolving the unreduced silver bromide. The explanation of this no doubt is that a larger quantity of bromide is left unreduced, and thus makes greater demands upon the hypo.

In the case of over-exposure, on the other hand, the image much more rapidly reaches satisfactory density and the fixer at the same time works more quickly. In short, when developing and fixing separately, the rapidity of action of the fixing bath is, other things being equal, roughly proportional to that of development. It may, therefore, be reasonably supposed that the same thing may be the case with combined development. And in practice it is found that criticism of combined development on the ground of its not affording sufficient latitude in respect to exposure is not founded on fact. With under-exposures the total time of treatment would be longer than with a normal exposure. In cases of over-exposure, on the other hand, it is shorter. With under-exposed plates negatives are obtained which are somewhat thin and soft, whilst with plates which are over-exposed the negatives are denser and yet of such contrast as to give excellent prints provided that the over-exposure (and the same thing applies to under-exposure) has not been excessive. Only the time of printing of the negative will vary: it will be a little longer with those over-exposed than with those under-exposed.

It may even be said without exaggeration that the combined method seems to be indeed the best for the use of amateurs who aim at obtaining an average of good negatives by an automatic process.

The addition of hypo to the developer appears to adapt the latter to an extraordinary extent to the plate according to the exposure the latter has received. Plates which have been under-exposed and treated by this method are of remarkable softness, whilst those over-exposed have a certain tendency to hardness in contradistinction to what happens in the ordinary method of development. It will at once be asked why this should be the case in the combined method, whilst in the ordinary method the longer the exposure the greater the tendency to contrast. It may possibly arise from the fact that with the developer acting at the same time as the fixer each of them plays its part strictly: the hypo removes the unexposed silver bromide, the developer reduces the exposed bromide, but nothing more. In the case of separate development and fixing it may be that the developer reduces not only the grains of silver bromide exposed to light but other unexposed grains in their neighbourhood, thus producing the greying and density of over-exposed negatives. If, on the other hand, fixing is done before development, it seems probable that the hypo here performs more than its strict duty, since in this case it is necessary to over-expose in order to obtain sufficient density. In brief, the presence together of hypo and reducer possibly limits the action of each to their respective rôles, and thus leads to the softness of under-exposures and the tendency to contrast of over-exposures.

It may further be that the development taking place at the same time as the fixing, the latter first commences in the parts where there is most bromide to be dissolved (the shadows), whilst the developer, on the other hand, would commence to reduce the exposed silver in the parts where there is most to reduce (the high-lights). This would give a certain advance of the development over the fixation in the densest portions, and, on the other hand, an advance of the fixer over the developer in the transparent parts. It would follow from this that the reducer has already lost a great part of its energy in the development of the high-lights (and this in proportion to the exposure, since there is more silver bromide to be reduced the longer the exposure) when it begins to exert its action on the less exposed parts in which the action already exerted by the hypo has probably weakened the action of the developer. Also the hypo contained in the solution would probably play the part of a restrainer.

In these speculations, as in many others connected with photo-chemistry, hypotheses which appear at present to account for facts, may, however, be found to contain errors. But whatever the cause of this increase of contrast in the case of over-exposures, when one makes practical use of the combined development method it will be found that the system does in fact exhibit this advantage, and, therefore, the method seems worthy of the attention of those who develop either plates or films by means of such mechanical appliances as those made by the Kodak Company and other manufacturers.

As regards other factors which have an influence on the rapidity of action of the combined bath, such as the thickness of the emulsion film, temperature of the solution, etc., experience has shown that such effect is exerted equally on development and on fixing. Thus one obtains satisfactory results both in winter and summer with thickly coated emulsions, such as those of Marion, or with very thin emulsions of the lantern-plate type. Only the time of treatment in the bath will vary in attaining complete action. V. Cremier.

*(To be concluded.)*

# Photo-Mechanical Notes.

## Resin Substratum in Making Photo-Engraved Plates.

In a recent patent specification (No. 9,659, 1911) is described a process, to which protection has been granted, for the preparation of photo-engraved plates by means of a sensitive film of bichromated colloid coated on a support (the metal plate) which has received a substratum of resin. The inventor, Herr Otto Luppe, of 102, Onter Wiener Strasse, Munich, claims for the process the advantage of dispensing with the burning-in, in conjunction with automatic development. The basis of the process, according to the specification, is as follows:—

If a light-sensitised layer, capable of being hardened, is exposed as usual, and developed, and the exposed parts then subjected to powerful hardening, the hardened parts have the quality of mechanically fixing resin layers underneath them. If the hardened part (with the mechanically fixed part) is removed by suitable means, the exposed picture becomes visible, in the colour of the metal. The invention essentially consists in coating the block with resin, coating the latter with a light-sensitive layer, exposing and developing, and then detaching the exposed portions, to which the resin underneath same adheres. It has heretofore been proposed to coat an exposed and developed layer of gelatine with bitumen, asphaltum, etc., and then detach the exposed portions of the gelatine, with their coating, by means of an acid bath.

This process may be carried out as follows:—A metal plate is coated with a dilute solution of resin soluble in alcohol, etc. Nearly all resins not soluble in water are suitable for this purpose, and form, after application, a coating sufficiently hard to receive the sensitised layer and to resist the acid. After drying, the sensitised layer of glue, gelatine, etc., is applied to the resin coating, and is exposed to the light under a negative as usual, and developed in water. The plate is then subjected to a powerful hardening treatment with a known agent, such as chrome acid, alum, chrome alum, etc.

After washing with water and drying, the hardened, i.e., the exposed, layer becomes detached, with the resin underneath it, and only simple brushing is required to obtain a clean, sharp picture in full detail, in the colour of the metal, the adjacent unexposed resin remaining undamaged, and forming an extremely resistant acid-proof layer.

Instead of dry removal, wet removal, likewise automatic, may be used. This is based on the fact that if the strongly hardened layer is brought into contact with hygroscopic solutions, for example, glycerine, etc., to which a hardening agent such as tannic acid, formaldehyde, or an acid, is preferably added, the exposed, hardened layer curls up and detaches the resin layer underneath it. After washing, the clean picture appears, in the colour of the metal.

By this process the exposed parts of the picture are removed. The unexposed parts of the plate remain in the form of undamaged, compact resin layers, ready for etching without heating or other treatment. As there is no heating during any part of the process, metals which do not stand high temperatures can be used for printing and etching. Other substances with which heating is inconvenient or impossible can also by this process be provided with pictures, and etched, for example, glass, porcelain, celluloid, etc.

### "Process" in Eder's Year Book.

The 1911 volume of "Eder's Jahrbuch" is to hand, and, as usual, contains a great deal of matter relating to process. Among the original articles are "Colour Collotype and Colour Exposures with Autochrome Plates," by A. Albert; "Division of Work in Process Establishment," by J. Husnik; "Normal Working Methods in Reproduction," by N. S. Amstutz; "On the Splitting of Collodion Films," by K. H. Broum; and "On Matt Printing," by A. M. Unger. There is a comprehensive summary of progress in photomechanical matters between June, 1910, and June, 1911, in which perhaps the largest share of attention is given to rotary photogravure. Among the supplements are two very fine examples of machine photogravure, several of newspaper photogravure, and an example of Krampolek's grain process, which is very similar to the results produced with the Metzograph screen. Those who read German cannot afford to be without "Eder's Jahrbuch."

### PHOTO-MECHANICAL PATENTS.

The following patents have been applied for:—

**Half-tone Negatives.**—No. 25,339. Method for the production of half-tone negatives. W. Robert Busch Larsen.

**Bas-Reliefs.**—No. 25,383. Photo-process of producing bas-relief printing-surfaces and the like. Hermann Borschel.

# Exhibitions.

## EDINBURGH PHOTOGRAPHIC SOCIETY.

The annual members' exhibition of Edinburgh Photographic Society, which was opened on November 25, in the rooms at 38, Castle Street, maintains the standard of former years in interest and variety. The exhibits reach a total of 128, and there is a satisfactory representation in each of the classes. As usual, the class for landscape and seascape is well filled, and contains a number of exhibits of high quality, the closeness of which in merit must have made the work of the judges difficult. Three medals have been awarded in the class. One of these is secured by Mr. Robert Thomson for a well-realised impression of winter, a bromoil study of leafless trees set in a mild landscape. The Rev. W. J. Hansell receives the other two medals, one for an attractive woodland study. The contrast between the high-lights of the ferns and the woodland shadows might be considered a little harsh. His other medal print is a view of Edinburgh from the Calton Hill, with good lighting and cloud effects. Another woodland view by Mr. Hansell, which receives honourable mention, has fine quality in the two tree trunks which form a conspicuous feature. Other exhibits which receive honourable mention are Mr. Robert Forbes's "Going to the Pasture," Mr. C. D. Paton's "Evening in the Harbour," an outstanding print, with rich deep tones, effective contrasts without harshness, and a fine cohesive effect; and Mr. W. Bruce Mount's "A Dutch Canal," a pleasing dreamy study. There may also be mentioned an attractive Volendam Harbour view by Mr. A. D. E. Mathison, in which, however, the side of a vessel at the edge of the picture disturbs the balance of the composition; a Brixham Harbour scene, by Mr. Paton; a fine print of broken water and rocks, massive, and well defined, by Mr. J. C. M'Kechnie; and Mr. J. F. Duthie's "The Auld Brig, Jedburgh," a quaint and pleasing composition, showing a fine vital quality in the masonry. The architectural section includes some interesting work. Medals have been awarded to Mr. G. A. Massie for a study of one of the corridors of Linlithgow Palace, with sunshine penetrating the shadowy interior through a window, the lighting problem having been successfully dealt with; and to Mr. Francis C. Inglis, who shows a series of outside and interior views of the Chapel of the Thistle. Mr. J. F. Duthie receives honourable mention for a Jedburgh Abbey doorway, and Mr. Inglis for a corner of the State Room in Holyrood Palace. The portraiture, groups, and figure subjects form a creditable section. Mr Hansell receives a medal for a harvest field study; and Mr. F. S. Gregory for a well arranged smithy interior, the figures in which stand out well in relief. Mr. H. Scott Lauder receives honourable mention for a well-posed figure study, "A Water Baby"; Mr. T. D. Hamilton for an engaging study of two street children; and Mr. Gregory for a separate study of the smith of his medal print. Mr. A. D. E. Mathison's print of two Dutch children has outstanding interest and quality; and Mr. J. R. H. Stewart's "Old Fishwife" has quaintness and character. Some interesting examples are shown of the series of survey photographs of Edinburgh and district. which have been undertaken by the Society for preservation by the Town Council. The sets on view include photographs of the Canal and Greyfriars Churchyard. In the section for scientific subjects, a medal is awarded to Mr. D. W. Thompson for a lightning flash photograph. Mr. C. D. Paton receives a medal for an admirable photograph of seagulls in the section for subjects in motion; and Mr. A. Wallace M'Gregor receives honourable mention for a print of a girl playing lawn tennis. The medals in the lantern slide section are awarded to Mr. J. C. M'Kechnie ("The Banks of the Tummel"), Mr. R. C. Malcolm ("Glen Nevis"), and Mr. C. D. Paton ("A Byway"); and those receiving honourable mention are Mr. W. G. C. Johnston ("Corrie Lagan, Skye"), Mr. M'Kechnie ("Harvesting"), and Mr. Paton ("At Knaresborough"). The judges were Messrs. James Hay, A. Eddington, and T. Drummond Shiels.

## THE CAMERA CLUB.

At the Camera Club, in the Adelphi, there is now on view the first annual exhibition of its members' work. As a picture show it cannot be said to be so distinctive as the displays of work by individual members that have taken place there formerly. Possibly these former exhibitions have taken the edge off it, for scarcely a member seems to have sent his most successful achievement. The room, too, which serves well enough for the one-man shows as attractive incidents in the economy of club management, seems too domestic, too much a lounge, for a general exhibition, apart from the fact of inadequacy of space and lighting. That the pictures should spill over into the billiard room is an indignity to them. But these are matters for which there is evidently no help. The show is dominated by two works. One is Percy G. R. Wright's finely designed Dutch figure and landscape piece called "The Little Town"—a truly beautiful print—and the other is the excellent and virile portrait of Prince Henry of Prussia, by F. Seyton Scott. The closing day is January 6, 1912.

## FORTHCOMING EXHIBITIONS.

1912.

March 12 to 16.—Sheffield Photographic Society. Sec., James W. Wright, 30, Oakhill Road, Sheffield.

May 3 to 11.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

The Pictorial Record Society of Exeter will hold its first meeting of the season at the Royal Albert Museum, on Wednesday, December 6, when an address will be given by Mr. F. A. Bridge, on "Matter of Fact Photography." The Mayor of Exeter will preside.

Messrs. C. Janzer and Co., 4 and 5, Gough Square, write us that the portion of the business dealing with the "Autographer" printing machine has been sold to Messrs. The Photographic Printing and Etching-Machinery, Ltd., who have purchased the French, English, and American patents for this machine. Mr. C. Janzer has the management of the business.

£4 per week, with travelling allowances of 12s. 6d. per day, and free railway and steamer fares were offered by the Australian Commonwealth Government in an advertisement for applications for the position of photographer and cinematograph operator for advertising the Federal States. The person appointed will obtain all the films and photographs which the Department of External Affairs think it necessary to provide for advertising schemes. The appointment is for a period of twelve months.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between November 13 and 18:—

Shutters.—No. 25,207. Objective shutters. Christian Bruns, Heinrich Bruns, and Christian Bruns, G.m.b.H.

View-finder.—No. 25,547. View-finder. John James Cresswell.

Sensitising Paper.—No. 25,271. Preparation of papers and other materials for photographic printing. James Burnside.

X-Ray Apparatus.—No. 25,328. Process and means for pressing an intensifying screen against a photographic plate in X-ray apparatus. Werner Otto.

Cinematographs.—No. 25,619. Cinematograph cameras specially for taking moving picture portraits and groups. Richard Kraus and Joseph Grebmeier.

## COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Dark-Room Lamps.—No. 23,750 (Oct. 13, 1910). The claim is for a dark-room lamp with an inclined front, the lantern turning on a spindle (fixed to a base plate, which is attached to the wall of the dark-room). The upper glass is covered by a hinged lid, so that the light can be varied without touching the glasses.

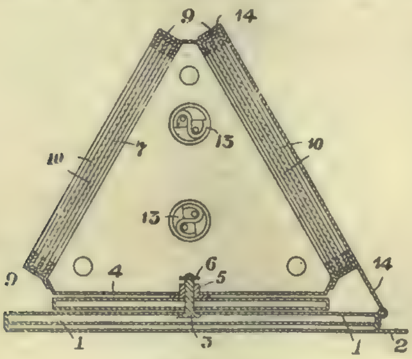

Fig. 1.

The lantern is composed of a body of triangular prismatic form, one of the faces of which comes against a base plate, 1, which carried fixing lugs, 2. On this plate is riveted a spindle, 3, which penetrates into the lantern through the face, 4, and the sleeve, 5, in which latter it is a close fit. A pin, 6, passes through the spindle, 3, above the sleeve, 5, and enables the face 4 to be slightly raised, in order to enable the lantern to be turned, but prevents it coming off the spindle.

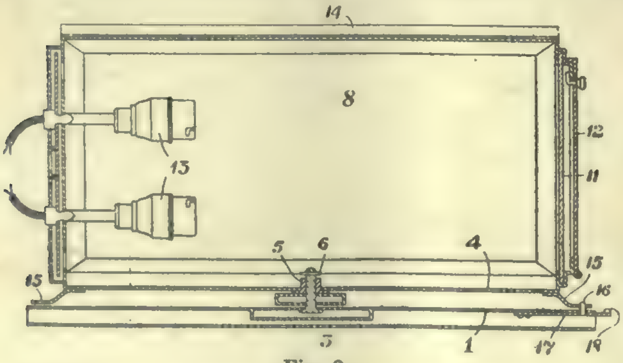

Fig. 2.

The lantern, having a triangular section, has on its two other faces, 7 and 8, rebates, 9, for receiving the filters, 10, directly or in suitable frames.

A filter, 11, which may be covered by a hinged shutter, 12, is also mounted or fitted on one of the ends.

At the other end the wires for two electric lamps, 13, enter, in order that the intensity of the light may be varied. By this end also the ventilation is done by means of a double bottom with zigzag apertures.

As the light is given by the lower filter, so as not to inconvenience the operator, whilst suitably illuminating the dish, the upper filter is closed by a cover, 14, hinged to the base plate, 1. When the lantern is to be turned, this cover must be raised, and then let down on the filter, which has been brought to the top and is no longer to be used.

Finally, in order to fix the positions of the lantern, its ends each have a lug, 15, provided with a hole into which a nipple, 16, on a spring blade, 17, enters, and which may be released by pressing on a knob, 18, when it is desired to turn the lantern.—W. P. Thompson, 285, High Holborn, London, W.C., for Poulenc Frères, 92, rue Vieille du Temple, Paris.

Fireproofing Fabrics.—No. 16,557, 1911 (July 18, 1911). The claim is for a compound of approximately equal parts of borax, powdered alum, and common salt, to be dissolved in water, and used for rinsing or dipping clothes, fabrics, etc., to render them non-inflammable.—Frank Johnson and Michael Newton, 298, Radford Road, Nottingham.

Colour Cinematography.—No. 25,869, 1910 (November 7, 1910). The invention is an improvement on the applicant's previous specification, No. 1,717, 1910 ("B.J.," February 24, 1911, p. 145), according to which prisms are arranged in front of the condenser and effect a simultaneous exposure of a number of consecutive pictures of the film, corresponding to the number of the basic colours used, and according to which a single lens is provided in combination with mirrors and prisms, which project the single pictures illuminated simultaneously as a composite picture on the screen.

The present invention has for its object to improve such means by replacing the prisms arranged in front of the condenser by a single divergent lens, thereby preventing the light from the condenser being projected on the pictures of the film with coloured edges. Further lenses are arranged between the divergent lens and the window of the apparatus, which lenses direct the light rays.

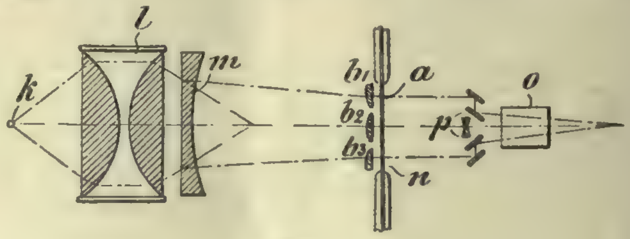

Fig. 1.

The divergent lens, placed in front of the condenser, diverges the light rays from the condenser in such a manner, that instead of forming circular light-areas on the film, each covering only a single picture, they now form an oval light-area covering a number of pictures corresponding to the number of the basic colours used—for instance, three.

Preferably the divergent lens is a concave cylinder-lens. The cylinder may be parabolical or elliptical.

In the figures, $k$ is the source of light, $l$ the condenser, and $m$ the divergent lens arranged in front of the same; $n$ is the window of the apparatus, which is so large that it corresponds to three widths of single pictures; $a$ is the film, $o$ the lens, and $p$ the mirrors or prisms arranged in combination with the same.

In the form shown in Fig. 1 three small convex cylinder-lenses, $b^1$, $b^2$, $b^3$, are arranged between the condenser $l$ and the window $n$ and near the window. One side of the lenses is cylindrical, parabolical, or elliptical, while the other side is plane. The two outer lenses $b^1$ and $b^3$ are only half lenses, the narrow side of which faces towards the central lens $b^2$.

All the light-rays coming from the condenser *l* will be directed towards a point of its prolonged axis, and consequently the light-rays passing through the two outer pictures of the film *a* will not be projected on the mirrors or prisms *p* arranged in front of the pictures. However, the two outer lenses $b^1$ and $b^3$, the refractive edges of which face towards the central lens $b^2$, will cause the light-rays striking the outer lenses to be bent outwards, and the angle of refraction of the outer lenses $b^1$ and $b^3$ may be so determined, that the light-rays are projected exactly on the corresponding mirrors or prisms *p*.

In the form shown in Fig. 2 the convex cylinder-lenses $b^1$, $b^2$,

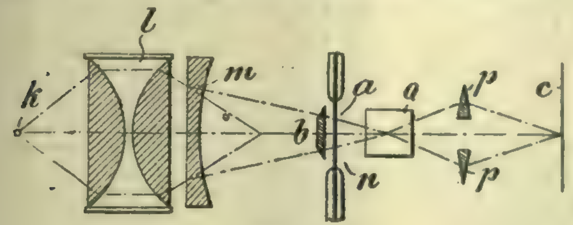

Fig. 2.

and $b^3$ are replaced by a lens or lenses *b*, which are cut in such a manner that the light-rays passing through the pictures illuminated simultaneously intersect in the centre-line of the lens *o*. The prisms *p* are further arranged between the lens *o* and the screen *c*, and cut in such a manner that they project the single pictures illuminated simultaneously as a composite picture on the screen. Preferably the lens or lenses *b* are made of a single plate of glass, the central part of which is plane and the edges of which are cut in such a manner that the light-rays passing through the pictures of the film *a* intersect in the centre-line of the lens. It is not necessary that the central part of the lens *b* is plane. Preferably the prisms *p* are arranged in such a manner that they can be adjusted. Rasmus Bjerregaard, 22, Tordenskjoldsgade, Copenhagen, and the Continental Films Kompagni, 22, Tordenskjoldsgade, Copenhagen.

The following complete specification, etc., is open to public inspection, before acceptance, under the Patents Act, 1901:—

CINEMATOGRAPHY.—No. 24,809. Apparatus for photographing and projecting cinematograph views. Berthon and Audibert.

# Analecta.

*Extracts from our weekly and monthly contemporaries.*

## Sulphide Toning.

IN order to obtain regularity of tone (writes Mr. Frederick A. Gardiner in the "Amateur Photographer and Photographic News" for November 27), a number of prints were made giving exposures which gave a fully developed print in one, two, three and four minutes' development. These prints were toned and kept as a standard. In exposing a print, I now, therefore, decide which of the four tones I desire to obtain, and thereby determine the time of development. I then make three exposures on a test strip in the usual way, and develop it for this time. The print is then given the selected exposure, and developed for the same time as the test strip. The resulting print will, on toning, be found to give the tone desired. To give an example of this method of working, we will suppose that the tone desired requires two minutes' development, which is what I find to give the most pleasing tone on Paget bromide paper. The test strip is then exposed for, say, five, ten, and fifteen seconds, and developed for two minutes. Suppose the part having ten seconds' exposure is considered the correct exposure (i.e., that which gives a print which is slightly darker than the desired finished result), then the print is exposed for ten seconds and developed for two minutes.

It will be seen from the foregoing results that contrastiness or flatness of the negative cannot be corrected by exposure in bromide printing if the prints are to be sepia toned. The only way of correcting these is by correcting the negative by reduction or intensification, or by making a fresh negative which is softer or more contrasty, as the case may be. In view of this, it is obvious that in taking a photograph and developing the negative, the tone of the resulting print should be kept in mind, and exposure and development should be arranged so as to give the best print with the exposure the tone required demands.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

FRIDAY, DECEMBER 1.

Cowlairs Co-operative Camera Club. Colour Photography.

SATURDAY, DECEMBER 2.

Edinburgh Photographic Society. "A Day in the Life of a Cowboy." Rev. W. Kenneth Grant.
Cowlairs Co-operative Camera Club. Social.

MONDAY, DECEMBER 4.

Bradford Photographic Society. "The Story of Fountains Abbey." Thomas W. Thornton.
South London Photographic Society. Lecturette Competitions.
Scarborough and District Photographic Society. "Domestic Life in Birdland." E. Arnold Wallis.
Leeds Camera Club. "Simultaneous Exposure and Development of Bromide Paper." R. Stockdale, M.A.
Southport Photographic Society. L. & C. U. 1911 Slides.
Catford and Forest Hill Photographic Society. "Bromide Enlarging," &c. F. H. Fenton.
Southampton Camera Club. "The Tinting of Lantern Slides." R. V. Banks.
Marylebone Camera Club. Visit to the South London P. S. Lecturette Competition.
Leek Photographic Society. "The Vale of Clwyd." R. A. Crombie.
Dewsbury Photographic Society. "Bromoil." Albert Lyles.
Bowes Park and District Photographic Society. "The Walled City of the Tauber." E. T. Coombes.
Bath Photographic Society. "Self-Toning Papers." W. H. Weeks.
Kidderminster and District Photographic Society. "Improving the Negative."
Wolverhampton Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

TUESDAY, DECEMBER 5.

Royal Photographic Society of Great Britain. "The Simplicity of Telephotography." Dr. C. R. Atkin Swan.
Worthing Camera Club. "Flashlight and how it is done." H. Hill (Chas. Zimmermann and Co., London).
Leeds Photographic Society. "The Making of a Lantern Slide." Godfrey Bingley.
Hackney Photographic Society. "The Walled City of the Tauber." E. T. Coombes.
Halifax Camera Club. "A Peep into a Worsted Factory." F. J. Baines.
Sheffield Photographic Society. "Landscape Photography." Dr. H. G. Paterson.
St. Helen's Camera Club. "Retouching." W. Bell, for Gevaert, Limited.

WEDNESDAY, DECEMBER 6.

Croydon Camera Club. "The Hand Camera: its Uses and Possibilities." James A Sinclair.
Borough Polytechnic Photographic Society. "Nooks and Corners of Old London." C. Forbes.
Coventry Photographic Club. "Amateur Photographer" Prize Slides.
Doncaster Camera Club. "Nature Studies—Garden and Wild Flower Photography." T. G. Hibbert.
Partick Camera Club. "Short Notes on a Tour in Normandy."
Sale Photographic Society. "A Holiday in Jersey." H. Holloway.
Ilford Photographic Society. "Intensification and Reduction." J. McIntosh.
North Middlesex Photographic Society. Lantern Slide and Print Competitions.
Barrhead and District Amateur Art Club. "The Hebrides and the Hebrideans." E. T. Gallocher.
Edinburgh Photographic Society. "Spring and Summer Days in Lochaber, Moidart and Skye." Rev. A. E. Robertson.
Scottish Photo Pictorial Circle. "Imagination in Landscape Art." Peter Mitchell.
Ealing Photographic Society. Third Print Competition.
Cavendish Camera Club. Discussion, "Time v. Tentative Development." Messrs. Rose and Harrison.

THURSDAY, DECEMBER 7.

Liverpool Amateur Photographic Association. "Flower Photography." E. Seymour.
Photographic Society of Ireland. "The Bromoil Process." H. W. Segrave.
Folkestone and District Camera Club. "Photography and Focus" Prize Slides.
Bodley, Farsley, Calverley, and Bramley Photographic Society. "My Travels in Norway." W. Bretherick.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, November 28, Mr. George Lamley in the chair.

Dr. H. Roger-Smith gave an extremely interesting lecture, entitled "Scrambles Around Zermatt and Arolla," illustrated by about 100 monochrome slides, many of which showed various members of the party in situations of considerable difficulty and danger, and included also a series of fine views taken from the tops of the various mountains which the lecturer had ascended. Dr. Roger-Smith also showed about a score of Autochrome slides, taken among the hills, and depicting sunset and twilight effects on the peaks of the mountains. The proceedings closed with a hearty vote of thanks to the lecturer.

## Commercial & Legal Intelligence.

**Canvasser's Fraud.**—Before Sheriff Laing, last week, at Stonehaven, George Black Strachan was charged with pretending to thirty-two persons that he represented a Glasgow photographic firm, and induced them to pay him sums of money amounting to £4 3s. for enlargements. He pleaded not guilty, and proof was led last week, and the case continued till yesterday to hear the evidence of William Miller, of the North-Eastern Photo-Enlargement Company, Dunfermline. Witness said accused was acting as canvasser for him in the North of Scotland, but was not authorised to take money. While at Grantown-on-Spey accused came to him with sixty photographs to be enlarged. He, before doing so, had to verify the orders, but accused bolted, and he had not seen him since. Witness did not know the addresses of the parties, and could not return the photographs, but was willing to do so.

The Sheriff said that, seeing accused had already been two weeks in prison, he would sentence him to sixty days.

**The public examination** was held at Cardiff Bankruptcy Court last week of George Lazar, photographic artist, lately carrying on business at 33, Queen Street, Cardiff. A brief report of the first meeting of creditors appeared in our issue of November 17. The liabilities were put at £377 and the assets at about £2. The debtor stated that he was a Russian subject, and came to England about six years ago. He remained in London for twelve months, and then went to Cardiff, where he started business as a photographic artist and enlarger with a capital of £30. He was financially assisted by friends on several occasions, and he ascribed his failure to bad trade and bad debts. Replying to the Official Receiver, Lazar said that a Mr. Roberts had lent him £188, the arrangement being that he should receive the money back by instalments. Debtor did tell Mr. Roberts that he should have a share of the profits, but he denied that Mr. Roberts was a partner. In further examination witness said that he got married without money, and went away on his honeymoon on the assurance of his father-in-law that he would let him have money to increase his business, but his father-in-law in the end would not let him have the money. Before his marriage he had borrowed £30 from one friend and £20 from another friend, who both knew that he had no means. His furniture belonged to his father-in-law. The examination was closed.

**Legal Notices.**—Notice of intended dividend is given in the bankrupt estate of John Thomas Garbutt, photographic dealer, etc., residing at 52, Hillcrest Avenue, Cowper Street, and carrying on business at 57, Guildford Street, Leeds. Proofs must be lodged on or before December 1 with Mr. A. Cripwell, 12, Cherry Street, Birmingham.

### NEW COMPANIES.

**Joseph Pearce, Ltd.**—This company was registered with a capital of £400 in £1 shares. Objects, to carry on the business of miniature specialists, photographers, manufacturers of photographic and other enlargements, etc. First directors, J. Pearce and J. E. Pearce. Registered office, Prospect Cottage, Kiln Road, Prestwood, Great Missenden, Bucks. Private company.

◆

**The New English Art Club.**—This exhibition is remarkable for two very delightful allegorical works by Wm. Shackleton, some landscapes by Prof. Fredk. Brown, of more than usual feeling and richness, a fine Wilson Steer, and a few powerful water-colours by Sargent and Rich. Besides these, the visitor will find another consignment of amusing caricatures by Max Beerbohm, which have come to be one of the staple attractions of the N.E.A.C.

## News and Notes.

**Harringtons, Ltd.**—In reference to our paragraph of September 1 last, Messrs. Harringtons write :—"It may interest you to know that we have still further developed our trade in New Zealand, having recently acquired the business of the Imperial Camera Co., of Wellington, which will in future be known as Harringtons N.Z., Ltd. This is further evidence of the great strides our business is taking throughout the Commonwealth and the Dominion of New Zealand. We have also appointed a special agent in Dunedin, N.Z., Mr. H. J. Gill."

**The Ernemann Prize Competition** has resulted, as far as English competitors are concerned, as follows :—Second prize, Miss M. K. Penrice, of Bournemouth; one of the five prizes of £2 10s. to Mr. O. P. Topham, of Bristol; one of the sixteen prizes of £1 to Miss Onstow, of Bournemouth; and one of the same value to Mr. W. Jesper, of Beechwood. The judges report that it was not a light task selecting the prizes from the numerous number of competitive pictures sent in, and, considering that the competition was open to the whole world, it is, indeed, gratifying to note that England is well represented.

**Rajar Monthly Competition.**—The prizes offered by Messrs. Rajar, Ltd., Mobberley, Cheshire, for the best prints on papers or postcards of their manufacture, submitted for the competition for the month of October, have been awarded as follows :—Class I., open competition, to Miss Dorothy Vincent, Portland House, Ryde, I.O.W., for print on self-toning paper; class II., for those who have never previously won a prize in any class of competition, to Mr. F. G. Caddy, 5, Craigerne Road, Blackheath, London, S.E., for print on self-toning paper purchased from Messrs. Butcher, Curnow, and Co., Tranquil Vale, Blackheath Village, London, S.E.

**The Camera Nuisance.**—Mr. F. G. Aflalo writes from St. Petersburg to the "Times" :—"We, in England, with our curious notions of unrestrained liberty, are apt to cherish a distorted view of the Russian police and all its doings. I venture, however, to suggest that, in one respect at any rate, the Russian police shows greater intelligence than our own, and that is in the tight hold it keeps on that modern nuisance, the amateur photographer. In England a man has only to buy a camera for a few shillings in order to annoy the whole of his fellow-creatures, not merely taking frightful pictures of them, which is bad enough, but actually, at his pleasure, sending his pictorial libels to the illustrated papers, which is immeasurably worse. In Petersburg things are managed differently, and, from the general standpoint, more intelligently. A special permit must be obtained (at a trifling cost of 3s., and on the strength of a letter from the applicant's Embassy) from the Prefect of Police, and in this document it is expressly set forth that the holder is not permitted to photograph religious or other processions, or, indeed, to photograph individuals who object to the ordeal. Here are sane and salutary restrictions which I, for one, take no exception to. *O si sic alibi!*"

## Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

### CHEMICAL POISONING.

To the Editors.

Gentlemen,—With reference to your correspondent, Mr. Sparrow's, trouble with diamidophenol, there is no doubt that to some persons this substance is highly poisonous, as, in addition to staining one's nails deep black, it has the effect of producing at first small pimples full of watery matter, which, if not checked, eventually spread into large sores, with intolerable itching. My experience with this chemical was detailed in the "B.J." some little while since, when, among various remedies suggested by various readers, one in particular effected a speedy cure. The advice was to well wash the hands, or any other affected parts, at bedtime with hot water, and to apply freely ordinary zinc ointment; this treatment to be repeated in the morning in the same way. It was stated that this would cure in three days. It took longer in my case, as the disease was of rather long standing.

My hands are now quite free from the trouble, but if I so much as let a single splash remain on the skin, the watery pimple arises the next day, so to obviate this rubber gloves will be found the best preventive.—Yours faithfully, DOLPHIN.

November 25, 1911.

### WHAT IS HALATION?

To the Editors.

Gentlemen,—Will Mr. F. F. Renwick please say what his normal developer was for plates 1 and 2, as, judging from the photo blocks, both 3 and 4 are very much better than No. 1? Fig. 3 was developed in strong M. Q. for two minutes, Fig. 4 for twenty minutes, so I am curious to know why normal development should give so much worse a result as shown by Fig. 1.—I am, yours faithfully,

R. L. BOYD.

10, Annesley Park, Rathmines, Dublin.
November 26, 1911.

## Answers to Correspondents.

*** *All matters intended for the text portion of this* JOURNAL, *including queries, must be addressed to* "THE EDITORS, THE BRITISH JOURNAL OF PHOTOGRAPHY, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* MESSRS. HENRY GREENWOOD & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* MESSRS. HENRY GREENWOOD & COMPANY, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**XERXES.**—By the Aerograph Co., 43, Holborn Viaduct, London, E.C.

**HYPO.**—We reviewed the Uto color paper in the B.J. "Colour Photography" supplement for November 3.

**AIR-BRUSH.**—From any of the firms named under "Air-brushes" in the "Almanac," page 1,428. Messrs. Reeves' address is Farringdon Avenue, London, E.C.

**H. L.**—It is difficult to say, as the price depends as much on subject as size. As, probably, another photograph could easily be obtained, we should say a guinea for the negative would be as much as you could ask.

**READER.**—If you require a lens purely for portraiture you cannot do better than choose one of the standard instruments of Dallmeyer, Ross, Meyer, or other makers, any of whom would advise you as to the best focus.

**LUX.**—We think you must refer to either the "Moonlight" vapour light, sold by Messrs. Gerard and Co., 243, Hyde Road, Manchester, or the "Devolight," sold by Messrs. James A. Sinclair and Co., Ltd., 54, Haymarket, London, W.

**A. B. C.**—You can get such work done by any of the firms making a specialty of the supply of photographic post-cards from photographers' negatives. See list of names under "Post-cards, Supply and Printing," in the "Almanac," published to-day.

**P.P.A.**—Would you kindly give the address in "Answers" column of "B.J." of the secretary of the Photographers' Association? I know you gave it previously for someone, and have been looking up back numbers and cannot find the reply.—THOMAS.

Mr. A. Mackie, 89, Albany Street, London, N.W.

**POSTCARDS.**—Can you tell me what developer and toning you would think was used for the enclosed postcard, as I have a lot of bromide postcards to do, and wish to get the best tone possible?—BROMIDE.

We should say the card is one hypo-alum toned. Amidol is about the best developer for this process, but be advised by the maker of the bromide cards you use.

**ARTURA.**—I read about a fortnight ago in your valuable paper an article headed "'Artura Method' Sepias," and a note concerning same. Could you tell me in your "Answers to Correspondents" where I could get a copy of "Photo-Era"? Also where I could purchase "Artura Paper"?—L. H. TAGGART.

For the "Photo-Era" apply direct to 383, Roylston Street, Boston, U.S.A. As regards the paper, no doubt the Kodak Co., Kingsway, could help you.

**CARICATURE PORTRAITS.**—Could you explain to me through the medium of the "Journal" the usual method of taking caricature photographs? I have some comic foregrounds, which only reach to the sitter's chin, and I find difficulty in getting foreground to blend with background. See print enclosed.—HOOSIER.

A special caricature foreground is used, the subject being posed behind it. Such grounds are sold by any large dealers; Messrs. Butcher, for example, list them.

**REMOVING INK STAINS.**—We have had an accident by upsetting some blue-black, ordinary writing ink on a P.O.P. print, glossy (we think a gold toning). Is there any means for removing same?—PROFESSIONAL.

We doubt if a perfect remedy is possible, but try to wipe off as much as possible with a damp pad of cotton wool, and then apply a weak solution of oxalic acid until all stain is removed. A good washing will then be necessary.

**AMBITIOUS.**—1. The most permanent three-colour prints are those by the carbon process. 2. The best method is to use a rigid camera, fitted with a repeating back, carrying the screens. You will find such repeating backs for colour work fully described in Messrs. Sanger-Shepherd's price-list in the "Almanac" published to-day. 3. The Autochrome plates. 4. "Photography in Natural Colours," by König and Wall. (Routledge. 2s. 6d.) 5. The process you name is a three-colour method. 6. Fair results, the best so far obtained at a single printing. See advertisement in this issue.

**HYDROMETER.**—1. Referring to Mr. Hullberg's interesting article on "Halation," will you kindly assist me in the developing formula, i.e., can you give me a solution in ozs. of stock solutions Nos. 2 and 3 (equivalent to hydro. tests)? 2. Is a hydrometer an expensive article or difficult to use? 3. Can you also tell me where I can obtain the "Library of Practical Photography," and the cost of same? If this work has many such articles, it is well worth its cost.—J. M.

1. See reply to "Cathay." 2. About 1s. or 1s. 6d. 3. It is published by "American Photography," 361, Broadway, New York.

**CURIOUS.**—We must say that we think the charge excessive. You appear to think that because the circumstances were sensational your prices could therefore be much more. In this it appears you were unfortunately misled by such remarks as "money no object." Those, we think, could not have been made by a responsible official. As a matter of fact, the work you have done is being turned out every day by scores of photographers, who, we should say, regard about half your prices as good payment. If we were in your place we should send a strictly itemised account to the Chief Superintendent, making the whole charge total from £3 10s. to £4. You do not enclose stamp for the return of the correspondence.

Painting Miniatures.—In painting a miniature, on a photographic basis, after the carbon photograph is lightly printed on the ivory, I believe it should be treated in some way with pumice stone before beginning to colour it. Can you tell me how this is done; and should powdered pumice stone be used?—Anne.

Pumice powder is used by miniature painters to give a fine matt surface to the ivory before commencing work. If a carbon print upon ivory is to be worked upon, it may be reduced to any desired depth by means of pumice powder applied as directed on page 900 of our last issue. Paper stumps may be used to apply the powder to small areas. Some workers prefer cuttle-fish powder, as being less likely to scratch. Whichever is used, great care must be taken to have both print and powder perfectly dry.

Solution Strengths.—Will you be good enough to inform me what the equivalent is, in grains per oz., of "70 with hydrometer sulphite of soda, and 40 with hydrometer carbonate of soda solutions," mentioned on page 876 of this week's issue of the "Journal"?—Cathay.

We are afraid we can only surmise that the hydrometer referred to is Twaddell, in which case 70 deg. equals a density of 1.35 and 40 degrees of 1.20. We know of no tables of densities of sulphite solution, and, in any case, owing to the variability in the quality of sulphite, we are inclined to think that a hydrometer test is not much good. In the case of the soda carbonate, a solution of 1.20 sp. gr. will contain about 20 per cent. of anhydrous soda carbonate, by weight, i.e., 1 oz. (Av.) in 5 (weighed) ozs. of solution. This is equal to 54 per cent. of soda carbonate cryst., and is getting very near to a saturated solution.

Bathed Plates.—1. In reading the "Answers to Correspondents," November 10 issue, I find a reader has bathed and successfully used plates as directed in an article which appeared in the "B.J.," written by Mr. A. Payne. Will you please inform me the date of issue in which this article appeared? Should also like to know what plate is most suitable for bathing, and why certain plates are more suitable than others for this process. 2. Is it possible for a plate to be made with black emulsion instead of the usual? If possible, would this not prevent reflection to bellows, transmission of light to back of plate thereby being faster through the fact of absorbing all, instead of reflecting some of the image?—J. E. M.

1. You will find full particulars in the article by Mr. Payne, "B.J.," March 8, 1907. 2. Hurter and Driffield long ago suggested a black emulsion for the reasons you name, but it has not been found practicable.

Copying, etc.—1. I am instructed to photograph some old books at a library. What would be the best (a) plate to use—process, ordinary, or an ortho.; (b) developer, quinol; (c) should the book be laid on the floor? 2. Would Lancaster's Ellipsoid enlarger for gas give as good a result as daylight? I have been using the latter, as I have work from amateurs as well as my own, but I can only work in fine weather. If these (gas) give good results I much prefer the cost over a condenser in the ½-plate size. I have both Cooke and Goerz lenses.—Weedee.

1. Yes, certainly, photo-mechanical plates. If the books are stained or yellowed with age there may perhaps be some advantage in an ortho. process plate. No better developer than hydroquinone for getting good density with clearness of line. Laying book out and supporting the camera vertically is a very good plan. 2. The apparatus is excellent for enlarging up to moderate size, say, 5 or 6 diameters. For larger scale work or when working from very dense negatives, daylight, or, better, a condenser with arc lamp is preferable.

Damaged Bromide Prints.—I am writing to ask you if you could explain one or two troubles I have had lately. Enclosed you will find three bromide prints on ——— paper. They were developed in diamidophenol, and fixed in an acid bath. They were left overnight in a weak alum bath, and given twenty-four changes of water. One, you will see, has got holes eaten right out of it; the others are both quite yellow, one all over and the other in patches, with a deeper stain on it. I may state the prints were each made on a different occasion. I should be much obliged if you could answer in your next.—Troubled.

The trouble is no doubt due to the use of the alum bath. In the case of the yellow-stained prints, the hypo was not all washed out before the alum was applied. The spots may be due to impurities in the alum. Iron is often present, and does much damage. We do not recommend the use of potash alum at all. If alum is necessary, use chrome alum; but formalin is preferable. Also, do not soak all night; it does no good, and no prints are any the better for over-much soaking. We should not use any hardening bath at all except in very hot weather, when it is really advisable.

Books.—Please state if you consider the books in the following list up to date:—"The Optics of Photography and Photographic Lenses," by J. Traill Taylor. "The Chemistry of Photography," R. Meldola. "Posing and Lighting in Photographic Studios and Private Apartments," C. Klary. "Photographic and Photo-Mechanical Printing Processes," W. K. Burton. "Photo-Mechanical Processes," W. T. Wilkinson. I have selected all of them, except that by C. Klary, from the list in last year's "Almanac." If there are more modern books on these subjects will you kindly name some of the best? Also inform me of a good book on colour photography.—W. M.

No better book, from a practical standpoint, than Traill Taylor's—the latest edition, edited by Everitt. Meldola's is a good elementary book, but does not deal—no book does in an easy way—with modern sensitometric photography. Either Klary or Duchochois. Burton's is a thoroughly sound manual, but somewhat out of date now. Wilkinson's is the best all-round manual on process. We advise you to get the list of the "Photo-Miniature" (Tennant and Ward, 122, East 20th Street, New York), any of which are the latest and most sound advice on their subjects.

Copyright.—I wish you would advise me if I am right or wrong. I am not a photographer, I do not know anything about photography, but I go about canvassing for enlargements, to make from photographs which my customers have. Then I send them away, and get them enlarged and finished for a few pence. Then I frame them for the expense of a few pence to me. Then I sell them for 21s. Now a few weeks past a real photographer came along with his camera and asked a young lady to let him photograph her. She asked how much would be to pay. He said nothing. He promised not to charge her anything. He took the picture and went away without any pay, but the next day he came back and showed her a proof, and told her he had recorded the copyright as his, and if she wanted any copies she could have them by paying him for them. It was a beautiful picture, and so she ordered some copies, which she paid for when she got them. Now I want to make the lady an enlargement and a miniature, which the lady is willing for me to do, but the photographer says I cannot make it without I must pay him. I have got nothing to pay with, so he says he can get paid from the lady too. Is that so? What shall I do?—Eli Rabinovitch.

Since the photographer took the portrait "on spec.," he can register the copyright and prevent anyone from making copies or enlargements of it. He is quite within his rights in this.

*⁎* Notice to Advertisers.—*Blocks and copy are received subject to the approval of the Publishers, and advertisements are inserted absolutely without condition, expressed or implied, as to what appears in the text portion of the paper.*

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2692. Vol. LVIII. FRIDAY, DECEMBER 8, 1911. Price Twopence.

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## SUMMARY.

Equipment of the Dark-Room.—A report of the recent discussion at the Royal Photographic Society on the fitting of the dark-room occupies pages 927 to 934. Mr. John H. Gear, in introducing the subject, dealt with the fitting of the photographer's working bench. He advocated a large sink of the lead-lined pattern provided with a dark-room lamp placed across the sink and fitted with a safe-light facing each way. A further lamp placed near the ceiling of the dark-room serves to give sufficient safe illumination for moving about and obtaining articles not on the working-bench. A tank giving a pressure of water of about 5 ft. is found preferable to drawing direct from the supply. Mr. Gear dealt with the making of the pyro-soda developer and the use of a number of convenient accessories.

Mr. W. B. Ferguson recommended a small sink on the score of dryness of the room. Dr. Mees described a simple holder for the printing frame allowing of the latter being placed at any one of a series of fixed distances from the source of light. Mr. McIntosh mentioned a convenient method of ventilating the dark-room, and Mr. Drinkwater Butt named certain further conveniences.

The points which a photographer needs to keep before him in arranging a show-case display are the subject of a leading article on page 926.

Other hints on the show-case and on studio methods are given in an article on page 935.

The improvement which can be made in a studio by re-decorating it on modern lines is instanced in the description of a Watford establishment on page 932.

A correspondent recommends a remedy for skin poisoning due to metol. (P. 942.)

Cinematograph projection appears under "Patent News." (P. 938.)

A striking series of Kodak photographs of the Turko-Italian war is being shown in the Strand gallery of the Kodak Company. (P. 937.)

M. V. Crémier has published formulæ for the combined development and fixing of lantern-slides and of development papers. (P. 934.)

The United States Government is said to be making extensive use of photography as a substitute for the labour of typists. (P. 937.)

## EX CATHEDRA.

**The Dark-Room.** The paper by Mr. John H. Gear and the discussion which followed it, at the Royal Photographic Society some weeks ago, provided both the professional and amateur worker with a good many excellent ideas for the equipment of the ideal dark-room. In reprinting the paper, on another page of this issue, we have to acknowledge the kindness of Mr. Gear and those who followed him in putting at our disposal the illustrations which are reproduced. Perhaps the most useful hint given by Mr. Gear was the arrangement of a top safe-light in the dark-room, in other words, a lamp giving a fairly bright yellow light, placed near the ceiling of the dark-room so as to throw its light upon this latter, and, by reflection, to scatter it through the room. Such a lamp, fixed above the working bench, does not in any way disturb the worker in using a safe-light of much deeper shade, it does not endanger the safety of plates which are being developed, but it does give a soft and even illumination throughout the room. The result is that one can move about and take other dishes or bottles from their shelves without groping in the intense darkness which stands around a comparatively small dark-room lamp fitted with a safe-light of depth suitable to the more rapid plates. Since reading Mr. Gear's paper we have installed such a lamp as this in our own dark-room, and would now on no account be without it. Mr. Gear made his with a bichromate solution—to our mind a rather inadvisable method for a lamp which occupies an elevated position. We prepared ours very cheaply from a small two-fold clothes-horse, to which we gave a V-shape by means of a pair of side struts, and then covered the whole of the framework with black blind material, saving only the top, which we covered with orange fabric. A single 16-candle-power electric lamp, with this lantern placed about a foot below the ceiling, gives a very agreeable illumination throughout a room about 12ft. square.

* * *

**Returning Empties.** We believe that we shall be doing a good turn both to many of our professional readers and to the firms making enlargements for them by giving a hint in regard to the return of empties, boards, stretchers, etc., to enlargers during the present month. During practically the whole of December the railway companies and carriers are working at an extra pressure, and in putting aside or delaying any class of goods are most likely to select those of the "empty" order, which, obviously, are not of the urgency of many of the perishable articles distributed from now onwards until the Christmas season. The result is that goods of this class are liable to be delayed in transit, or even to fail altogether in reaching their destination, thus causing annoyance and correspondence which could quite easily be avoided by keeping them in hand until after the Christmas holidays. We are not aware that enlarging firms are in the habit of making an intimation to their customers to this effect, but from correspondence in past years which we have had occasion to peruse it is evidently a source of trouble which, in a number of instances, has been the cause of mutual recriminations.

* * *

**Sulphide Toning.** A writer in the "Amateur Photographer" makes some excellent suggestions with regard to sulphide toning. He points out, quite correctly we believe, that the final tone depends on the exposure and development of the original print, and in order that he may be able to get the desired tone on any particular brand of paper he experimentally determines the tones given with varying times of development, and so creates a standard for future guidance. Details of this method were given in our "Analecta" column, on page 921 in the issue for December 1. The theory that exposure and development are the real determining factors in the final result has been put forward several times before, but it has, to a considerable extent, been overshadowed by various speculative ideas with regard to the action of stale sulphide solution and other theories that looked well on paper but apparently had little foundation. We believe, however, that most successful workers are now agreed on the importance of correct exposure and development, correct, that is, for sulphide toning purposes, and that they pay very little attention to the precise quality or strength of the sodium sulphide solution that they use. It often happens that of two workers both using the same formulæ one always gets good tones, while the other often, if not usually, gets bad ones. This alone is enough to show that the difference is due, not to the chemicals used, but to the preparation of the bromide print.

* * *

**Society Programmes.** Anyone through whose hands passes a large number of the fixture-lists of photographic societies must have remarked within himself upon the total absence of any photographic method in the design or production of such society literature. It seems to be one more instance of the cobbler's wife going the worst shod. We are, therefore, rather relieved to see in the fixture list of the Tunbridge Wells Amateur Photographic Association signs of a departure in the shape of half-tone portraits of the patron and president of the Association on the front cover of the programme. Photography might be called into requisition far more in such instances. The whole front cover of the programme might be occupied by a suitable half-tone reproduction, into the original of which the name and place of the meeting of the society had been worked. There is nothing very attractive about the average society prospectus, certainly nothing beyond the recital of its fixtures, to attract a photographic beginner into its ranks. Many a society which complains of lack of support could do a good deal worse than appoint a small committee to design an illustrated fixture list, which would be a really compelling piece of advertisement literature.

* * *

**The Revival of the Lantern.** We are glad to note that there is a decided return of interest in the optical lantern, or rather in lectures illustrated by its means, this winter. As we predicted long ago, the cinematograph has reacted upon its forerunner, and brought it once more into favour. This should mean a little additional business to those photographers who do not mind taking the trouble to make good-quality slides from amateurs' negatives. In nearly every town there is some skilful amateur possessing negatives suitable for a lecture in aid of local or other objects, and he is only deterred from utilising them either by want of time or doubt of his own powers in slide-making. A few decent slides, accompanied by a quotation of prices, should result in increased business. We know of photographers who do over a hundred slides annually for each of several customers. Naturally, the work must be of good even quality, and especial care taken with indifferent negatives. Apart from the public lecture demand, many amateurs would be glad to get good slides for private display at Christmas and New Year parties, when holiday episodes may be fittingly recalled. We would remind our readers that the production of slides is fully dealt with in the new issue of the B. J. ALMANAC.

* * *

**A Hint to Carbon Workers.** Some photographers have found that the dry-mounting process does not altogether suit their carbon prints, giving an uneven, mottled surface which cannot be entirely removed by sponging. A correspondent writes that he has entirely obviated this defect by re-fixing the prints in the alum bath after stripping from the temporary support. The coating on the transfer paper seems to be softer than formerly, and does not stand the heat unless hardened.

## WHAT THE PUBLIC WANTS.

PHOTOGRAPHERS seem to have widely different ideas as to what constitutes a good specimen portrait, and perhaps it is well that this is so. They must, nevertheless, have a common object in mind, and that is the attraction of fresh sitters, although from the inspection of many show-cases and windows, it is difficult to realise it. Just now there seems to be a tendency to exhibit any style which happens to be fashionable, to the exclusion of the sort of work which nineteen out of twenty customers require. It is the usual practice to fill all the best positions with "sketch" portraits, more or less expensively finished, which few people want, while the money-earning work is relegated to the background. Another mistake is that of overloading the window with big enlargements. Photographers ought to realise that these are no longer a staple article in their business. The modern householder does not cover his walls with family portraits, and it is only in the cheapest class of trade that anything over 12 by 10 is in daily demand. The better class of work is only in request for public institutions, board rooms, and the like. The old photographers who showed large numbers of cartes and cabinets, displayed in huge frames under cut-out mounts, were wise in their generation from a business point of view, for they certainly showed the public what they were likely to get at that particular establishment, which is more than can be said of the window-displays of many photographers nowadays, who, we regret to say, attract by "trade house" specimens and send out very little "home-made" work indeed. This is not only dishonest, but it is bad business, almost as bad as using rejected proofs as specimens, a practice which is not unknown. Too much attention should not be given to technique when choosing specimens; the faultless negative may appeal strongly to the photographer, but the customer does not appraise it at the same value. This was forcibly impressed upon us the other day, when looking at a window filled with children's portraits. They were well exposed, full of detail, evenly lighted, and free from any trace of movement, the photography and general get-up were excellent, *but* there was not a smile among the lot; they were all watching the camera and waiting for something to happen. This particular batch of specimens must have cost the photographer many pounds, but as business-bringers were not worth half-a-dozen cabinets of happy babies. How many cameras has the well-known Kodak specimen, "Hello, Daddy," sold? Probably thousands. Parents wanted a portrait like that, and, finding no photographer offering it, started upon the job themselves, without realising the technical difficulties to be overcome. We have no doubt that our readers have many negatives which would make just as attractive specimens upon their shelves, but because there has been a slight move, or there has been a faulty background, they have remained unprinted. When next thinking of specimens, let them look out for pictures with life in them. The fat, stolid child makes a good advertisement for a patent food, but does not touch the heart of the public like "He won't be happy till he gets it." The same principle holds good in adult portraiture; the unconventional picture attracts while the correct orthodox pose is passed unnoticed. We make a practice of noting the attitude of the public towards photographers' displays, and the results are interesting. In a mixed show of celebrities and private sitters the former seem to attract all the attention, while the ordinary portraiture is ignored. On the other hand, a window not overcrowded with good ordinary work, with two or three of outstanding attractiveness, commands a thorough inspection, and evidently makes a lasting impression upon the beholders. The subject is one of great importance to the photographer: the show-case is practically his only means of publicity; yet instead of bestowing upon it the care and thought which the ordinary business man knows he must give to his advertising department, he too often regards it as a weariness of the flesh, a disagreeable task which has to be got over somehow. In these times, next to good work, judicious advertising is the essential of success, and the portraitist should have the show-case ever in his mind, making, as many do, special pictures for it, apart from his regular orders.

# FITTING UP THE DARK-ROOM.

[The following report of a recent discussion at the Royal Photographic Society touches a topic which is of constant interest to every class of photographer. In reproducing it we have arranged the views of the various speakers as a series of articles, in doing which we have to express our thanks to the respective authors for the use of the photographs illustrating their dark-room arrangements.—Eds., "B.J."]

The selection of the dark-room is the first consideration or ought to be. Many photographers pay great attention to their reception rooms, but any hole presumably will do for the dark-room, and veritable holes some of them are. As to the amateur photographer, if he is not as enthusiastic as he might be over the more tedious part of his hobby, he annexes the bathroom and becomes a perfect nuisance to the household. If he is more ambitious and aspires to a room set apart as a dark-room, it is important for him that he should take certain considerations of constructional suitability into account. In the case of a room with a door opening close to one corner, I would prefer to place the sink behind the door, so that the door will open back upon it. The first consideration is to make the room quite perfect with regard to the exclusion of white light. Doors generally fit very badly, and the ordinary fillet is often insufficient to exclude the light. Some kind of step is necessary to stop light entering from underneath the door, but the blocking out of light from the door is not a difficult matter to arrange. The windows, especially if the sun is upon them during the working day, will present greater difficulty, unless, indeed, the light is to be permanently excluded. But a room, in my opinion, ought not to be always shut out from daylight and sunlight. I like to admit the sun into the dark-room occasionally, and for that reason I prefer a blind that can be readily put up as required. It is something of a problem, however, so to fit a window with an opaque blind and to ensure that the light does not come round its margins. The proper fitting of such a blind, moreover, is an expensive matter. As far as my experience goes, there is only one firm in London

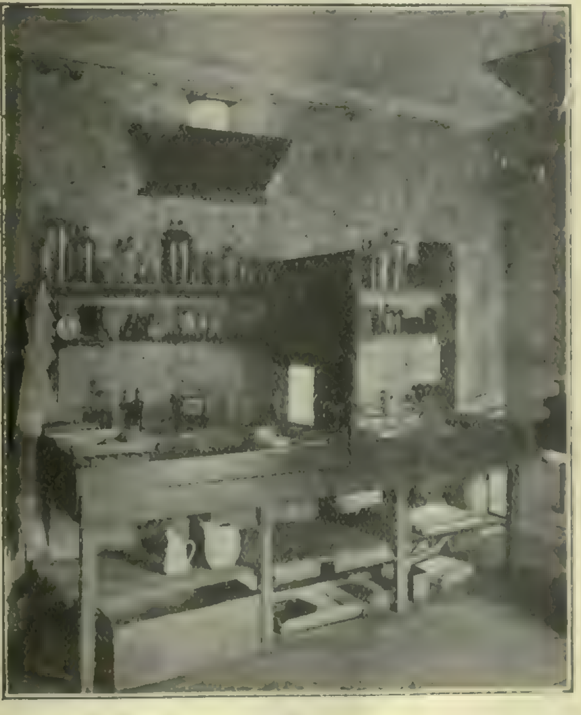

Fig 1.

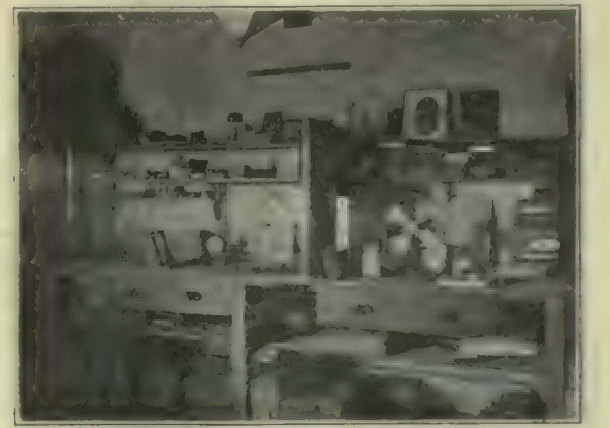

Fig. 2.

able to fit a blind perfectly so as to exclude the light, the firm of Avery and Co., 81, Great Portland Street.

Those who do not require so elaborate an arrangement can exclude the light perfectly at quite a small cost by using compo. board. It is not so readily taken down and put back in place as some more expensive arrangements, but compo. board if suitably battened to keep it from warping will answer all practical purposes. It should be lined with felt for about two inches around its margins; there should be a fillet at the top so that the compo. board can be pushed behind it, and two bolts on each side, one in the centre and the other at the bottom. These bolts hold in place the felt edging, which thus makes a light-tight joint with the window-frame. This will perfectly exclude daylight from the room in as simple a manner as it can be done, and at a small cost.

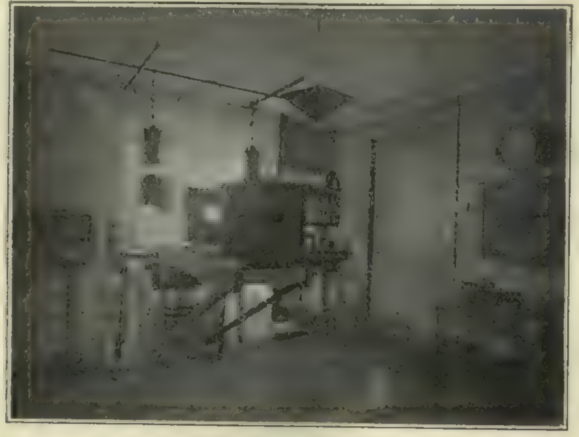

Fig. 3.

Having excluded the light, we have to consider the ventilation —a point which, I fear, is often neglected to some extent, if not absolutely. If one is in the dark-room only for a short time the effect of neglected ventilation is not appreciable, but those who have to spend hours in this confinement, must have some ventilating system if health and comfort are to be considered. The admission of air from the lower part of the room is advisable, and that can easily be obtained by means of a few holes at the bottom of the door, and a strip of black wood fixed outside or inside with about half an inch space between it and the door, thereby admitting air but not light. As to the air exit, this is better placed at the top, near the ceiling if possible, but with sash windows in a room a very simple air-trap or ventilator may be employed, and with this I have worked in dark-rooms for some time. If the top sash is placed about twelve inches down from the top of the window, and a kind of box arrangement placed at the top of the frame, into which the compo. shutter already described can terminate, free ventilation will be obtained around the light trap, and there will be no admission of light.

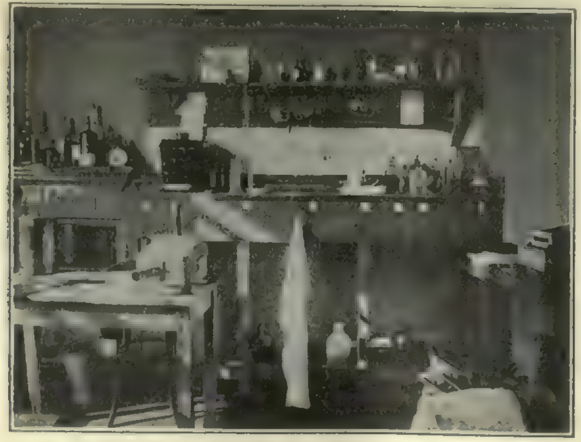

Fig. 4.

In many dark-rooms the sink is cut down to the smallest limits—a very great mistake. Earthenware sinks also are frequently used—another great mistake. Earthenware sinks are liable to cause damage to one's measures, as well as dishes. I prefer a lead-lined sink, and the lead should be burned, not soldered at the corners. If the corners are soldered, care must be exercised in the use of acids to prevent them from running down the sink, and causing the soldered corners to leak. As to the sink's dimensions, the length should be 8 or 9 feet at least, the width about 2 feet, and the depth 6 or 8 inches. Of course, there must be a slight lean towards the outlet so that the water will run away freely. Two taps for a sink of that kind are sufficient, and I prefer the swing taps if the pressure of the water is not too great. No swing tap of which I know, however, will remain long without leaking if the pressure is at all great. Therefore, I have a cistern giving a fall of about 6 feet only in a convenient part of the dark-room, and under those conditions I find the swing taps never give trouble by leaking, and the temperature of the water is more constant.

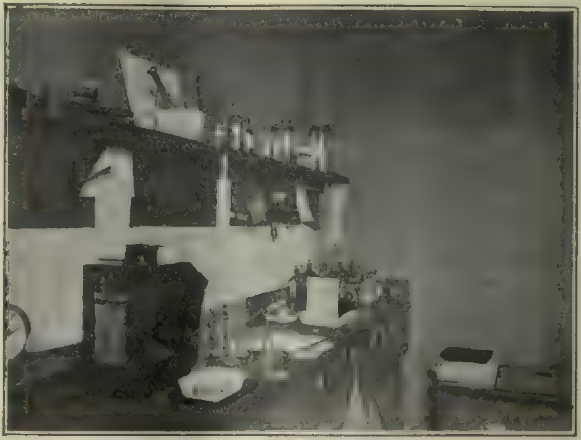

Fig. 5.

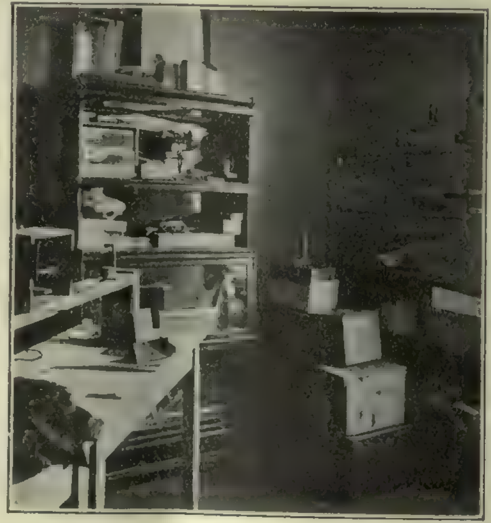

Fig. 6.

I have had them in use for fourteen or fifteen years, whereas similar taps where the pressure is greater have begun to leak within a month or two.

The sink should be divided across the centre so that one side can be used for developing and the other side for fixing, washing of negatives, reducing, or whatever may be required in that direction. I strongly condemn the practice of having the fixing-bath underneath the sink. It means that hyposulphite of soda solution is continually being dropped upon the floor, there to crystallise and become a nuisance. Across the centre of the sink's length I placed a board, about 9 inches wide, at the top of the sink, and above it a partition rising for about 4 feet. The dark-room lantern is mounted within that partition, giving an illumination both to right and to left. In that fashion we have a pleasing illumination in the dark-room, one that is not trying to eyes and temper owing to the non-illumination of required bottles. I prefer my developing light at right angles to the run of the sink. The lantern slide will make the arrangement clearer than a great amount of descriptive detail. It will be seen at once that by this method of arranging the illumination the bottles and measures are well illuminated.

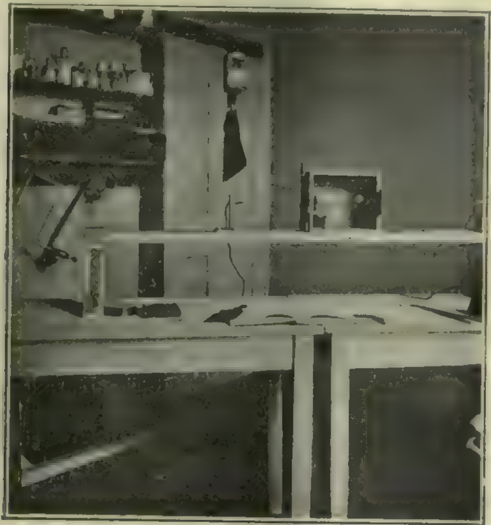

Fig. 7.

It will be noticed that near the ceiling I have another means of illumination, which I consider every photographic developing room or enlarging room should contain, namely, a lamp giving a bright but safe light. By these means I ensure a very safe and excellent illumination all over the room. With regard to the lamp, which is mounted in the partition, I have a two-way switch which enables me to have safe light for the developing sink or to have white light, at will. The duffused light given by the lamp is not trying to the eyes, and enables one to see the gradation of the negative or transparency much more readily than an unobscured light. The size of the lamp is 12 inches by 10 inches, and 8 inches in depth. The electric lamp hangs in the centre from the top, the bulb coming down about half-way in the lamp.

I have not hitherto said anything about safe-lights. Actually there is no such thing as a safe-light unless it is absolute darkness. The glass which is made for the purpose has, as a rule, a very poor quality of safety. Only recently a prominent London photographer who was incapacitated from personally attending to the dark-room, asked me if I would develop a dozen or two of his negatives. I found that a number of the plates were greatly fogged. To make sure that my own illumination was not at fault, I took two plates and developed one of them in front of the light openly, and kept the other totally covered. The first was entirely free from fog, the second, which was covered up, was fogged. I told the photographer what had happened, and when he saw the negative the mystery was plain to him. Those that were free from fog were the plates which he had himself placed in the dark-slides in total darkness. In the other cases the slides were filled by his assistant, who used the lamp of the dark-room. I examined the light with a direct-vision spectroscope, and I would rather have attempted to fill the slides with a candle at the other end of the room, the direct rays screened with an opaque screen, than to have used his light. Although a dark-coloured red, it did not cut out, so far as I could see, the least bit of the violet rays. We find something of the same inefficiency in photographic lamps very frequently.

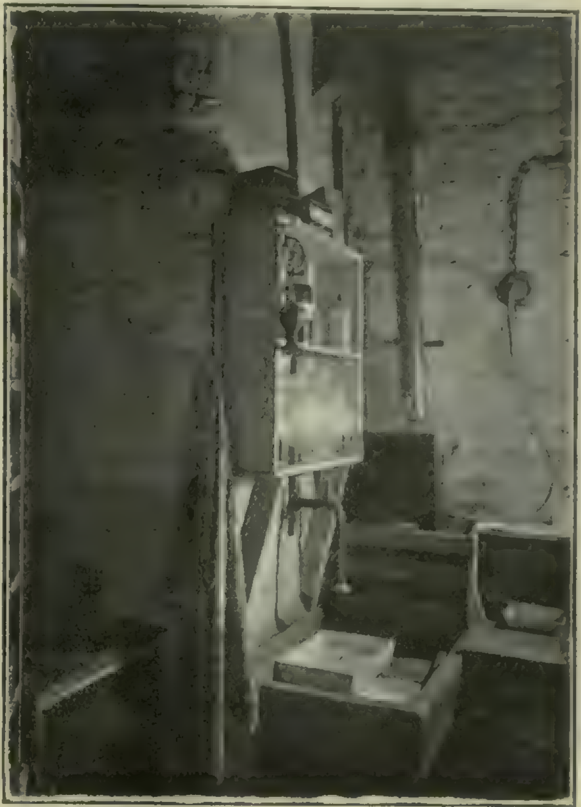

Fig. 8.

The screen which I use is one that is safe for all ordinary plates, not orthochromatic or panchromatic. To make my safe light I take an exposed and undeveloped plate, fix it, wash it, and dry it, and then bathe it in a solution of tartrazine. Another plate subjected to similar preliminary treatment I bathe in a solution of erythrosine. I dry the plates previously to bathing them because I find they take the dye more deeply than they do if the gelatine is saturated with water. Between these two plates I use a piece of white blotting paper or opal glass. As a matter of fact, I generally use opal glass in front, because it gives a very nice soft light. A plate so bathed, and bathed sufficiently deeply, will leave practically no green, and will give the maximum amount of light with a very large amount of safety.

When dealing with photographic plates, however, safety is a relative term. To determine the safety of a light for development purposes I inspect it with a spectroscope, and test it with the fastest plate that I should probably use in practice with that light. I should expose a plate from a batch that had not previously been opened, placing it in the dark slide without any light at all. I should then lay the plate at 3 feet in front of the light to be tested, leaving a portion of the plate uncovered, as a check to any fog in the plate, and exposing it in sections for about 15 seconds, pushing the dark slide in after each exposure. I should then develop that plate with a normal developing solution, again absolutely in the dark. If I saw no fog on the plate at 30 seconds' exposure, I should consider the screen to be perfectly safe, for it has to be remembered that when we are dealing with plates immersed in water they are less sensitive than in a dry condition, and furthermore, a partial deposit on the plate robs it of some of its sensitiveness. Therefore we should be within the limits of safety in passing a source of illumination which produced no fog on a plate after 30 seconds' exposure under the conditions I have indicated.

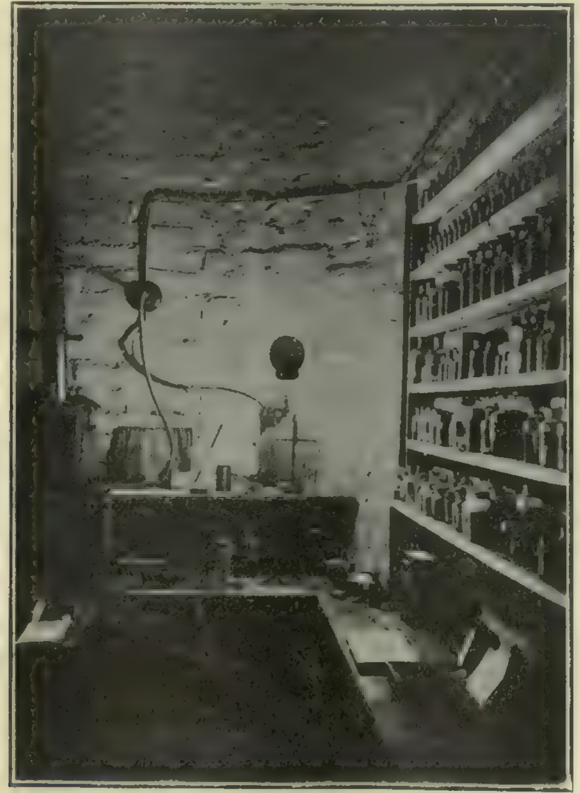

Fig. 9.

In dealing with orthochromatic plates I should be careful to keep them away from the light, and if used in any considerable number I should employ a different screen. For panchromatic plates I should recommend the Lumière "Virida" screen, which appears to give an enormous amount of light because, the eye being more sensitive to green than red, we can use actually a smaller total amount of light and yet see what we are doing. I also make for myself a liquid filter. Liquid filters as a rule become a nuisance because they leak, but this one will not leak unless the glass is cracked. The lamp consists in its exterior of a 40-oz. beaker, and within it there is placed a smaller beaker, leaving a space of three-quarters of an inch between the outer and inner vessel. Inside the smaller one I place a 16 or 8-candle power electric lamp. The two beakers are put together by means of three pieces of wood which are joined by means of apertures with a piece of metal on each side. In the space between the two I use a saturated solution of bichromate of potash—saturated at a low temperature; not above 50 degrees Fahr.—and add some eosin. After the addition of eosin I refine the mixture with liquid ammonia (.880), and we get a clear solution, which being placed near the ceiling with a reflector at 45 degrees from the wall, quite shields the developing part of the sink from the direct light. In this manner a very even and pleasant illumination is diffused over the room, giving no trouble whatever.

While we are upon the question of sinks, I may perhaps mention one developing solution which I employ. It is not, strictly speaking, a dark-room fixture, but it is an important point. Of course, every photographer has his own idea as to which is the best developing solution, and by his own special method he fancies he gets more out of his plate than another person would do. I prefer to have as my standard developing solution pyro and soda, and I gave a good deal of thought and attention to the matter before pyro-soda was used to any great extent. I prefer to keep three solutions, and I find it impossible to keep a 10 per cent. solution of pyro preserved with sulphite, as insufficient sulphite cannot be used in a 10 per cent. solution of pyro. My solutions are as follows:—

A. Pyro, 1 oz.
Citric acid, 50 grains.
Sulphite of soda, 6 ozs.
Water to make 19½ ozs.

Before making it should be dissolved in the order given. Previously to dissolving the sulphite, however, it is advisable to rinse the crystals quickly and to wash away the sulphate. I have never found sulphite of soda free from sulphate even in the best sources, and in testing a sample of new and good sulphite I found it totalled 4 per cent. sulphate, but by rinsing the crystals it only showed .4. The keeping of the pyro, even in that condition, is not an easy matter if a large-stoppered bottle is employed, but those who are not using great quantities of pyro are recommended to bottle it off as soon as made according to the amount they like to use either in two- or four-ounce bottles. The bottle should be filled nearly to the cork, and after corking lute the cork with paraffin wax, then the pyro will keep for years. Indeed, I have had pyro bottled seven years previously and have found it as good then as when it was first made up. I come now to the other solutions:—

B. Bromide of potassium, 1 oz.
Water to make 9 ozs. 1 dram.
C. Carbonate of soda (pure), 5 ozs.
Water to make 20 ozs.

Solutions B and C will keep indefinitely. The normal developer is A 40 minims, B 5 minims, C 40 minims, in 1 oz. of water. In this manner we have a formula of pyro-soda which will give every satisfaction.

I come now to the other side of the developing room. The space at right angles to the sink is a convenient place for the bench. There, again, I have a bench some 8 or 9 feet in length, of similar dimensions to the sink. Like the sink, the bench is divided by means of a partition some 3 or 4 feet in height, with a lamp mounted within it, giving an illumination both to right and left along the bench. I find that two drawers below the bench are very useful for storing paper and other materials. I have two lamps for white light suspended from the dark-room ceiling, and I much prefer to have the light in the dark-room reflected from the ceiling and also to come through an opalescent screen than to have the direct rays from a clear bulb. A lamp with four opal glass sides, about 12 inches square from the top, and suspended about 18 inches from the ceiling, will be found very satisfactory for examining negatives and transparencies. Such a means of illumination is very soft and pleasant to the eyes.

Among the articles on the working bench will be noticed an electric pot for warming solutions, an electric hot plate which is very useful for desiccating dry plates. If carefully done it will yield a plate with a much finer grain. I have also a fan, useful for circulating the air, and an object to which I draw particular attention is the drying cupboard. This is not so necessary now as it was in former days, when the practice of the commercial backing of plates was less common, but it has very great conveniences. The ventilating shaft is about 3 feet in length, up which warm air passes into the box, and fumes from the lamp out of a smaller pipe without entering the box. The warm air circulates through the box and out of the ventilator at the top.

If the room is sufficiently large to have within it a copying or enlarging apparatus, or both, so much the better. I prefer to have the copying camera in the dark-room for the purpose of saving time. My next slide will show the enlarging camera in its place. The camera is upon the cantilever principle, and although the room in which it stands is on the second floor there is little appreciable vibration, which does not matter, as the whole apparatus vibrates together. Attached to it I have two arc lamps of 20 ampères each. The resistance is in the fireplace, thus creating a draught which produces a circulation of air in the room and takes away the heat quite readily. In the winter the problem of heating the room has to be faced. Hot water pipes are undoubtedly the best, but I use the "Omega" stove and find it perfectly suitable for the purpose. No direct ventilation to the outside is afforded, but there are no obnoxious fumes with that stove. JOHN H. GEAR.

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I DO not agree with Mr. Gear as to the advisability of having very large sinks. In a former dark-room of mine I had a large sink and found continual trouble from dampness, so that I had some difficulty in drying negatives. I resolved that in any future dark-room I might occupy I would not have such a large amount of wet surface, and I have now a sink of very small dimensions indeed. If I require to develop very large plates or bromide enlargements I fit a movable large lead-lined sink on to the top of the small sink. I confess that my sink is a porcelain one. I minimise its dangers by putting a piece of sheet-lead in the bottom, so that if the measures do happen to fall they fall upon the lead. The advantage of porcelain is that it can be kept cleaner than lead. Furthermore, if we are in the habit of using acids or corrosive substances, they will affect the lead soldering, but generally they will not attack the porcelain. I have found also that hot water, if allowed to run into a lead sink, will cause what my plumber calls a "creeping" of the lead, and this is very liable to lead to cracks. For stopping the window in my dark-room I have a wooden frame which just fits into the window space and goes under the fillet at the top. The frame is filled with dark red American leather cloth which is quite opaque, and even though the sun shines upon the window there is no admission of actinic light. It is a great deal lighter than compo. board, and it is the easiest matter to lift it up and slide the top under the fillet. I admire Mr. Gear's plan of having a liquid yellow lamp near the ceiling. We certainly require some diffused light of the kind in order to avoid obstacles in the room. In my experience the dark-room is a depository for litter which the other members of the household do not know quite what to do with, and imagine may be useful in photographic operations. In my dark-room, as will be seen from the photographs, I have rather a long bench and a small sink in the middle of it. I like a bench at which I can readily work while standing up, and therefore I have it at about the height of my elbow. The illumination of the dark-room is a matter which each man must test for himself. Some people can see better in red than in yellow or orange. Personally I think the kind of light to be chosen depends upon the particular plate one is using. Lately I have been working with the old lantern which you see depicted on the slide, which has a screen of canary fabric and of bright apple green glass. The light so transmitted is quite safe for ordinary plates and the addition of a sheet of orange chrome paper makes it safe for ortho plates. As my work is mainly on the chemical and physical side of photography, I find it very useful to have in the dark-room two or three deal tables about forty inches long and twenty inches wide of the same height, which either separately or together form handy supports for photometric and other apparatus (Figs. 6 and 7). W. B. FERGUSON.

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I IMAGINE that the purpose of this discussion is to give hints out of each speaker's experience. There is only one hint that I can think of. In order to get the printing frame at the correct distance from the source of light, I have a row of holes bored at definite distances along the bench. As I generally work in metric measure, they are 10 centimetres apart. The stand for my printing frame has projecting from its base a couple of pegs which fit into these holes, and by this simple device the occasional difficulty of knowing the exact distance at which one is working is overcome. The question of large versus small sinks entirely depends upon the kind of work that is being done. For purposes other than professional, very large sinks are not required. Sinks measuring 3 feet 6 inches by 2 feet 6 inches are convenient. But it is important that the sink should always be big enough to contain the fixing bath. It is absolutely necessary that the fixing bath should be in the sink itself, and in all our dark-rooms we insist upon it that over every sink there should be a white light. By this means the operator is under no temptation to turn round to the central source of light so as to examine the negative after fixing, and thus the hypo drips into the sink instead of dripping on to the floor. C. E. K. MEES.

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I MUCH prefer that the dimension of the dark-room sink used for the smaller sizes of plates, say whole plate and under, should be such that the back of it can be very easily reached. As to the material for the sink, I certainly prefer a sink that is lead-lined. I have never seen an earthenware or porcelain sink that was flat, and I have had to make them flat by putting strips of lead at the bottom. It is desirable to keep such a sink shallow—3½ or 4 inches is a good depth—a shallow sink does not tire the arms so much as a deep one. In the making of a grid on which to put the dishes—for one can never advantageously put a dish upon the bottom of the sink itself—I use pieces of ordinary composition pipe bent into U-shape, with about 3 inches between one leg and the next. These advantageously replace the wooden arrangements, for they never warp. I should like to know why Mr. Ferguson chooses red American cloth in his window frame. Why not black, which cuts out all light, instead of red, which so far as it is transparently red, only cuts out a portion of the light? Mr. Ferguson has suggested a cheaper and lighter material than Mr. Gear, and I would go further and suggest two thicknesses of common brown paper instead of the American cloth. In considering lights for ordinary plates in the dark-room, one must remember that it is only really necessary to get rid of the violet, blue, and blue-green. Yellow light is more pleasant and maybe as safe as red for an equal illumination. I generally use five or six thicknesses of ordinary yellow fabric with a 16-candle power lamp behind it. For isochromatic plates I should add a sheet of orange fabric and for panchromatic plates a sheet of red, though I should be careful in such cases always to keep the dish covered.

CHAPMAN JONES.

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My own dark-room (Figs. 8 and 9) is a lowly establishment compared with that which Mr. Gear possesses; a description of it may, however, be useful to those who have to put up with a very small room and yet wish to make the best of it. It was designed originally as a coal cellar, but being on the same level as the scullery I annexed it and had a coal cellar built elsewhere. It is about 7 feet in length and perhaps 4 feet 6 inches across. But it has a considerable height—about 12 feet. I have to keep everything except cameras, plates, and papers in it, and as I want a good many bottles for different purposes, I find it a good plan to have plenty of shelves and to keep the shelves very narrow, so that there is less likelihood of getting one set of bottles behind another. Two ranks of bottles are undesirable and often result in breakages. My dark-room lamp is a gas one. The gas-jet, of course, creates a draught which passes up a piece of stove piping coming from the top of the lamp, and this stove piping turns at right angles, going inside a larger pipe which communicates with the outer air. An opening is left at the point where the small piping enters the larger, and, the heat from the lamp causing a draught, the air of the dark-room is sucked through the opening, thus ensuring a fair ventilation. Hanging from the rack which holds the Autochrome chemicals is the "whirler," about which I am often asked questions. An ordinary indiarubber pneumatic holder is attached to an egg-whisk (such as can be bought for sixpence or ninepence), by cutting off some of the tin parts, and it can be made to revolve at great speed. The suction of that pneumatic holder will carry a plate at least 10 inches by 8 inches. I have also that useful accessory, a drying cupboard. It is now used principally for the purposes mentioned by Mr. Gear. The ventilation, however, differs somewhat from his description. The bottom of the cupboard is about a foot from the ground, and a light-tight ventilator brings in fresh air. At the outlet I have another light-trap, and above that about 6 feet of piping with a door about half-way up; inside the door is a gas jet which creates a current of air. Although the dark-room is only large enough for one person to work in, the space has been so economised that I find room for all I want and can work in comfort.

J. McIntosh.

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As one who has a good deal to do with the designing of dark-rooms and studios I have been greatly interested in the discussion, and one or two points in particular have occurred to me. The first has regard to the ventilation, for considerations of health come before everything else. Mr. Gear's methods apparently are very good, although I do not think his air-trap would prove altogether efficient. In the ordinary way it scarcely seems as though it would have sufficient extractive power. I always like to use a ventilator of what is known as the Boyle type. It is made of thin sheet iron, and can practically be fixed anywhere, and remains in action for as long as there is any movement of the air outside, whereas some ventilating systems for the dark-room, however admirable otherwise, depend solely upon the action of the hot air which rises to the ceiling. Mr. Gear said nothing about the provision of hot as well as cold water for the sink. Wherever possible it is well to install a proper hot-water system. If this is out of the question I find it a good plan to employ one of the small spiral water heaters. One of these placed over the dark-room sink would be found very useful for raising the temperature of the solutions and for other purposes. The whole question of the temperature of solutions is an interesting one. Of course, if there is hot water it is an easy matter to heat a vessel and stand the bottles of developer in it until the required temperature is reached. In more than one dark-room which I have designed I have had small troughs made with concealed gas jets underneath them for this purpose. Another point that struck me—and it struck me forcibly when I was looking at the slides which appeared on the screen—was that most photographers appear to be extremely careless as to the manner in which they use and arrange their bottles of chemicals, etc. There are all kinds of bottles in the average dark-room, some stoppered, some corked, some with only a quarter plate laid over the top. Some, again, are labelled and some are not. It is a good plan to keep practically everything that can be so kept in a stoppered bottle, and to have the bottles all of a size, and the labels all written clearly. I find the best form is the "Markus" bottle, having a patch of frosted glass—a ground surface made by sand blast—upon which any inscription can be written and subsequently rubbed out as necessary. It seems to me after listening to the discussion that the dark-room is probably so called because it is very seldom dark and practically never a room, and in this connection what Mr. Gear said about having a good-sized one is very much to the point.

DRINKWATER BUTT.

# THE RE-DECORATION OF A STUDIO.

We have from time to time in these pages encouraged the departure, on the part of photographers, from the old stereotyped lines of furnishing the studio and reception room. Ancient customs die hard, and it must be admitted that among many photographers the expulsion from their studios of accessories of the type which were practically universal up to fifteen or ten years ago means little short of a mental and physical revolution. However, the growth of taste among both photographers and their customers has advanced rapidly within the past few years, and the task of giving to the studio a homelike and at the same time an æsthetically pleasing appearance has been rendered much easier by the help available from a number of firms in the photographic trade which have specialised in thus catering for the professional photographer. It is not difficult for anyone who contrasts in his mind's eye a studio of, say, twenty years ago, and one which is furnished on modern lines, to realise the immensely more favourable impression which the latter makes upon a sitter. Where formerly a customer was faced by forbidding imitation rock-work, grass mats, sham stone steps, and balustrades, the eye to-day falls upon a room which, so far as is consistent with adequate lighting, is furnished on the lines of a large and comfortable

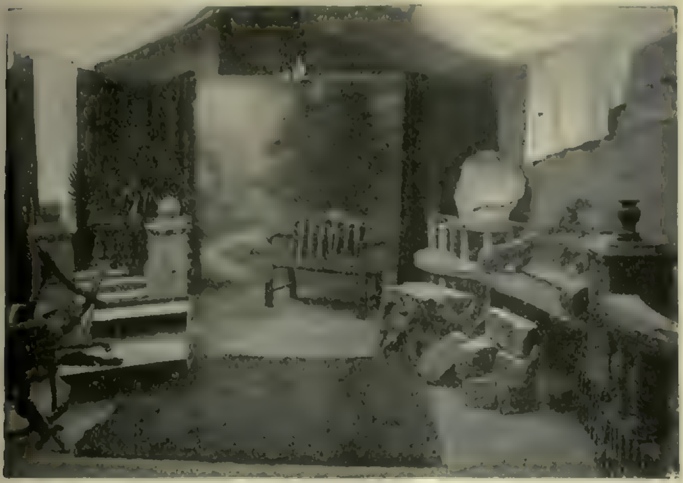

Fig. 1.

domestic apartment or public lounge. Even in the respect of the material comfort of the sitter, more adequate arrangements are now made for warmth in winter and coolness in hot weather. We have so often emphasised these studio matters and have so frequently sought to impress their importance upon our professional readers that it is always a gratification to us when the owner of a studio indicates to us the success which has followed his endeavours on these modern lines.

The three photographs which we reproduce afford an interesting demonstration of the improvement made in a studio by remodelling it with a regard to its favourable impression upon the sitter as well as to the provision of increased facilities for pleasing and natural portraiture. The reproductions are from photographs of the studio of Messrs. Gregg, Couper, and Co., High Street, Watford. The first represents it in its former state, and is, in fact, a photo-engraving which Messrs. Gregg, Couper were formerly in the habit of using for advertisement purposes. The two other illustrations show the studio as recently re-decorated. From these it will be seen that as far as possible the wall-coverings selected have been of a kind which form suitable and pleasing backgrounds, whilst, as regards furnishing, the old sham "accessories" have been swept away to make room for furniture which in the qualities of appearance and comfort are what anyone of taste might well select for their own home. No one, of course, realises more clearly than we do that in many a studio, still littered by all manner of antiquated appliances, portraiture of a high order is being

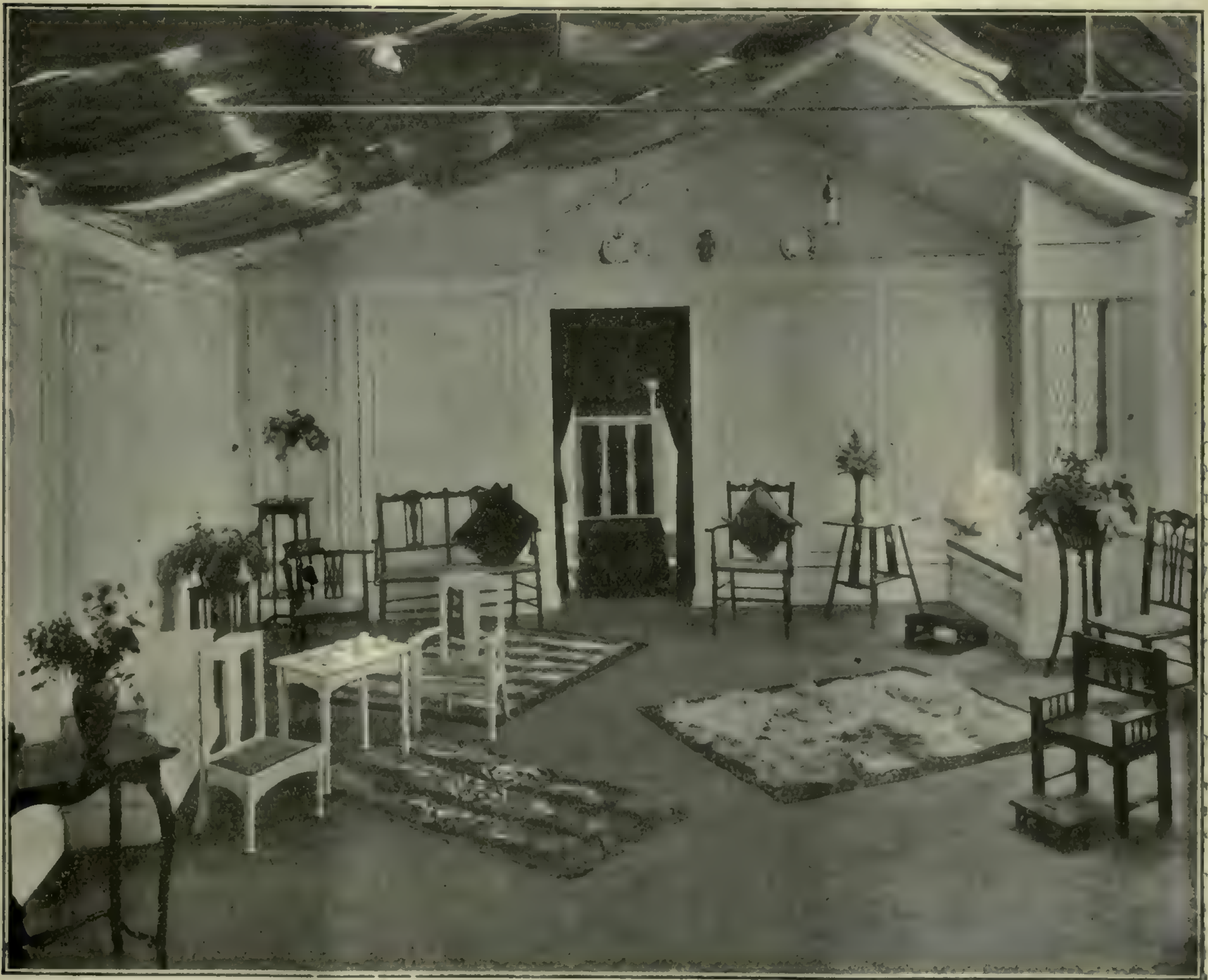

Fig. 3.

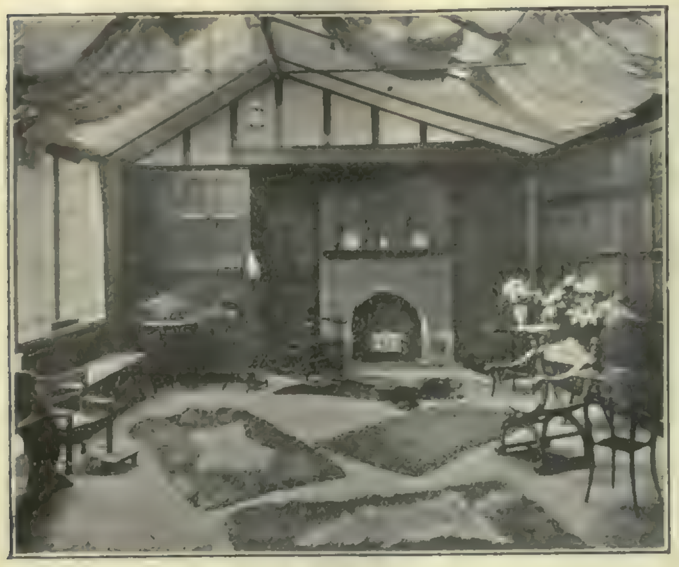

Fig. 2.

done: we have often been surprised that firms of eminence should still continue to allow the furnishing of their studios to be entirely out of harmony with the character of their finished work. In many instances, no doubt, their reputation is high enough and old enough to withstand any shock which new sitters may experience on a visit to their establishment. But even so, the day of such practice is rapidly departing. Photographers have realised the sensitiveness of the present generation to jarring notes in furnishing and decoration. However excellent their work may be when finally delivered at the sitter's home, they can no longer afford to miss the opportunity of creating a favourable impression from the very start. The work *may* be no better, but the sitter views it through spectacles which are coloured by the conclusions instantly formed on first entering a photographer's door. On the other hand, the sensation of comfort which a sitter experiences must conduce to a more pleasing likeness, whilst the ability to arrange premises on the artistic lines which are illustrated in the photographs argues the possession of taste and refinement also in the operations of negative making and printing. For this reason we may hope that many others, like Messrs. Gregg, Couper and Co., have called to their aid the arts of the decorator and have applied them to their own individual requirements.

# COMBINED DEVELOPMENT AND FIXING.

[The following is a series of articles which we translate, with some abridgment, from the "Photo-Revue." The subject is one which of recent years has attracted a number of experimenters, and doubtless also the experimental departments of photographic firms catering for the amateur worker. Yet, so far, no really satisfactory method of simultaneous development and fixation has been worked out for gelatine plates. Even M. Crémier, so far as we can judge from experiments described in an article on another page, has not gone much further in solving a problem which some day will be solved. He has, however, brought to light one or two interesting facts connected with the diamidophenol developer, and we may hope that his experiments will suggest more successful methods to other experimenters.—Eds. "B.J."]

## II.

We must now turn to consider the use of the combined method for lantern plates, and here the first thing to remember is that there is less latitude in exposure than in the case of negatives. With negatives one can do with a little more or less density, since it is the print which is the final result, but in the case of slides the density must be adjusted with considerable nicety, and this means the giving of as exact an exposure as possible. The diamidophenol formula, previously given, serves excellently for lantern plates. Although these plates fix much more rapidly, I, nevertheless, use 2½gms. of hypo with the object of obtaining greater softness in the results. The tendency of the combined method, when using diamidophenol developer, is towards contrast, even when ample exposure is given. This tendency is particularly noticeable in the lactate lantern plates of Guilleminot: the black-tone lantern plates of Lumière tend more towards softness. Exposure is almost the same as when developing by the usual method. If such exposure gives rather thin slides it may be increased by about 50 per cent.

By adding to the diamidophenol developer a few drops of potass bromide, 10 per cent. solution, the image will appear in about twenty to thirty seconds: it gains strength rapidly when viewed lying in the dish, and after three or four minutes the plate is completely fixed. This applies to the Lumière black-tone plate: the lactate plates fix a little more slowly.

The above, it should be said, refers to slides of black tone. In regard to those of warm tone they can equally be prepared by the combined method, though here again it is necessary to give fairly correct exposure in order to obtain correct density in the slides. Using most of the warm-tone lantern plates, we have been able to obtain, with the formula given above, only results of a more or less greenish-black, even with the addition of 5ccs. 10 per cent. potass bromide. Only the Marion warm-tone plates and the "Varieta" plates of Grieshaber have given us really warm tones without excessive over-exposure. Even with these, great excess of exposure tends towards tones of greenish-black.

We were thus led to seek for a combined developer other than diamidophenol, and after some experiments devised a formula which is specially suitable for the production of warm tones. The developer proper is:—

| | |
|---|---|
| Soda sulphite, anhydrous | 15 gms. |
| Hydroquinone | 2.5 gms. |
| Caustic soda | 1.5 ,, |
| Potass bromide | 1.5 ,, |
| Water | 250 ccs. |

To make the combined developer take:—

| | |
|---|---|
| Stock solution above | 30 ccs. |
| Water | 60 ,, |
| Hypo 20 per cent. solution | 15 ,, |

The above quantity of hypo is somewhat high. Although lantern plates as a rule fix more rapidly than negative plates it was, nevertheless, found necessary thus to increase the hypo in order to be able to over-expose without obtaining slides of too great density. This formula is suitable for warm-tone lantern plates and has given particularly good results with the Grieshaber "Varieta" plates, which readily allow of obtaining a wide range of tones from bluish or warm black up to red, according to the developer, and are nevertheless of considerable speed, so that it is not necessary to use magnesium ribbon for their exposure. With a negative of average density the "Varieta" plate gives a very pleasing warm violet tone with an exposure of two minutes at six inches from an oil lamp. By reducing the exposure the tone is colder, but it should not be reduced below 1¼ minutes, otherwise there is danger of producing dichroic fog in the high-lights. The image comes up in about a minute, gains strength rapidly, and gives the complete finished slide in five or six minutes. As in the case of negative plates it is well to wash thoroughly immediately after development: if plates are left to soak in the same lot of water a slight stain is apt to be produced over the slide.

### Combined Development and Fixing of Bromide Papers.

As in the case of lantern plates, it is necessary to give as exact an exposure as possible, but it will be found that this exposure may be practically the same as that for separate development and fixation. The developer first used was that previously given for plates (diamidophenol) with the addition of ten drops of 10 per cent. potass bromide solution to keep the highest lights clear. All bromide papers are not equally suitable for this developer. The Lumière papers, which may be said to be among the best bromide emulsions, are not at all suited for it, the prints fogging after about a minute and a half. Addition of extra bromide up to five ccs. did not effectually cure this fog, which is likewise produced on many other makes of paper. Of all those examined the Kodak "Velvet" gave the best results.

As already stated the time of exposure is the same as for separate development and fixing, and, when this exposure is given, the image appears in about thirty seconds, and may be considered as completely fixed after five or six minutes. There is, however, no drawback in prolonging the action up to, say, ten minutes, if it is feared that fixation is incomplete. Nevertheless, test exposures made with prints which were developed for five minutes only have shown no traces of incomplete fixation on after-exposure to strong daylight. There is thus no need to make ten minutes the rule, but only in cases when the developing bath may be thought to be becoming exhausted, say, after more than five quarter-plate prints have been treated in 3½ ozs. of bath. The appearance of the prints made by this method is excellent: they have a fine black colour in the shadows so long as bromide is not added beyond, say, a dozen drops of 10 per cent. solution, which is amply sufficient for maintaining purity of the high-lights even when the development is done for longer than five minutes. By adding five ccs. of bromide and increasing the exposure the shadows are of a somewhat unpleasing warmish colour, though one which for certain subjects may be considered suitable. A bath which has been much used likewise tends to give prints of warmer colour than a fresh bath.

Comparison prints made from the same negative and developed—one lot by the ordinary method and another in the combined bath—show that the latter has a marked tendency to give greater contrast and brilliancy, even when using only about twelve drops of bromide. This is the quantity which is advised for negatives which are somewhat weak, and, in the ordinary way, give too flat results.

Besides the fogging which takes place with certain papers, some makes also develop and fix irregularly, and with some others, also, it is impossible to obtain sufficient density. By giving extra exposure a warmish brown tone is obtained, but the shadows are still of insufficient strength. Everyone will try the method with the paper which he regularly uses, though it may be said that the Kodak bromide paper seems to be the best for this method of treatment.

### Combined Development for Gaslight Papers.

The success obtained with certain bromide papers led us to apply the process to the slow development papers now so largely used. The diamidophenol formula already given was used, the bromide being ten drops of 10 per cent. solution. All the tests were made on special portrait Velox. The whites became veiled and stained, and we therefore added bromide up to five ccs. Under these conditions stains were no longer produced, but the high-lights were still somewhat veiled, as compared with a perfect print made by the ordinary method. The results obtained were very similar to those on bromide paper toned by the hypo-alum method, though less brilliant and without the richness of the half-tones. In contradistinction to the results produced on bromide papers the combined method with gaslight emulsions evidently gives less vigour than the ordinary procedure. Similar results were obtained with the Marion gaslight paper, though the tones were somewhat colder than with Velox. Thus it would appear that the gaslight papers, though not so suited to the method as bromide emulsions, may nevertheless be developed by the combined method.

Probably in the case of bromide papers the chief use of the combined method would be upon an industrial scale, since it would simplify the production of postcards printed and developed on paper in the roll. V. Cremier.

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# SOME STUDIO BUSINESS METHODS.

[The following recent paper in "Camera Craft," like others which we have reprinted from our excellent San Francisco contemporary, deals with the business ways and means which suggest themselves to the alert American photographer who is intent on making the most of his opportunities. While certain of his suggestions are more applicable to a United States public, much of what he says can be of service to any studio engaged on the problem of attracting customers to its doors.—Eds. "B.J."]

"Give us this day our daily bread" is all very well, but if one will pray for more photographic information, and then apply that which is so easily obtained from the magazines of our craft, he may have the added pleasure of eating jam on the bread. It is strong recommendation of photography as a profession that so many can obtain their daily bread thereby, while following the plan, if plan it can be called, upon which they conduct their studios. Their doing so makes it almost an assured fact that the photographer who follows a more business-like plan will be rewarded with more than the necessary amount of regular sustenance. Let us compare the two plans.

### Show-Case or Museum.

The display case gives the prospective customer his first and perhaps strongest impression. It may be used as a sepulchre for dead flies and other ornamental insects, conveying the idea that it is a museum exhibit. And it certainly makes an impression on the prospective customer: an impression so strongly repugnant that it influences and intensifies the favourable impression that the next case makes. This other one is dressed anew each week. The proprietor secures thirty or forty assorted card mounts and novelties from his dealer, fixes them all up in about the same time it would take to fix just enough for one change, making it easier to get them all of the same tone and quality, and finds that he has enough to dress the case a number of times, perhaps making the suggestion of a museum exhibit unnecessary. A good display in the street case and window is, nine times out of ten, the most inexpensive and most profitable form of advertising the photographer can do. Old, faded pictures, obsolete styles of mounts, these are worse than no display at all.

### Look on this Studio—and on that.

A dirty flight of stairs, and here we are, sure enough. Here is where we step into the reception room. Isn't it a dream of paradise? There is a strange atmosphere, art atmosphere no doubt, pervading it. An assortment of pictures undergoing the dry sepia toning process adorns the walls. A cuspidor is acquiring an oxidised finish in one corner. It would be sacrilege to disturb either it or the pictures at this stage. But in the other studio they are not hampered by traditions. The samples are kept in a few neat, strong boxes. These are always clean and the price is plainly marked on the back of each one. Frequently a customer does not like to ask too often as to the prices. He feels that he is giving the impression that the price is the main consideration; but with each sample marked, he has only to turn it over to obtain the desired information. One can believe that the floor covering is on speaking terms with a broom. "Sweet sixteen" or a June bride, garbed in white, could safely come in and find herself able to leave without changing the colour of her apparel, even be the white apparel not in the form of a harem skirt. And one other difference is quite noticeable; the proprietor has learned that the combination of a polite little greeting and a smile will not endanger either his vocal cords or his facial elevation in the least; in fact, he finds they help business along.

### The Studio—

But let us return to the first studio. Here we are, right in front of the operating room. Yes, it is plainly labelled, "Operating Room," in large letters so that every one will know just what he can expect. One photographer who did this had an unfortunate experience with a nervous individual who thought it was a real surgical operating room. But then, everybody is not nervous. We are not, so let us enter. No, the light is not coming through shingles worn thin by the elements. That is a glass skylight that has not been cleaned since it was put in. The accumulation of dirt does suggest worn shingles, but it is really made out of glass. Our more businesslike photographer keeps his skylight clean. It lets in more light and the effect on his visitors is more creditable. He keeps up a pleasant conversation with his sitters, and yet does not act the part of a combination photographer and windmill. He knows that dry plates do not cost so very much, and finds it is profitable to make a few extra poses, particularly if asked to do so. Back in that other studio the operator does it differently. If the sitter has some preconceived idea as to how the pose should be, he tells her that he is an artist, and knows how to pose correctly, and that in carrying out her ideas she would be entirely too "wooden." She appreciates the information so much. A group went into a studio of that kind recently, and, on suggesting a certain pose and arrangement, the photographer asked: "Aw! what's the matter with you?" The trouble must have been with the one making the query, because he lost a good order.

### —and a Studio Manner.

You are, by this time, in a position to determine which of the two plans you are following. It is needless for me to further identify or distinguish between the two. I can better use the remaining space to give a few hints and suggestions as a result of my own practice.

Avoid, as much as possible, the making of full-length pictures of persons who are quite tall, and a lady whose skirt does not touch the floor will not be pleased with a full-length pose. Background catalogues and the illustrations in the popular magazines suggest some very effective poses. Fancy poses are rarely asked for, yet when I have a subject that I think will show up well in some certain pose I have in mind, I make a negative, and when the proof is shown it seldom fails to effect an order. Besides, it gives me something special for the display. Sometimes a full-length pose is demanded, despite the fact that it does not look well. Throwing the weight of the body on one foot will often improve matters greatly. Three-quarter standing poses of ladies should be made with the body having a slight forward inclination. But above all, do not get "old-fashioned" and stereotyped in your poses. Try to get variety, and always have something new to present. Keep up some kind of a conversation when posing, and do not embarrass the sitter by standing and gazing at her.

### Children.

Photographing children is very fascinating work, yet full of difficulties. The first commandment is: Secure the child's friendship. After that, all is easy. Have everything ready before the child enters. If the child is posed as busy with some toys, nine times out of ten the picture of "the little darling" will have the approval of the fond parents. A stock of toys should always be kept on hand. A box of dominoes, toy animals, a miniature train of cars, a horn that can be blown, those and other things will prove of priceless value. If you cannot attract the child's attention in any other way, light a piece of paper and see how intently the flame will be watched. Always make a series of plates, and then, when the proofs are shown, there will be a larger order through the parents being unable to resist the varied poses. In making groups of children, a picture book comes in very handy. For little girls, a small table arranged with dishes forms an excellent point of interest at which they can be grouped, and around which they will assume most natural poses. A small set of mission furniture is just the thing for children. And do not forget that girls like dolls.

A profitable scheme for the studio is to keep a record of all the births, putting down the name, age, birthday, and address. All this can be obtained from the local register. A few days prior to the birthday of each child, send the parents a photographic card on which has been printed a good child pose, and on it write, "Lucile will soon be two years old," or as the case may be, "and why not have her portrait made in memory of the event?" This plan works admirably. It is also a good idea to keep as close track as possible of approaching nuptials, and just a few days before the ceremony send a neat letter to bride and groom. The attention is always appreciated, and the little statement at the end of the letter brings some good business to the studio.

It is a good plan to use more styles in 4 x 6 and 5 x 7 portrait poses. And why? Because the postcard picture has changed the standard of value in picture sizes. The cabinet looks too near the post-card size, but the larger size will sustain a present good price and permit of a poor price being raised.

### Looking at Proofs—in the Studio.

Whenever possible, induce the sitter to come personally to the studio for his or her proofs. If the proofs are mailed, the recipient is more than likely to notice some disagreeable little feature that could be easily explained were the photographer at hand. But most people know very little about the possibilities of photography; they imagine the finished pictures will be as unsatisfactory as the particular proof objected too, and the order is either made smaller or lost entirely. If the sitter calls at the studio, the proof can be shown on first this and then that style of mount, and a suggestion made as to the most desirable. If there are several poses of the same subject, the customer can be shown how well they will look made up as a combination card. These combination cards should be shown and explained whenever possible, and made a means of bringing money to the studio that would otherwise be lost.

### Old Negatives.

When an accumulation of negatives becomes so great that one must dispose of them in some way, put it off for a while and insert a small advertisement in the local paper, one stating that you must destroy for lack of room negatives made during a certain period, but will hold them for a month, during which time re-orders will be accepted at a certain price. One will be surprised at the number of orders that will result. From the negatives from which the better class of work has been done, proofs can be made and mailed to the prospective, together with a letter explaining the matter in a little more personal manner. If one sees fit, it can be explained that as a negative is already made and properly retouched, the duplicates will cost a little less than the regular work.

### On Advertising.

As to the regular advertising, short, catchy newspaper "locals" of three or four lines generally prove very effective. "Your friends are saying: 'Wish we had a photograph of her.' Then why not have some taken at Snapshutter's Studio?" "Daddy wants baby's picture now. Special styles and special attention for the little ones at Snapshutter's Studio." "A photograph will keep the family together; the time is now when they are all together." These are, of course, only suggestions. The photographer can write them to suit himself. A neat display advertisement, used in connection with these "locals," will prove effective. If illustrated with a cut, particularly of a portrait of your own making, so much the better. The cuts cost very little, and should be ordered of such a "screen" or degree of fineness as to print properly on the paper used. But the best plan is to arrange with the editor to furnish him with a series of photographs to be published for their local interest. Picnics, parades, fire scenes, the county fair, social gatherings; in fact, there is an endless supply of subjects that will suggest themselves to the wide-awake photographer. To these can be added a few words about one's work, and, as they are in the nature of news illustrations, if furnished promptly, the editor will generally give quite a reduction from his regular price for space.

But do not get the idea that printer's ink will do all the advertising that is needed. Each dozen photographs that one puts out are an advertisement for or against his studio. As I suggested early in this article, the display case is a vital element. And one's manner is also quite important. Do not "knock" your competitor. Speak well of him to your customers. Have but one price for your work, and make that price to everybody. In short, conduct your studio in a business-like manner, and yourself in a gentlemanly way, and you will succeed.

L. Siebeneck.

## THE USE OF CAMERAS IN COPYING DOCUMENTS.

A great deal of the work of the average Government clerk in America is copying words or figures. This was done formerly by pencil and pen. Letters, for instance, used to be written first by one clerk and then pen-copied by another clerk for the office records. Water-press copies were not considered sufficiently safe or legible.

Long after they were in general use in the business world came typewriting machines into the Government departments. With the use of typewriters came the demand for operators and for stenographers. Supplementing the work of the stenographers and typewriters came the graphophones. In the Roosevelt Administration (says the "Philadelphia Record") graphophones were quite popular. One of the prominent bureau chiefs installed graphophones all through his bureau. He himself dictated his thoughts into a graphophone and then hung the cylinders up on a peg for his typewriters to transcribe.

The latest transcribing device to be used by the departments is a photo-copying machine—a machine that makes photographic copies of manuscript. Years ago there was a good deal of talk about such a machine, but its use was not practicable because of certain defects. It could not, for instance, make a photographic copy of any kind of type except of a dark colour on white paper.

### How the Work is Done.

These defects have been overcome by using a peculiar kind of photographic paper, and also a colour-screen, which filters rays, so that indistinct words on tissue manuscript, for example, are made even clearer in the photographic copy than in the original itself. The documents to be copied are placed upon a table, which is illuminated by strong mercury-vapour electric lamps at each side of glass tubes about three feet long.

The time of the exposure of the manuscript to the lens of the camera depends upon the kind of material to be copied, and from four to thirty seconds are necessary. The entire operation, from the beginning of the exposure, through the developing, to the completion of the fixing in the hypo solution of the print is about a minute. The photo-copy machine copies two typewritten pages at once.

That is at the rate of 600 words a minute, which is four times faster than a good stenographer writes shorthand, and about ten times quicker than a fast typewriting operator. Allowing for relays and rests, the photo-machine will copy in a day 400 typewritten pages of 300 words each. A pretty good typewriting operator is necessary to copy steadily every day as many as twenty-five pages of typewriting, 300 words to a page, and at the same time make comparisons and corrections. The photo-machine will, therefore, do the work of, say, sixteen good typewriters, such as would command individual salaries of at least $1,200 a year.

### Accuracy and Expense.

It is not unlikely that the photo-machine will save the Government hundreds of thousands of dollars yearly. Indeed, an authoritative statement was made recently that the machine is now saving the Bureau of the Census $80 a day. No one believes, however, that the services of a single typewriter will be dispensed with, as the demand for these is greater than the supply. The cost of copying each page of 300 words has been calculated to be 1¼ cents. The photo-machines make only one copy, to be sure, but the operation can be repeated several times and still be much quicker than a typewriter.

And on the point of accuracy, everything, of course, is in favour of the photo-machine. In this there is as much difference between the photo-copy and a typewritten copy as there is between a hand sketch and a photographic print of something. The photo-machine gets everything, such as initials of a letter, facsimile signatures, and even a fly that happens to be passing at the time. The photo-machine is not, of course, designed as a substitute for regular typewriting work, but its superiority for long and difficult copying work is plainly apparent.

# Exhibitions.

## HEREFORDSHIRE PHOTOGRAPHIC SOCIETY.

The exhibition of the Herefordshire Photographic Society of 1911 has fully maintained its own high standard of the past. The architectural subjects exhibited are few, but the work mostly good. Of the exteriors, "Church Lane, Ledbury," is very fascinating, with its narrow street and quaint houses. The landscapes are, from an artistic point of view, a very strong class. No. 31 is the gem of the collection. Just a bit of shingle, a boat, and a couple of cottages, but the soft atmospheric effect, the composition, the lightning, and the colour are all delightful, and make up a charming little picture. No. 38, "A Cool Retreat," and No. 56, "The Smiling Village," are both pleasing; both are pictures of rural life. "The Cool Retreat," some cattle in the Wye, is good, with a well-chosen style of printing and paper. In No. 56, perhaps, young England is rather too much to the fore, but it is a beautifully finished picture, and the village street is full of interest. Nos. 25, 27, and 50 are all praiseworthy exhibits. No. 60 is a nicely-balanced sheep study, with a rather heavy sky. No. 90, "Friar Street," is a picture full of life and light, and is a clever example of how even our mean streets may be made to appear beautiful.

Most of the portraits are of a very high order indeed. No. 75, a picture of an old gentleman, is lifelike, and excellent in the simplicity of its rendering. No. 76 is unaffected and virile, and recalls the portraits by Max Bohm. No. 86, a lady in modern costume, would rank well with the best professional productions. No. 72, a leather worker, is a powerful little picture, and the skill displayed in the lighting is worth more than a passing glance. No. 68 is an old man's head, a very fine character study. Nos. 69, 76, and 79 are all well-lighted clever portraits. No. 73 is a fascinating little lady in costume, and is a picture showing a good deal of careful work. No. 98, a well-conceived portrait of a man, which would have been much improved by the omission of the pipe. No. 101, fascinating portrait of an old lady in a white cap; perhaps it lacks gradation in tone.

## THE TURCO-ITALIAN WAR IN KODAK PHOTOGRAPHS.

A striking series of some hundred photographic enlargements of scenes in the present Turco-Italian war is now being shown at the West Strand Gallery of the Kodak Company, within a few doors east of Charing Cross station. The pictures are chiefly enlargements from the negatives of Mr. T. E. Grant, the representative of the "Daily Mirror," whose permit to remain with the Italian forces, it will be remembered, was recently cancelled by General Caneva. Mr. Grant, in taking his photographs, used an ordinary Kodak of the 3a folding pattern, and the photographic visitor will be particularly interested in comparing the contact prints from his negatives, which are displayed side by side, with the enlargements to a size of about 15 x 12. The results give a remarkably graphic account of incidents of the war, and include scenes in which Arab prisoners, victims of the cholera scourge, the Italian forces in action, as well as the official incidents of the war, prominently figure. Photographically, many of the enlargements, indeed the greater proportion, are beautiful examples of photography in a country which is full of light and atmosphere. Many of the desert scenes are especially good in this respect, and it must be no little solace to a Press photographer to see his work take this perfect shape in place of the scant justice done to it by reproduction in the daily Press. The exhibition remains open to the public until after Christmas.

### FORTHCOMING EXHIBITIONS.

1912.

March 12 to 16.—Sheffield Photographic Society. Sec., James W. Wright, 30, Oakhill Road, Sheffield.

May 3 to 11.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

## Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between November 20 and 25:—

Cameras.—No. 25,895. Cameras for use in photography. William Norman Lascelles Davidson.

Cameras.—No. 26,186. Photographic cameras and lenses therefor. Thornton-Pickard Manufacturing Company, Ltd., Arthur Gray Pickard, and Richard Hesketh.

Stereoscopes.—No. 26,265. Stereoscopes. Jules Richard.

Daylight Development.—No. 26,351. Daylight developing apparatus for photographic negatives. George William Oscar Secretan.

Colour Cinematography.—No. 26,428. Projection of moving pictures in natural colours. Donald Willson Player.

Cinematographs.—No. 26,431. Bioscopes and apparatus to be employed therewith. David Albert Thomson.

Cinematographs.—No. 25,868. Moving picture machines. James Aughiltree Cameron.

Colour Cinematography.—No. 25,889. Projection of moving pictures in natural colours. Walter Harold Speer and Biocolour, Ltd.

Cinematographs.—No. 26,277. Cinematographic novelty. Fraser Gordon.

Announcement Slides.—No. 25,823. Manufacture of plates and slides suitable for scratching or writing titles or announcements for cinematographs, magic-lanterns, and the like, imitation coloured glass and the like. Henry Levy.

### *COMPLETE SPECIFICATIONS ACCEPTED.*

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Projection Before and Behind Screen.—No. 28,849, 1910 (October 14, 1910). According to this invention, the apparatus is designed with the object of projecting animated or other pictures carried on an opaque or nearly opaque base, by means adapted to effect the illumination of the front of the picture, a supplementary source of light being also arranged behind the same so as to serve in projecting the picture by transmitted light; thereby accomplishing the projection by reflected and transmitted light. The combination, alternative use, or due adjustment of these illuminations in connection with suitable subjects may be used to afford various dioramic or scenic effects.

Apparatus adapted to accomplish the objects aimed at may comprise generally the following arrangement of parts:—In suitable relationship to a lantern or condensers a screen or partition is mounted in such a manner that an aperture in the said screen appears in the optical axis of the lantern. The pictures or objects to be projected travel past or are situated at or near the aperture in the screen or partition, which aperture corresponds to the "gate" pertaining to the cinematograph apparatus. Thus any picture or object may be projected by illumination either from the back or from the front or from both back and front. For instance, there may be an illumination box or device situated on either side of the aforesaid lantern or objective and adapted to illuminate the front of the picture or object, the illumination boxes or devices being disposed at such an angle as to effect the purpose referred to. Similarly at the rear of the screen two, three, or more illumination boxes or devices may be disposed. If, for instance, three such boxes be employed, the central one may be arranged in the axial line of the objective, while those on either side may assume such angle relatively thereto as to cause the illumination effect to be produced on the rear of the picture or object to be projected. These illumination boxes or devices are adapted for individual use or for use collectively, or in any manner that may be desired. Otto Fulton, 3, Rupert Street, Leicester Square, London, W.

The following complete specifications, etc., are open to public inspection, before acceptance, under the Patents Act, 1901:—

Films.—No. 20,119. Manufacture of cellulose films. Brandenberger.

Colour Cinematography.—No. 23,825. Method and device for cutting out contour bands used in colouring cinematographic films. Itala Film.

Colour Cinematography.—No. 23,826. Method of cutting out the contour bands used in colouring cinematographic films.

## New Trade Names.

Utocolour.—No. 336,632. Photographic chemicals and photographic plates and films. Société Anonyme Utocolour, 21, Rue de la Pointe, La Garenne, Colombes, Seine, France, manufacturers. October 4, 1911.

## New Books.

Eder's Jahrbuch, 1911. Edited by Dr. J. M. Eder. Halle: W. Knapp. Price Mk. 8.

The twenty-fifth annual volume of this well-known German yearbook makes its appearance, as hitherto, containing a large number of contributions on the more scientific side of photography, as well as the customary record of the year's progress in all departments and applications of photographic work. Among these may be mentioned that by A. Saal on "Photographic Work in the Tropics." Herr Valenta writes on the use of thiosinamine and thiocarbamide as sensitisers of bleach-out dyes; A. Coblenzl, on the testing of emulsion papers; R. Namias, on the effect of silver in rendering gelatine insoluble; Dr. Goldberg, on wedge-screens; Professor Hartmann, on astro-photography; and A. von Pavlocsay, on recent work in screen-plate colour photography. Dr. Miethe describes a modified form of density-measuring instrument.

The conspectus of recent work in all branches of photography is again done with the fullness and thoroughness which are characteristic of the compilers of the "Jahrbuch," and the usefulness of the volume is further intensified by the excellent indexes to authors and subjects which are provided.

The Wellcome Photographic Exposure Record and Diary, 1912. London: Burroughs Wellcome and Co. 1s.

It is difficult to say new things about the Wellcome Exposure Diary, which for several years past has maintained the perfection of compactness, condensation and convenience. In most respects the 1912 issue is identical with its immediate forerunners, but we must not omit to mention the evidences of the minute and painstaking revision which keeps the volume thoroughly up to date. The list of plate speeds for use with the convenient exposure calculator is a most comprehensive record of the rapidities of all plates which may be said to be on the British and colonial markets. The tables of relative rapidities of bromide papers and lantern plates should also be of frequent use to the practical worker. In the formulæ section of the book the compilers give many useful tables and other data for time development with "Tabloid" rytol and other developers, classifying the commercial plates as regards speed of development. The Diary likewise continues to give definite instructions for the use of the various "Tabloid" toning, intensifying, and other preparations.

Three separate editions are published, specially adapted for the Northern Hemisphere and Tropics, the Southern Hemisphere and Tropics, and the United States. When purchasing care should be taken to specify which edition is required. The Wellcome Exposure Record may be obtained from all photographic dealers and booksellers, and at the railway bookstalls. Price in the British Isles, one shilling.

## New Materials, &c.

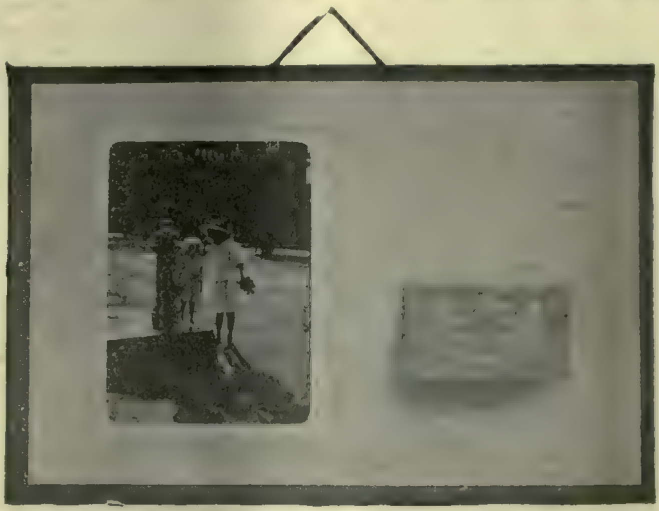
**Ensign Christmas Mounts. Made by Houghtons, Ltd., 68-69, High Holborn, London, W.C.**

The large eight-page list containing many excellent half-tone reproductions gives as descriptive an account of Messrs. Houghtons' specialties in greeting-mounts as can well be done in type and printing. We may, however, make mention of one or two particular examples which specially appeal to us as typical of the taste in colours, surfaces and arrangement which is evident in all the mounts. The Nos. 2,316A and 2,316B are mounts for postcard portraits and landscapes respectively. They are of a very pleasing cream board, embossed in gold and brown, and provided with an inner slip-in mount; price 1s. per dozen. Another equally tasteful style is Nos. 2,311 and 2,330. This is a mount of art linen surface with gold embossed motto on the front, and an inner printed mount provided with figured tissue cover. It is issued both in brown and grey for prints 5 x 4 and half-plate. Prices 1s. 3d. and 1s. 6d. per dozen.

No. 2381.

A very neat mount is No. 2,381 of the slip-in variety, with oval opening suitable for postcard and cabinet prints. Printed in light brown with a darker brown edge, and motto embossed in brown; the price is 1s. per dozen.

The series of calendar mounts includes a number of very pleasing designs, one of which, No. C125, we reproduce. It is for upright quarter-plate prints, which are held in the slip-in mount. In colour and surface these calendars will take almost any kind of photographic print, while yielding a harmonious effect. The price of the mount referred to is 2s. 6d. per dozen.



No. C. 125.

Mimosa Toner for C.C. Effects on Gaslight.—Mr. C. A. Rudowsky, 89, Chiswell Street, London, E.C., sends us a further sample of the "Mimosa" single-solution sulphide toner, together with a circular of new instructions for the use of this toning preparation in obtaining C.C. effects on the "Verotype" gaslight paper. The paper is exposed and developed in the ordinary way, using any suitable developer, but adding additional bromide in proportion to the warmth of tone required in the final prints. After development, fixing, and washing, prints are simply placed for about a minute in the "Mimosa" toner mixed with about 500 times its bulk of water. In this very weak bath prints assume a series of very agreeable warm-black to cool-brown tones, the warmth of tone being proportional to the degree of greenish tinge in the prints, which is produced by the addition of bromide to the original developer. Working according to this general direction, we found that addition of 10 per cent. bromide solution in quantity from ½ dr. to 8 drs. per 12 oz. of developer afforded a series of tones very similar to those obtained by platinum toning of collodio-chloride paper. This rapid method of obtaining prints of agreeable colour, as well as of great brilliancy and richness in gradation, should be of much service to photographers in dull weather when, without arc-light or mercury-vapour for printing, the use of a print-out paper may often involve considerable delay. It may be added that the "Verotype" is a paper of the slow bromide class, intermediate in rapidity between gaslight and bromide, and readily manipulated in a very bright yellow light.

## New Apparatus, &c.

**The Goerz C.D.V. "Tenax." Made by C. P. Goerz Optical Works, Ltd., 1-6, Holborn Circus, London, E.C.**

In this camera the makers provide an instrument intermediate in size between the "Vest Pocket" Tenax and the quarter-plate "Tenax" hand-camera. It takes a plate 3¼ x 2¼ inches, and is fitted with a Goerz anastigmat at 3½ inches focal length. Either the "Syntor" or "Dagor" f/6.8 lenses may be had or the "Celor" f/4.5. Focussing is provided from infinity up to two yards by moving forward the two rods on which the four supporting struts are fixed. This is done by means of the milled head seen to the left of the drawing, at the back of the camera. The adjustments include most convenient milled screws for the lens diaphragm and the shutter speeds, which latter are from 1 second to 1/250th. In addition, exposures can be given by bulb and time. The finder is of the direct-vision type, a sighting lens being provided on the back frame. Both turn down when not in use, so that they are free from accidental damage. Constructed entirely of metal, the camera is one which should be perfectly immune to climatic extremes. It is quite sufficiently portable for its bulk not to be felt in a side-pocket, since the dimensions are less than 5¾ x 4 x 1¼ inches. The weight is 1 lb. 10 oz. A further good word must be said for the dark-slides, which are of the solid pattern, constructed throughout of metal, and with a most convenient catch for securing the plates in position. The camera can also be fitted with film-pack adapter. With Goerz "Celor," three double slides, and purse cases for slides and camera respectively, the price is £12 15s.; with the "Syntor" this price is £10 10s.; whilst with the "Dagor" it is £12 10s.

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### CATALOGUES AND TRADE NOTICES.

**Marion Plates and Papers.**—The latest list of the plates, cut-films and papers of Messrs. Marion and Co., reaches our table, and may be obtained free on application to Soho Square, London, W.

**Hypono.**—Messrs. Marion have just issued a new leaflet of instructions for the use of this hypo-eliminator, giving hints for its use also as a relief from metol poisoning, etc. Hypono is now supplied in 6d. as well as in 1s. bottles.

**Lantern-Slides.**—A little booklet, just issued by the Leto Company, 1, Crutched Friars, London, E.C., contains some useful hints on the making of lantern-slides on the Leto and Kristal plates, by Mr. W. L. F. Wastell. The booklet may be obtained free on sending a postcard to the Leto Company.

**Griffin's Professional List.**—A new abridged list of papers, plates, cameras, backgrounds, and other accessories, mounts, chemicals, etc., has just been published by Messrs. Griffin, and will be sent (together with particulars of discounts), to *bonâ-fide* commercial photographers, on application to the firm at Kingsway, London, W.C.

**Gevaert Papers.**—A very effective get-up is adopted for the third edition of Messrs. Gevaert's price-list of papers and postcards. The list fully specifies the sizes and prices of the firm's products, including their platinum and "Gravure" papers. It also contains the formulæ and developers for Gevaert P.O.P., gaslight, bromide and C.C. papers. It is sent free on application to Messrs. Gevaert, Ltd., 26-27, Farringdon Street, London, E.C.

**The Ensign Works.**—Messrs. Houghtons have recently published an illustrated booklet describing their camera and mount factories at Walthamstow, and illustrated by a large number of photographs showing the large metal and wood-working shops. No doubt, in response to any reader of the "B.J." who would wish to take this opportunity of acquainting himself with the extent of Messrs Houghtons' enterprises, a copy of the publication will be sent free.

**Lantern Slides.**—A booklet issued by Messrs. Wratten and Wainwright may always be said to be worth the getting, and the third and revised edition of this firm's 16-page booklet on lantern-slide making is no exception to the rule. Messrs. Wratten, in connection with their bromide lantern plate, have worked out a number of special methods for the production of warm tones by a convenient and certain "time" method. Also the formulæ for the physical development of their lantern plates permit of special effects being obtained, particularly when dealing with flat or contrasty negatives. Lantern-slide makers should certainly despatch a postcard to Croydon for the booklet, which is sent free.

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# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, December 8.

Cowlairs Co-operative Camera Club. Gum Printing.
Cardiff Camera Club. "Colour Photography." Charles Kelly.

### Saturday, December 9.

Edinburgh Photographic Society. "From Edinburgh to Moscow." W. Bertram Miller.

### Monday, December 11.

Leek Photographic Society. "Amateur Photographer and Photographic News' Prize Slides.
Marylebone Camera Club. "Trimming and Multiple Mounting." J. A. Lovegrove.
Southampton Camera Club. "The Possibilities of a Hand Camera." W. A. Chaplin.
Southport Photographic Society. "Enlarging." Capt. G. C. Appleyard.
Leeds Camera Club. "With Pencil and a Camera." S. A. Wilkinson.
Scarborough and District Photographic Society. Members' Night. Lantern Slides, Prints, and Photographic Apparatus.
South London Photographic Society. Nature Study Competitions.
Bradford Photographic Society. Discussion—"Automatic versus the Old System of Development." A. R. Sharpe and F. Nicholson.
City of London and Cripplegate Photographic Society. "Art and the Camera." P. Bale Rider.
Dewsbury Photographic Society. "A Trip to Brittany." A. E. Porter.
Bowes Park and District Photographic Society. "Bromide Enlarging Without a Condenser." H. Field.
Bath Photographic Society. "The Autochrome Process." Rev. James Dunn, M.A.
Kidderminster and District Photographic Society. "Two Years in Egypt." Lord Hampton.
Wallesley Amateur Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

### Tuesday, December 12.

Royal Photographic Society of Great Britain. "The Fitting up of the Studio." Drinkwater Butt.
Hackney Photographic Society. "New Lights on Old Subjects." H. W. Lane.
Halifax Camera Club. "Oberammergau and the Country of the Passion Play." W. H. Houghton.
Leeds Photographic Society. "Some Swiss Recollections." Gilbert Middleton.
Dumbarton, Denny Institute (Photographic Section). "Chemistry of Photography." D. G. M'Kenzie.
Sheffield Photographic Society. President's Evening.
Todmorden Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

### Wednesday, December 13.

West Surrey Photographic Society. "The Swiss Alps."
Batley and District Photographic Society. Autotype Carbon Demonstration.
North Middlesex Photographic Society. An Evening with Pictures. P. Bale Rider.
Ilford Photographic Society. Lantern Slide Competition and Criticism.
Partick Camera Club. Monthly Lantern Slide Competition.
Sale Photographic Society. "Bromide Printing."
Coventry Photographic Club. "The Carbon Process." Members.
Borough Polytechnic Photographic Society. "Ways and Means in Photography." Messrs. Burroughs Wellcome.
Huddersfield Naturalist and Photographic Society. "Caudebec and St. Wandrille." J. R. Wigfull.
Bristol Photographic Club. "Bromide Enlarging." E. G. Watts.
Rochdale Amateur Society. "Retouching." W. Bell, for Gevaert, Limited.
United Stereoscopic Society. Third Annual Auction Sale.

### Thursday, December 14.

Handsworth Photographic Society. The "Amateur Photographer" Prize Slides.
London and Provincial Photographic Association. "Another Ramble Amongst Wild Flowers." H. Essenhigh Corke.
Liverpool Amateur Photographic Association. "In the Scottish Highlands." G. E. Thompson.
Sutton Photographic Club. "Recent Progress in Direct Colour Photography." A. P. Hoole.
Chelsea and District Photographic Society. "Nooks and Corners of Old London." C. Forbes.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Bromide Toning." A. Abel and J. G. Farrar.
Leigh Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

## ROYAL PHOTOGRAPHIC SOCIETY.

Meeting held Tuesday, December 5, Mr. James A. Sinclair in the chair.

Dr. C. R. Atkin Swan gave an informal talk on "The Simplicity of Telephotography," in the course of which he dealt with the many occasions on which the telephoto lens was of immense service to the photographer of average subjects. Dr. Swan illustrated the practical points of his discourse by means of a large series of lantern illustrations. A brief discussion followed, in which Messrs. Lan-Davis, Lumley Cator, Ernest Marriage, and Capt. Owen Wheeler took part. A hearty vote of thanks was accorded to Dr. Swan.

**Croydon Camera Club.**—Mr. H. P. C. Harpur, last week before a full house, gave an exposition on the carbon process, at which he is an adept. The Autotype Co. having kindly supplied all materials, and undertaken the printing of the lecturer's negatives—who, by the way, modestly refrained from lending for the purpose anything larger than 20in. by 15in.—all, of course, went well, and some first-rate pictures were developed, and much useful information was imparted in the inimitable style peculiar to Mr. Harpur. To speak more accurately, Mr. Harpur has several styles which follow each other in beautiful and almost invariable sequence. At the outset we have the scientific phase, pinnacled, and impressively ponderous. By the time any strangers present have been forced to the conclusion that the speaker must be at least a F.R.P.S. and D.Sc. rolled into one, and his many friends are getting anxious lest a brain storm should intervene, the lecturer has descended to the colloquial. This is followed by what may be termed the "free and easy," rapidly to give way to the genial and friendly familiar, and terra firma is reached at last.

Amongst a number of useful tips given, more or less well known, two may be mentioned as being rather outside ordinary practice. Many workers of the carbon process are occasionally troubled with blisters, due to imprisoned air, which may entirely spoil an otherwise excellent print. These can be entirely obviated, the lecturer said, by previously placing the transfer paper, prepared side down, for about fifteen minutes or longer in water at a temperature of 150 deg. Fahr. Since adopting this plan, which had no injurious effect on the paper, as might be supposed, he had never experienced a single case of a blister. The other expedient related to a dodge for lightening heavy shadows, or brightening up high-lights locally, which it was stated worked like magic. A few ounces of chloride of lime and Canadian potash are mixed together in equal quantities, a little water is then added, and a horrible mess results, which is allowed to settle. Three or four drops *q.s.* of the clear supernatant solution which eventually forms, are added to half a pint of water, and the solution directed in the form of a jet on the print. A member who inquired as to the chemical constitution of Canadian potash received no answer, for nobody knew; but after all, as Mr. Harpur said, what did it matter?—Canadian potash is obviously Canadian potash, and is stocked by all oil and colour shops.

# Commercial & Legal Intelligence.

## NEW COMPANIES.

**Bioschemes, Ltd.**—This private company has been registered with a capital of £10,000 in £1 shares. Objects, to carry on the business of makers of, and dealers in, cinematograph films, cameras, photographic apparatus, etc. Registered by Kenneth Brown, Baker, Baker and Co., Ltd., Lennox House, Norfolk Street, W.C.

**Premier Circuit, Ltd.**—This private company has been registered with a capital of £2,000 in £1 shares, to carry on the business of manufacturers of photographic apparatus, cinematographs, etc. First directors, J. Cafferata, A. E. Venner, and S. W. Venner. Qualification £50. Remuneration £50 per annum. Registered by McIntyre and Capel Peters, 401, Birkbeck Chambers, Chancery Lane, W.C.

**Royal Visit to Salisbury.**—On the occasion of the visit of Princess Patricia of Connaught to Tidworth and Salisbury, her Royal Highness honoured Mr. H. C. Messer, of Castle Street, with a special sitting for a photograph.

# News and Notes.

**London and Provincial Photographic Association.**—The address of the hon. sec., Mr. E. Human, is now "Birchdale," Woodlands Avenue, Wanstead, Essex, where all letters should be addressed.

**The Sixth Houghton Smoker** will this year be held at the Criterion Hotel, at 7.30, on December 15. If Messrs. Houghtons' impresario, Mr. Phil Payne, does no better than equal his previous records we can promise the visitor a thoroughly entertaining evening. Tickets may be obtained at Messrs. Houghtons', 88-89, High Holborn.

**Royal Institution.**—A general meeting of the members of the Royal Institution was held on Monday last, December 4, Sir James Crichton Browne, Treasurer and Vice-President, in the chair. The special thanks of the Members were returned to Mr. D. J. Blaikey for presenting to the Institution, from the bequest of the late Miss J. Barnard and at her express wish, a large volume of Faraday's containing engravings, portraits, and letters. The Chairman announced that the Managers, at their meeting held this day, had appointed Mr. W. Bateson, M.D., F.R.S., Fullerian Professor of Physiology for a term of three years.

**The Scottish 'Folio.**—The annual Portfolio of the Scottish Federation is now on its tour around the societies. Two hundred and seventy prints were submitted by twenty-two societies, and of these sixty-eight have been retained from sixteen societies by the judge, Mr. John H. Gear, for circulation. From a selection of seven the winner was chosen, "'Tween the Gloamin' and the Neuk," by Mr. A. D. Wilson, secretary of the Shettleston and District Camera Club. This is the second occasion the Shettleston has had that honour, Mr. W. J. Hart of that club winning in 1909-10. The selection includes pictures by Messrs. J. Riley, Dundee and East of Scotland; G. Malcolm (2) and J. B. Johnston, Midlothian; John D. Stephen, Aberdeen Art Photo; and James Hamilton, Glasgow Eastern. The Midlothian, who supplied last year's winner, has the largest number accepted, viz., twenty-two, Shettleston being second with ten.

**Amalgamation of German Journals.**—The two German photographic periodicals, "Photographische Rundschau" and "Photographische Mitteilungen," will be amalgamated on January 1 next, under the title "Photographische Rundschau and Mitteilungen," and will be published by the Halle firm of Knapp, by whom the "Mitteilungen" has been acquired from Messrs. Gustav Schmidt, of Berlin. With Dr. R. Luther, under whose direction the "Rundschau" has of late risen to a leading place in the German photographic Press, will be associated Herr Paul Hanneke, hitherto editor of the "Mitteilungen." The art side of the publication will continue to be in the hands of Herr F. Matthies-Masuren. The new conjoint periodical, which will appear fortnightly, has our best wishes for its success.

**Finger-Nail Photographs.**—According to the "Daily Sketch," the latest fad for Christmas is photographs on the finger-nails. The idea has come from Paris, where fashionable ladies have portraits of their lovers or husbands printed on their finger-nails. "The portrait will last for a couple of months," said an expert. "The nail is first prepared to hold the film of the tiny photograph as it is transferred to the new setting. Brown tints look quite attractive against the pinkish tone of the nail, and the photographic negative can be worked up by an experienced photographer so as to make the finger-nail look almost like an etching. Any colour can be provided, for there are at least thirty in the printing of carbon portraits. It is like transferring a portrait to a bit of delicate china, only there is no 'firing' to be done, and the new fad is perfectly harmless. After the picture has been properly set on the finger nail, a little varnish is sometimes used to preserve it. It is," continued the expert, "much more attractive and sensible than wearing a picture hidden in a locket. Moreover, it puzzles your friends to know what you have on your nail. You might think it easy to discover the original of a finger-nail photograph, but it isn't in the least, the picture is so tiny."

**Royal Institution.**—The following are the Lecture Arrangements at the Royal Institution, before Easter:—Dr. P. Chalmers Mitchell, a Christmas Course of six illustrated lectures on The Childhood of Animals, adapted to a juvenile auditory: 1. Introductory; 2. The Duration of Youth; 3. Colours and Patterns of Young Animals; 4. Young Animals at Home; 5. The Feeding of Young Animals; 6. The Play of Young Animals. Mr. W. Bateson, Fullerian Professor of Physiology, R.I., six lectures on The Study of Genetics. Professor E. G. Coker, two lectures on Optical Determination of Stress and Some Applications to Engineering Problems. Dr. T. Rice Holmes, three lectures on Ancient Britain. Professor A. W. Bickerton, two lectures on The New Astronomy. Professor A. M. Worthington, two experimentally illustrated lectures on The Phenomena of Splashes. Mr. M. H. Spielmann, two lectures on The Portraiture of Shakespeare. Mr. F. A. Dixey, two lectures on Dimorphism in Butterflies: 1. Seasonal Dimorphism; 2. Sexual Dimorphism. The Rev. John Roscoe, two lectures on The Banyoro: A Pastoral People of Uganda: 1. The Milk Customs; 2. Birth and Death Customs. Sir Alexander C. Mackenzie, three lectures on: 1. Russian Music of To-day, with the kind assistance of the Hans Wesseley Quartet; 2 and 3. Franz Liszt (Centenary) (with musical illustrations). Professor Sir J. J. Thomson, Professor of Natural Philosophy, R.I., six lectures on Molecular Physics. The Friday evening meetings will commence on January 19, when Professor Sir James Dewar will deliver a discourse on Heat Problems. Succeeding Discourses will probably be given by Professor Bertram Hopkinson, Dr. J. Mackenzie Davidson, Dr. J. A. Harker, Rt. Hon. Sir John H. A. MacDonald, Mr. G. K. B. Elphinstone, Dr. W. J. S. Lockyer, Mr. F. Soddy, Professor D'Arcy W. Thompson, Professor Sir J. J. Thomson, and other gentlemen.

**The "Northlight" in India.**—Apropos of a failure to obtain a photograph of the Sirdar, and his family on their departure on a journey, the "Hindi Punch," a press cutting from which reaches our table, comments upon the efficiency of photographers in Bombay to meet exigencies of this kind, and instances the studio of Messrs. Gomes and Lawrie, who have recently installed one of the multi-carbon studio arc lamps of Messrs. Marion. We like the words which our Indian contemporary, in recommending its readers to patronise an up-to-date photographer. They are as follows:—"'Hindi Punch' would say to all who wish to have imperishable, physical, mundane immortality in the shape of good speaking likenesses—seek Gomes and Lawrie—specially if they have buoyant, restless infants and children 'to be taken' successfully by their spontaneous process."

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## CHEMICAL POISONING.

To the Editors.

Gentlemen,—Apropos of your remarks *re* the chemical poisoning of the skin, perhaps my experience will be not only interesting but helpful to those suffering from this most distressing complaint. I was (and I am thankful in being able to use the past tense) a sufferer for several years, and tried all kinds of ointment, both quack remedies and doctors' prescriptions, including one given me by a physician at one of the London hospitals. For weeks I had to have the fingers of both hands dressed each night, using both the ichthyol ointment and plaster, but could find no cure for the complaint, and the irritation became so severe and of such a prolonged character, that it began to affect my general health, and my doctor talked of the necessity of my giving up photography. Eventually I was able to give up all dark-room work, and gradually my hands got well. But even then at intervals the irritation would return, and unless attended to at once the skin used to crack.

Some three years ago I had of necessity to do my own dark-room work again, and my hands began to get bad, and again I commenced the old routine of ointments, creams, plasters, etc. Hazeline was practically useless, and rubber gloves caused an increase of the irritation, and so had to be abandoned. One day I saw an advertisement of a preparation called D.D.D. for all skin diseases. I sent for a bottle (4s. 6d.), and began to use it. It is simply dabbed on the parts affected, and being of a spirituous nature it dries almost immediately. I used this always before and after developing, also every time I washed my hands. At the same time, I discarded all other soaps, and used exclusively the D.D.D. soap (1s. tablet). The irritation was at once relieved, and the cracks and wounds began to heal. When the liquid is first applied it causes one to "sit up," but the pain is over in a few seconds. When I found it was necessary to purchase a second bottle, I thought I would try the second or stronger of the two strengths, and found to my surprise that the directions advised that the stronger preparation should not be used on the hands, the very purpose for which I required it. However, I risked it, and found it quite all right, and my hands are now apparently as well as ever they were. I say "apparently," because I feel that the immunity is due to the fact that I continue to use the D.D.D. soap, and occasionally touch my fingers with the preparation (just for luck). During the Coronation week I developed over 500 bromide cards in one batch, and when I had finished I found that my fingers were very sore and painful, and, unfortunately, I was without the preparation, and had to send to London for it. During the three days which intervened my hands were becoming as bad as ever, but after resuming the treatment the trouble speedily disappeared, and since then I have been quite free from it.

I need hardly say I hold no brief for the D.D.D. Co., whoever they may be. My object in writing is simply to pass on to others a remedy for a complaint which at one time nearly drove me mad.—Yours faithfully, H. C. Messer.

29, Castle Street, Salisbury,
Dec. 2, 1911.

## THE "ALMANAC" INDEX TO GOODS ADVERTISED.

To the Editors.

Gentlemen,—Doubtless, like many another reader of the invaluable "Almanac," I have had reason to be grateful for the guide to the endless articles described in its advertisement pages which is provided by the "Index" at the extreme end of the volume. Such a feature was long needed, and is certainly a boon to one when seeking to purchase any particular article. Equally it must be of advantage to the firms themselves, since it prevents the specialty of any given firm from being overlooked among the mass of advertisements. After this, it seems unkind to utter anything in the nature of a complaint, but, at the same time, I think that a little friendly criticism is required of the index which accompanies the 1912 "Almanac" just issued. In many cases a reference is given to firms who do no more than simply mention a given article. One is put to the trouble of turning up a number of pages without being rewarded by finding anything in the way of information which one did not know before. It would almost seem, in a number of instances, as if firms had specially drafted their advertisements with a view of securing as many references as possible in the "Index." Naturally, one cannot blame them for this: they know a good thing when they see it. But, from the point of view of the reader, to save whose time I take it the index is planned, I think there might be some indication by an asterisk or some other means that an article is merely mentioned and is not described, nor even its price stated. As it is, I fear that many other readers besides myself will feel that the usefulness of the "Index" is in danger from an excess of good nature on the part of its compilers. Personally, I don't think that advertisers who get a lot of entries by making their advertisements little more than a list of articles, will really get much benefit from the same. When one turns up the page and finds nothing that one did not know before one has a feeling of having been "had," and after one or two references of this sort, feels disposed in favour of firms who give full particulars of their goods. I can understand that in the compilation of an index such as this some rigid rule must be followed, and I would only submit that some distinction be drawn between the two classes of advertisement.—Yours very truly,

W. **Longland.**

11, Beresford Road, Canonbury, N.,
Dec. 5, 1911.

To the Editors.

Gentlemen,—I have been looking forward with some gusto to the appearance of the 1912 "Almanac," and now that I am in possession of it I must indeed congratulate all concerned upon the production of a volume containing such a mass of useful information. I think it is far and away ahead of all previous issues. There is, however, one little source of irritation I should like to mention, and that is in connection with your Classified Index to Goods Advertised. The inclusion of this index a few years ago must have proved a most invaluable aid as a ready means of selection when in want of anything used in photography, but now, as far as I can see, it serves no useful purpose, for so many of the items mentioned therein are simply based on a bald reference in the several advertisements. I think it most irritating to find that upon looking up a certain page there is merely a number of items, without the slightest description or price. The generality of people naturally conclude that in the ordinary course of business such-and-such a firm stock the goods enumerated. Then would it not be more advantageous and beneficial to them to use the space for more detailed information which would enable intending purchasers to make a selection?—Yours very truly,

F. W. A. **Bird.**

29, Fenchurch Street, London, E.C.

[We are glad to have our correspondents' views, which we shall keep before us in preparing future issues of the "Almanac."—Eds., "B.J."]

### HALATION.

To the Editors.

Gentlemen,—In reply to Mr. R. L. Boyd's letter I may say that plates 1 and 2 were developed with Ilford formula pyro-soda developer for five minutes, at about 60 deg. F., but the much stronger halation in plate 1, compared with plates 3 and 4, is due, not to this, but to the longer exposure given to the first pair.

In picking out 1 and 2 from a number of others for reproduction, I wished simply to show the characteristics of true halation clearly and the creative effect of a backing, and I regret that I overlooked the possibility of the direct comparison of these with the second pair shown in Figs. 3 and 4.—Yours faithfully,

F. F. **Renwick.**

## Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

**Photographs Registered:**

W. Sullivan, Sunnyside, Southend Road, Stanford-le-Hope, Essex. *Photograph of motor-car accident in ditch, Southend Road, Stanford-le-Hope, November 16.*

**Amazed.**—In some few cases we have heard of want of focus with an arc of the enclosed type, that is, a sharp picture on the focussing screen is not sharp on the negative. You can only remedy this by using a lens which does not give it, or possibly by using a light-filter, which will absorb ultra-violet rays.

**Aerial Graphoscope.**—I should be very pleased if you can, in your next issue, give me any particulars of the working of "The Aerial Graphoscope."—H. Hinge.

The Aerial Graphoscope is a lantern screen formed by a white lath, pivoted at one end, and rotated around this pivot at a high rate of speed. It is used for projection effects.

**Postcards in Strips.**—Would you kindly tell me the name and address of the makers or where I could get a machine for printing postcards in strips of a dozen or more from one negative?—G. Whitbourn.

Messrs. Marion have such a machine—the "Good" rapid printer—which we review on page 688 of the "Almanac," 1912.

**Book on Flashlight.**—Are you aware if there is an English translation of the handbook on "Flashlight Work" entitled "Das Photographieren mit Blitzlicht," reviewed in the "Journal" of November 24? Also, do you know of any good works published in this country or America upon the same subject? — Lux et Tenebris.

There is no English translation. A very good manual on flashlight work is "Magnesium Light Photography," by F. J. Mortimer. (Routledge, 1s.)

**Studio.**—Will you kindly state if a wall (painted white), and standing about ten feet away from studio and ten feet higher than studio roof, would be detrimental to light. The studio would be north light and plenty of it; also, will you advise name of firms who make a speciality of portable studios?—Inquirer.

In the absence of a plan to scale, it is not easy to say definitely, but we should consider the wall a serious obstruction in dull weather, and likely to cause too much top light. Messrs. Boulton and Paul, Norwich, are makers of portable studios.

**Fixing.**—I have rather a lot of postcards to do (bromide). Would you be good enough to tell me through your column about how many cards I could safely fix to a pint of acid hypo made up as follows:—Hypo crystals, 4 ozs.: 100 grains, metabisulphate potassium: water 20 ozs.? I am anxious they should be permanent, and do not know how much bath to allow.—Postcard.

It is not a good plan to stint hypo, but as a guide we may give the figures of M. Lumière, who found that not more than 50 postcard prints should be fixed in 35 ozs. of acid bath containing 15 per cent. hypo.

**Cinematography.**—1. What would be the approximate cost of a complete cinematograph apparatus suitable for giving public entertainments in villages? 2. Can the films be hired, and where? 3. Is a licence required by the operator? 4. What would be a proper charge to make at private Christmas parties? 5. Is there any book published which would give me useful information?—Cinema.

1. From £40 to £50. See the prices given by firms named under "Cinematographs," page 1,427 of the "Almanac." 2. Yes, there are dozens of film hirers. Write to Messrs. Butcher and Sons, the Tress Co., etc. 3. The hall has to be licensed. 4. £5 to £10. 5. The "Bioscope Operator," published by Ganes, Ltd., Shaftesbury Avenue, W.

**Potass. Sulphocyanide.**—1. For the past few months I have been using potass. sulphocyanide for toning silver prints instead of ammon. sulphocyanide. Does that make any difference, and what is the former for? 2. I seem to have trouble in glazing postcards, although I use very best benzine and wax. Is that through using potass. sulphocyanide?—Toning.

1. Potass. sulphocyanide is equally suitable, but the ammonium compound, being prepared for photographic purposes, should be used in preference. Sulphocyanide is used in photography for practically nothing else than toning baths. 2. We should say not, if the sulphocyanide is a pure sample. Too large a quantity of sulphocyanide would account for it, as the salt has a softening action on gelatine.

**Rotographs.**—A gentleman has applied to me for a set of Rotographs, to be taken from a certain number of sketches. I have explained to him that, as far as my knowledge goes, the word "Rotograph" applies to a firm and not to a process, but he is equally insistent that it is a special process, which, by the way, will not yield a reproduction by the ordinary methods of printing. He sent me a small strip as an example, and it appeared to me nothing more than an ordinary paper bromide negative, though, at the same time, I may be mistaken. Would you be good enough to help in the matter?

We are sorry we cannot say anything to help you. We think your customer is misinformed. The Rotary Co. issue a bromide negative paper, but, of course, such negatives can be printed from in the ordinary way.

**Enlarger.**—Could you give me, through your "Journal," a cheap method of making an enlargement camera. I have small Eastman's pocket Kodak (2 in. x 1½ in. films) camera, and would like to enlarge some of the pictures to cabinet size, and I am not able to buy one of the nice, useful-looking cameras I see in shop windows. I have two lenses taken out of two 5s. magic lanterns; would they be of any use? If you could advise me I should be grateful.—Riverside.

Unless your camera has a focussing movement it will be difficult to arrange it for enlarging, while your magic-lantern lenses will be of no use at all. You might purchase a shilling handbook on enlarging and construct a daylight apparatus in the manner you will find described. This will, however, cost a little for material and take some time, and we doubt if you will not find it just as economical to purchase a small fixed-focus enlarging camera Messrs. Kodak supply one adapted to exactly your requirements for 10s.

**Krayn Colour-Screen Film Process.**—In to-day's Supplement, under instructions for making the three coloured filters from fixed-out ordinary plates, for the violet is given: Crystal violet, 9 grammes. Are you sure this is correct? A few weeks ago I had given me this same article, taken from a trade journal, and, having procured the dyes, I began to make the filter screens. The red and green came all right with 1 gramme, but I failed altogether to dissolve so large a quantity as 9 grammes of crystal violet, and was told by a chemist that it could not be done in 100 cc. of water. Finding that the violet dye was very much stronger than the other two, I concluded that 9 grammes was a misprint (after trying .9 instead of 9) for 9 centigrams, and having made a bath of that strength and dyed the plates with it I can only say that, if anything, the violet screen is even then more strongly dyed than the red and the green.—Charles H. Murray.

The article was given as it appeared in an American contemporary, but we think with you that the proportion of dye is an error.

**Wedge Spectrum.**—I shall be much obliged if you will kindly criticise the following suggested optical device for securing what is called a "wedge spectrum." The idea is to interpose, between the illuminant and the slit, an opaque partition with its edge across the length of the slit. The light must be a uniformly illuminated area of definite geometrical shape, and the apparatus so arranged that the slit comes within the penumbra of the shadow cast by the partition. Any range of gradation can be secured at will simply by adjusting the relative positions of light, slit, and partition. The form of the gradation curve will, of course, depend on the shape of the light-source.—Sukumar Ray.

We do not see any advantages in your device, which would certainly be difficult to arrange. A much simpler method would be to make a Goldberg wedge in the manner described by Dr. Goldberg in the "B.J." for August 26, 1910. You would then have a truly gradated wedge spectrum, whereas your device will give a complex kind of gradation that will vary with very slight displacements of the apparatus.

**Agreement.**—As a reader of your journal I should like your advice on the following:—Three months ago I took a job as outdoor operator and canvasser for a man who paid me 22s. and commission, and said that I should be able to make up my money considerably, and found I had all I could do to make it up to 25s. Anyway he made me sign an agreement not to work on my own or within six miles of his place for three years; but I was only with him three months, and he paid me off on account of my being late one morning. Now I have got a place with a London firm to travel, and the very first place they want me to start is the town where I was working for the man I signed the agreement for. The agreement was written by the boss himself, and made me liable for £20, if I photographed anything within six miles after I left him. I should like to know if I can take this job, as it is a very good job, and I think it hardly fair to have to lose this job. I shall be glad of your advice.—A. H. N.

We should say you cannot take it without rendering yourself liable to action. We could only say positively after seeing the agreement, but we expect that it covers both your working for another employer as well as on your own.

**Potass Carbonate.**—1. What is the best way of keeping potassium carbonate? It is so very deliquescent that it is absolutely unreliable for making up a glycin developer for time development. 2. How long will a solution of it keep its original strength? 3. What is the best strength for a stock solution? 4. Is the potass carbonate, as sold by photographic dealers, $K_2CO_3$ or $K_2CO_3.2H_2O$? 5. Will there be any difference in the character of the grain of a developed negative if potass carbonate is replaced by soda carbonate in the glycin developer?—S. N. Banerjee.

1. Best to buy the dry or anhydrous carbonate, $K_2CO_3$, and to make up at once in solution, or keep in well sealed bottle. If it gets damp it can be rendered dry again by heating in a porcelain evaporating dish, or, at a pinch, an iron saucepan over a fire or gas burner. 2. Practically indefinitely, save only that it attacks the glass, but this action is very slight. 3. Almost any strength can be made; we suggest one of 20 per cent., that is, 200 gms. dissolved in water and made up to 1 litre. 4. The "dry" should be $K_2CO_3$, but is often weaker than this owing to absorption of water. The "cryst." is somewhat indefinite. 5. None that we know of, but soda carbonate is not soluble enough to be used in making the Hübl glycin paste.

**Studio.**—Can you kindly advise me if the room herein described can be adapted for a studio for high-class portraiture? The room is the first floor up in a three-storey building, with another room above. The size and position of windows are described upon sketch herewith. I have seen a studio where good work was done using daylight and electric light combined. Also, can you recommend a suitable style of decoration? I would like it made like the hall of some old ancestral castle, with wainscotting about 7 ft. high, panelled and plastered, etc., ceiling to show either fine panelling or beams and rafters, etc. What book is there that I could get with good drawings of such interiors? Perhaps some of your readers could help me with valuable ideas, etc.—Alpha and Omega.

Your sketch does not give exact position of windows, nor their height; that is to say, how much of the 4 ft. of dead wall is above and below the sashes. The light appears to be too much broken up to be of much value, except to supplement an electric light, which should be one of the new patterns for low-roofed studios. Houghtons, Kodak, and Westminster Engineering Co. all list suitable models. Marion's Northlight is also good, if you prefer an open arc lamp. You can obtain books and designs for decoration in the style you desire from Mr. B. T. Batsford, 94, High Holborn. Haddon Hall would be a good model to copy. Write to Mr. Keene, photographer, Derby, for photographs of the interior. You can now get wainscotting very cheaply; the panels are made of oak-faced three-ply wood, and the styles are machine grooved.

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# THE BRITISH JOURNAL OF PHOTOGRAPHY.

No. 2693. Vol. LVIII. FRIDAY, DECEMBER 15, 1911. Price Twopence.

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## SUMMARY.

We deeply regret to announce the death of Mr. Snowden Ward, by whose sudden decease at New York on December 7 the photographic world is deprived of a leading personality, worker, and writer. Mr. Ward is reported to have died after only two days' illness. A notice of his life and character by the Editor of this Journal, to whom, perhaps, Mr. Ward was as intimately known as to anyone, appears on page 953.

We print this week an article recently written for our pages by the late Mr. Snowden Ward. It deals with the business of Mr. William H. Rau, of Philadelphia, a well-known American photographer, who has made a specialty of photographic work for railways and other bodies. (P. 947.)

In a leading article on page 846 we endeavour to deal briefly with a question of charges for photographic work away from the photographer's studio.

Opportunities for the sale of portraits, etc., in connection with physical culture are referred to in a note on page 846.

Many useful hints on the equipment of the studio were given by Mr. Drinkwater Butt in the course of a lecture before the Royal Photographic Society on Tuesday evening last. (P. 961.)

The usefulness of a mixture of potass. bichromate and sulphuric acid in the dark-room as a means of rendering dishes, measures, etc., chemically clean, is the subject of a note on page 945.

Electric photo printing machines, cinematograph mechanism, dark-slides, etc., figure under "Patent News." (P. 956.)

The current issue of "Camera Work" is a Stieglitz number as regards illustrations. (P. 958.)

The uselessness of the barium chloride test for sulphite, or rather for sulphate in sulphite, is the subject of a note on page 946.

M. L. Benoist, in a recent paper before the French Photographic Society, has described the method of determining shutter speeds by means of a flame vibrating at a known frequency. He uses an acetylene flame for this purpose. (P. 949.)

In a further chapter on the theory and practice of dark-room safe-lights, Dr. A. P. H. Trivelli gives a series of formulæ for eleven different safe-lights suitable for the development of all grades of photographic materials. (P. 951.)

## EX CATHEDRA.

**The Dark-room.** Mr. Gear's recent paper on the "Dark-room," read before the R.P.S., gave rise to an interesting discussion and to the contribution of numerous tips of a more or less useful nature. A great deal was said with regard to the sink, and differences of opinion were expressed as to the relative advantages of lead and stoneware sinks. The chief objection urged with regard to the latter was the fact that measures or negatives dropped into the sink invariably broke. The best preventive of this is to put a wood grating or perforated rubber door-mat at the bottom of the sink. Obviously for commercial purposes it is well to take whatever safeguard is possible against the loss of a negative as a result of slipping from the hand. The breakage of a measure is a small matter compared with the perforation of the sink; but any insurance against accidental breakage of negatives deserves to be taken, even though, at times, a sink may require looking to.

* * *

**A Universal Cleanser.** The mention of acids reminds us that none of the speakers referred to the use of a cleaning bottle, which is a most desirable auxiliary in a dark-room. If a wide-mouthed bottle filled with a solution of bichromate and sulphuric acid is kept always standing in the sink it is a constant reminder that used dishes and measures will be all the better for a rinse with the acid solution. The stuff being so handy, it is no more trouble to use it than it is to rinse with water alone. We prefer this solution to nitric acid, which is often used for the same purpose, because it is fumeless, and can be kept in an open bottle and used over and over again. We are somewhat surprised to see that one of the speakers advised the use of bottles all of a size. Considering how often it is necessary to use the bottles in the dark, we are distinctly of opinion that a variety in size and shape is distinctly desirable, for then we get to know the contents by the feel of the bottle. The conditions are not those of a laboratory in which we can see what we are doing and read labels. The three bottles used for a three-solution developer should be all three different, so that each one can be recognised by its feel, and to avoid confusing these three with other bottles there should be a special small shelf at the sink on which the bottles and measures required can be put before turning out the white light.

* * *

**Testing Sulphite.** Several times lately we have seen articles in which photographers have been advised to test their sulphite for sulphate by adding barium chloride, and they have been given to understand that this test indicated more or less accurately the degree of purity of the sulphite. Unfortunately, this advice is quite deceptive. Sulphate is always to be found in sulphite, hence its mere presence is no indication of exceptional impurity. Also its quantity is no measure of the amount of sulphite present, for this salt does not change directly by oxidation to sulphate. Sulphate is only the final product, and the intermediate one is dithionate, which produces no precipitate with barium chloride, and therefore is not indicated by the test. If barium chloride reveals the fact that the sample of sulphite used contains, say, 10 per cent. sulphate, then instead of the remaining 90 per cent. being sulphite, as the writers we have referred to suggest, there is probably another 10 per cent. of dithionate and about 5 per cent. of carbonates, bicarbonates, and other impurities, so that it is not likely that more than 75 per cent. sulphite exists in the sample. The barium test is thus almost meaningless from the practical point of view, while it is by no means easy to carry out if a quantitative result is desired. The only satisfactory method of determining the strength of sulphite is to test it directly for sulphite, and titration with iodine is certainly the easiest way of going to work.

* * *

**Photography at the Gymnasium.** Photographers generally seem to be indifferent to the Physical Culture movement which is so rapidly making headway in this country. A few Press workers have specialised more or less in this branch, but in the majority of cases this field is practically unworked. As a rule, such pictures must be made by artificial light, as few amateur athletes can spare time for daylight sittings. Flashlight has the advantage of allowing the photographer to invade the gymnasium itself and to secure customers too diffident or too lazy to come to the studio. Besides this, the action is contagious, one sitting because another does so. If a good picture in football rig can be obtained of one member of a team, it often results in his fellows visiting the studio, so that they may exchange portraits. Even if postcard orders only result, they break fresh ground, and may lead to ordinary sittings. When doing this class of work great care to avoid distortion must be exercised, as the necessary poses may not be those to which the photographer is accustomed. A long focus lens should be used, and the lighting arranged to emphasise the muscular development. As a rule the outline is better shown if a fairly dark background is used, though a light one is better in the case of swimmers, who usually wear dark costumes.

◆

## CHARGES FOR OUTDOOR WORK.

We have been referred to on several occasions during the last few weeks with regard to the extra amount, if any, which should be charged for outdoor jobs, generally of small extent. That such questions should arise shows, in the first place, that there is no established custom in the matter, and, in the second place, that photographers as a body justify their reputation for being unbusinesslike in their methods. In very few other trades or professions does a man start any piece of work without having some idea as to its extent and the amount which he is going to charge for it, but many photographers do this, and feel aggrieved when they receive an insignificant order and are expected to execute it at their regular studio prices. This state of affairs would be obviated by fixing a minimum charge for outdoor work within a certain radius from the studio, adding out-of-pocket expenses beyond that distance. The method of arriving at such charges must naturally be chosen to suit local and other conditions, but there should be some clear rule, and this should be adhered to even at the risk of losing a customer, who would probably not be worth much any way. Some photographers charge a fixed sum, varying from half-a-crown to a guinea, in addition to their ordinary charges for studio work, so that if a two-mile journey resulted in an order for a dozen postcards it would still be remunerative, but in such cases this rarely happens, for the customer, knowing that he has to pay the extra fee, generally makes up his mind to give a respectable order. Other houses issue a separate list for outdoor work, fixing a minimum price no matter how small the order. Ten shillings, we believe, is the usual amount in small businesses, while a third way is to give a distinct estimate in writing for the work required and to carry it out to the letter. Much annoyance on both sides would be avoided if any of these systems were applied in a regular way. The fact is that photographers are too uncertain in their business ways, being always in expectation of good orders resulting from small beginnings, and trusting to luck as to how things will really work out. An order given to a photographer should be regarded in the same light as one given to a tailor. The latter would certainly not procure cloth and cut out a suit if he knew that it was open to the customer to reduce the order to one for the vest only at the "trying on" stage. Yet parallel cases occur daily in photography, and we have complaints of receiving orders for a few shillings after a ten-mile drive and the expenditure of a dozen plates. The labourer is worthy of his hire, and if a photographer cannot produce work for which he is not ashamed to ask a decent price, then he has missed his vocation, and should try some other for which he is better adapted. It will perhaps be said that amateurs' competition has spoiled the minor class of outdoor business, but after considerable enquiry we do not find this to be the case, at all events not to anything like the extent generally supposed. There are few amateurs with cameras over half-plate size, and even the half-plate workers are abandoning that size for smaller ones. Years ago the amateur progressed from quarter-plate to 15 x 12; now he retrogresses from quarter plate to "Block-note" or "Ensignette," which is better for his professional brother.

The whole subject is one of great interest to the profession, and might well be discussed at the next Congress of the P.P.A. Most photographers would follow a good lead if they knew that there was an established custom and that they could rely upon competitors in their neighbourhood observing it.

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Croydon Camera Club.—Mr. James A. Sinclair, on December 6, gave a lecture upon "The Hand-Camera: Its Uses and Possibilities," a full report of which is deferred until next week.

Taste in Shop-Fitting.—The "Architect's and Builder's Journal" publishes a recent note on the excellent taste displayed in the fitting of the retail shop of the Kodak Co., in its new Kingsway building:—"The shop-front at the Holborn Ward corner of the building is fitted in mahogany and gunmetal, with gunmetal stall-plates bearing the company's name in raised letters. The windows are made on the 'shadowless' principle, without upright sashes, the angles being ground together and joined with a special cement. White enamel panelling is fitted throughout the shop, and the window-, wall-, and counter-cases are framed in German silver. The lighting, which is excellent, comes through prism glass in the transom. A feature of this room is a plate-glass-topped demonstration counter, beneath which are concealed a sink and drying racks for use in demonstrating the uses of daylight developing appliances and other accessories. Side windows, which are not used for display, have obscured glazing, against which are ranged tiers of stock cupboards, fitted on rollers so that they can be slid out of position, giving access to the windows for cleaning, etc. The shop-fitters who executed the work were Messrs. E. Pollard and Co., 27, Clerkenwell Road, London, E.C."

# AN "OFFICIAL PHOTOGRAPHER'S" STUDIO.

WILLIAM H. RAU, of Philadelphia, recently opened a new studio and works which have many unusual features and some that are unique. Mr. Rau himself is as interesting as his surroundings; a "prince of good fellows," who has made a great success both commercially and technically. His specialty has lain largely in undertaking and in suggesting to his customers things of which no one else thought at the time. His railway panoramas of some of the engineering feats of America were tremendously striking in the day when they were new and unique; and his very latest works, the enormous coloured transparencies that fill some of the windows in the grand entrance to the Pennsylvania R.R. station in New York, are part of the talk of the town. For years Mr. Rau has been official photographer to the Pennsylvania R.R. Co., one of the world's greatest railway organisations, and to the Lehigh Valley Railroads, and he was one of the first photographers to have a specially built and equipped railway car. In 1904 and 1905 he was official photographer to the great World's Fairs of those years, and for his fine work at St. Louis in 1904 the French Government made him Officier d'Académie. This year he is the President of the Professional Photographers' Association of Pennsylvania.

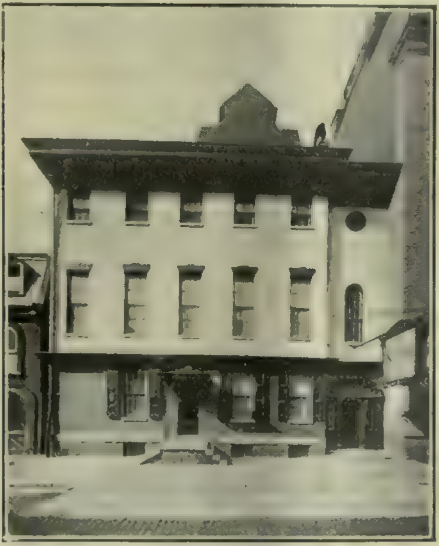

Fig. 1.
Exterior of Studio.

Such a man would be sure to have an important and an individual workshop—and so he has. On the principle that "good wine needs no bush," and realising that show-windows are not necessary in his line, he located his last studio and his present one in small bye-streets in the heart of the business section of a great city: where big frontage prices are not demanded for sites, but where access is easy for the commercial men, who are the principal clients. Camac Street, where the new studio stands, is one of the last streets to continue residential as the city grew commercial, and latterly the old "Colonial" residences have been converted into clubs of literary and artistic tendencies. The studio building, first a great residence, afterward became a school, and although the interior has been practically rebuilt from foundations to roof the old exterior is retained, and the general style of quiet refinement of the Colonial times has been followed in converting the house to commercial purposes. Wide doorways open from room to room, so that a whole floor gives the impression of spaciousness, and as the rather unusually large clerical staff works in these rooms there is always a sense of occupation. The large staff is rendered necessary by the variety of the business and by the large proportion of it that is done by correspondence, not only with America, but also with all parts of the world. For instance, the lantern-slide department, which is one of the important sections, has a very large connection with professional lecturers, in whose interests it sometimes sends operators to great distances, and does much work in the libraries and art galleries. A development of this department has resulted in Mr. Rau being the technical adviser and outfitter, and often supplying the photographer for many of the principal expeditions of discovery. A very responsible work of recent times was the developing of the exposures of the Peary North Pole expedition, and the making of lantern slides, prints, and enlargements therefrom. This comes about quite naturally, for just thirty years ago—in 1881—Mr. Rau was selected as the photographer for a great expedition through Egypt, Palestine, Arabia, and the then almost unknown wilds of Arabia Petræa. It was probably the very first important expedition to trust to the new and wonderful dry plates, and Rau scored a big success for dry plates as well as for himself. The front of the lantern-slide show-room is shown in Fig. 3 with the deep, many-drawered specimen-cabinets along the front wall.

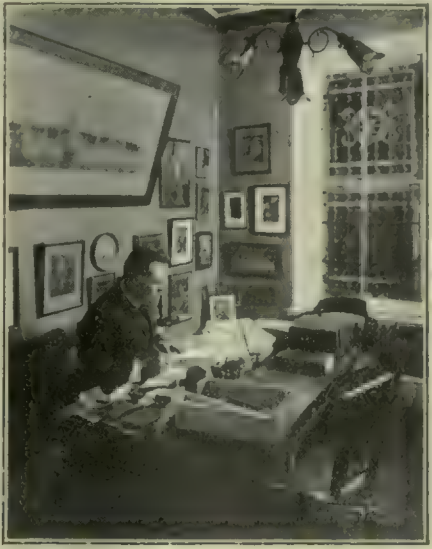

Fig. 2.
Mr. Rau in his private office.

The brain and nerve-centre of the whole establishment is shown in Fig. 2, Mr. Rau's private office, from which he has telephone connection to every room, and where he surrounds himself with prints that are usefully suggestive, by many workers. The catholicity of his taste may be judged from the fact that he has almost a complete set of the prints from Stieglitz' "Camera Work" framed on one of his walls, and enjoys them greatly, though his own photography, perforce, is mostly connected with architectural and engineering triumphs and *f*/64 stops.

The portrait studio (Fig. 4) is an unusual room 40ft. x 20ft. x 18ft. high, with no skylight, but five large ordinary windows along one side glazed with prismatic glass. The mercury-vapour installation seen on the right is one of Mr. Rau's experiments, using the ghastly vapour light with a brilliant yellow-orange set of lights to give an effect approximating daylight to the eye. Three rows of small black curtains, with three rows of yellow ones, control the light completely. The inner wall of the studio (on the left of the picture) is painted to represent tapestry, and forms a great background, while other tapestry backgrounds, on movable frames, are much favoured by Mr. Rau. The artificial lighting of the studio is novel, and very effective. Large bronze vases (the irreverent photographers of Philadelphia call them Rau's coal-buckets) are hung from the ceiling (one is seen at the farther end of the studio view), and contain electric incandescent lights, which flood the ceiling with a rich glow, and give a strong but beautifully diffused reflected light throughout the room.

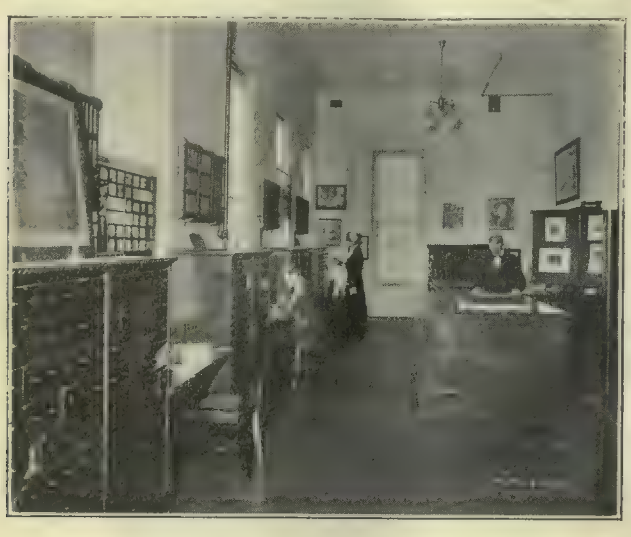

Fig. 3.
Slide Salesroom.

The unusual factor in the workrooms is the size of the prints, negatives, and transparencies to be handled. Original negatives are made as large as 36in. x 24in., and in panorama shape 10in. and 16in. deep, with the "Circut" camera; but enlarged negatives up to ten feet in length are used, and prints from these (as from smaller negatives, too) are made with the negatives lying on plate-glass-topped benches with mercury-vapour and incandescent lights below. One of the smaller printing-benches is shown near the right side of Fig. 5, which represents the inner end of the Velox printing room. Seven foot enlargements, either on paper or glass, can be made in the artificial-light enlarging camera, and some of these are the fine coloured transparencies already mentioned as adorning the station entrance in New York. One of them is shown, in course of colouring, in Fig. 6, and those who remember the days of J. Traill Taylor's editorship of the "B.J." will be interested in knowing that the artist shown at work on this transparency is Mr. George Hanmer Croughton, one of the early authorities on retouching and on colouring photographic prints. The colouring of these great transparencies is done in a dark room, with the same artificial light thrown through the transparency as is to be used in its display to the public—for only in this way can the artist judge correctly of the density and colour-effect of his work. As one order for the Pennsylvania Station took six hundred and fifty square feet of coloured transparencies, the importance of good work in this department is clear.

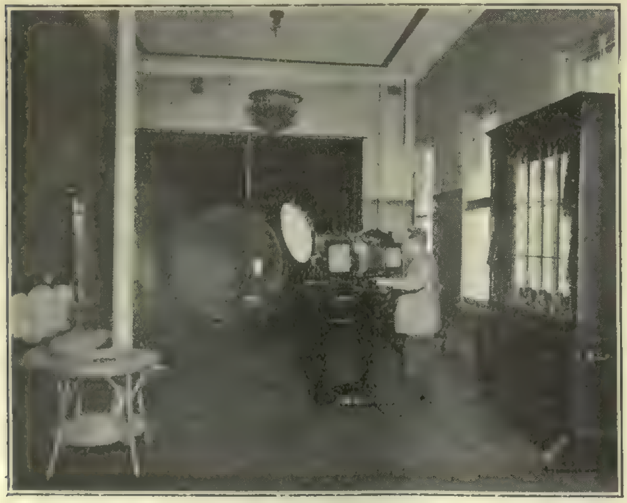

Fig. 4.
New Portrait Skylight, Mr. Rau at work.

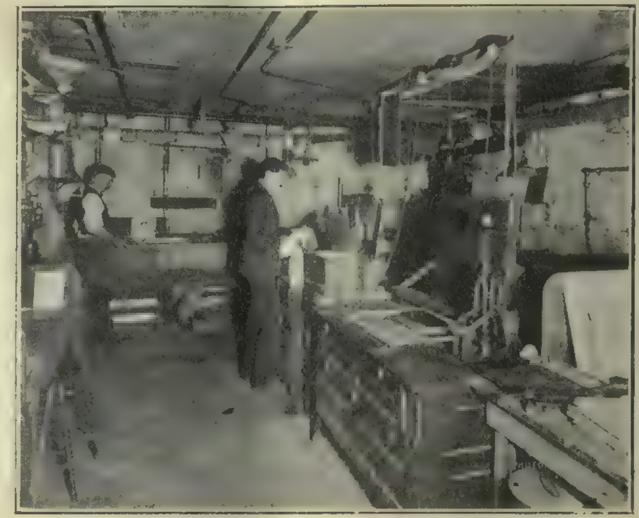

Fig. 5.
Velox Printing Room.

Separate rooms, with their separate staffs, are devoted to commercial photography and copying, to mounting and framing, and to retouching and colouring (both prints and lantern-slides). A whole floor is devoted to lantern-slide making, and a large part of the upper floor to daylight printing. For what is perhaps the most interesting room of all, however, we must descend into the basement, to the development room, adjoining the Velox printing-room. The problem of developing seven-foot negatives

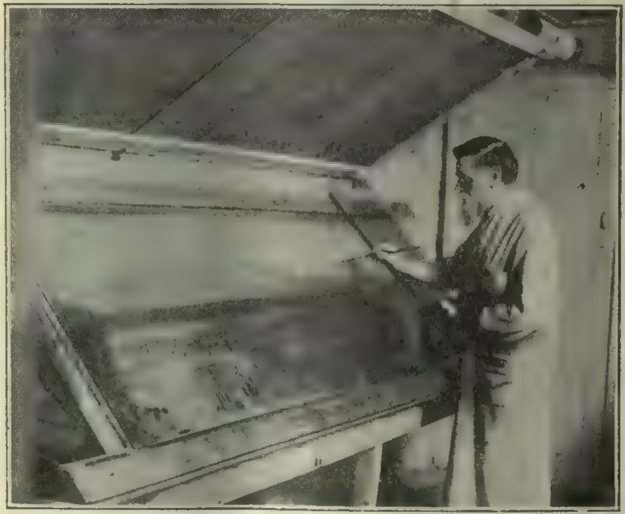

Fig. 6.
Artist Colouring a Transparency.

is relatively easy, for they were slung in frames with counterweights and dropped into grooves in great tanks, long before "the tank system" became a popular boom. To develop great paper prints evenly, without waste of developer, and without allowing the developer to get stale, is a more difficult problem, and in solving it Mr. Rau has built machinery that looks more like a wool-washing establishment than a photographic studio. Great cylinders of wood, built up in many pieces, and then turned circular, carry the prints, and dip into semi-circular troughs. By controlling the space between the cylinder and the trough, the amount of developer is controlled. The slowly revolving drum keeps all parts of the print equally served with developer, and prevents any risk of streaks, air-bells, or uneven development.

Not only in this development room, but throughout the building, the fittings and fixtures give the impression that they were designed and carried out by an engineer rather than by a photographer. Simplicity, strength and efficiency have been the aims, and they have been wonderfully achieved.

H. Snowden Ward.

# VIBRATING SINGING FLAMES IN THE TESTING OF SHUTTER SPEEDS.

(A paper read before the French Photographic Society.)

The electric arc supplied by alternating current, which is now so largely used in street lighting, supplies, as I have shown in a previous paper before the Society,[1] a very accurate method, and one very simply applied, of measuring the speeds of a photographic shutter. The process is one which is at the disposal of all, since it involves no calculations nor any special apparatus. It consists in photographing the alternating arc, using the shutter at the different speeds which it is required to measure, at the same time swinging the apparatus at a sufficiently slow rate. On the print obtained, each speed is represented by a disconnected trail, forming as many images of the luminous globe as there were periodic re-lightings of the arc during the exposure, that is to say, alternations of the current. In the case of arcs on the Left Bank section of the Paris electric light service, where the frequency is 42.5 periods per second, each image of the globe corresponds with 1/85th of a second. Convenient as the method is, it is, of course, useless to those who are not able to make exposures on such alternating arcs. I have, therefore, endeavoured to work out the same method using other sources of light more readily available and having a luminous intensity and regular and rapid alternation, the frequency of which can be readily determined.

The flame of acetylene gas caused to vibrate in a regular manner has provided me with the solution of the problem. Although less brilliant than the arc it is of sufficient intensity to give very good images, even at high speeds of shutters. The apparatus necessary for its production can be readily obtained, and the arrangements, to be described, allow of the flame being caused to vibrate at an accurately known and variable frequency within very wide limits. I first thought of employing, for the supply of acetylene to any commercial lamp, one of the Koenig manometric capsules, which are used in physical laboratories for acoustical experiments. The capsule consists of a small box, provided on one of its faces with a small burner, at the extremity of which the illuminating gas (acetylene) conveyed into the box is lighted. The opposite face, formed by a rubber membrane, is fixed against an opening arranged at a convenient height in the wall of an organ pipe. When this latter vibrates under the action of a suitable bellows, the flame of the small burner commences to vibrate with the same frequency as the pipe. For example, I have used a pipe giving the note sol$_2$ + 4 beats, or exactly 200 double vibrations per second. It would only be necessary to photograph this acetylene flame, thus rendered periodic, with an apparatus such as that used for the alternating arc in order to obtain measurements of shutter speeds up to 1/200th of a second.

In this way the negative shown in Fig. 1 was obtained. In order to measure speeds up to 1/400th or 1/500th of a second it is only necessary to replace the pipe by another giving a higher note. The drawback to this arrangement is that it requires an installation such as many photographers are not in a position to obtain—it was not the very simple method of solving the problem which I sought. I then turned in my search to an old experiment, well known to chemists, that of the "harmonica chemica," consisting of lighting a jet of hydrogen gas at the end of a pointed glass tube and surrounding this non-luminous flame with a glass chimney of greater or less length. The flame then commences to "sing," giving a note the height of which is proportionate to the length of the chimney. I then endeavoured in this experiment to substitute acetylene for hydrogen, in order to obtain a flame which was both actinic and vibrating. The result was completely satisfactory. By making suitable choice of the length and diameter of the glass chimney in conjunction with the use of a fine tube for the gas and position of the flame, there is obtained a very pure note which can be obtained constant and is readily compared by reference to any musical instrument. Knowing that the normal *la*, or *la*$_3$ (the *la* of the middle of the piano), gives 435 double vibrations per second, one can easily calculate the frequency, N, which corresponds with the note obtained, or inversely what is the note to be obtained in order to get a given frequency. For example:—

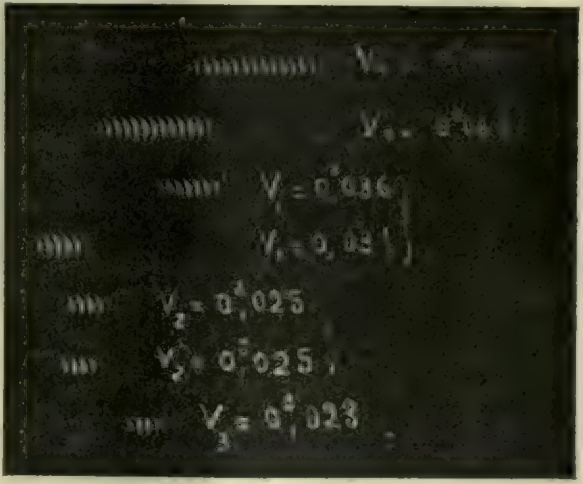

Fig. 1.

Shutter Test—each flame represents $\frac{1}{200}$ second.

N = $200^{vd}$ is included between $sol_3 = 194^{vd}$ and $sol^{\sharp}_{3} = 205^{vd}$, 5 ;

N = $400^{vd}$ is included between $sol_3 = 388^{vd}$ and $sol^{\sharp}_{3} = 411^{vd}$ ;

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[1] "Bull. Soc. Fr. Phot." 1910, p. 390.

$N = 500^{vd}$ is included between $si_3 = 488^{vd}$ and $ut_4 = 517^{vd}$;

$N = 1000^{vd}$ is included between $si_4 = 976^{vd}$ and $ut_5 = 1034^{vd}$.

There is no purpose in endeavouring to identify more closely the corresponding notes, for the simple fact of placing them between two consecutive notes of a well-tuned piano is sufficient to prevent the possible error from exceeding 2 per 100, and allows of it being reduced even to 1 per 100. As regards the practical arrangement it is so simple and inexpensive that any amateur photographer is in a position to provide himself with it. An ordinary acetylene lamp, such as one could buy at any stores for about 3s., is taken, and the steatite burner replaced by a metallic gas connection in which is fixed, with a little sealing wax, a glass tube of about ½ cm. diameter and about 12 cm. (5 inches) in length. On this tube, by means of a rubber cork, is fixed another small tube terminating in a narrow aperture which is sharply cut with a file. A very brilliant flame is obtained measuring from 1 to 2 cm. The chimney is formed by a long glass tube, of length suitably chosen, this chimney being either held in the hand or supported in a small clamp, such as that shown in Fig. 2. On the flame being lighted it commences to sing, and by means of any tuned musical instrument the height of the note is determined. It is then regulated as required and described below, and is photographed just as in the case of the alternating arc. In making this adjustment regard must be paid to the following considerations:—

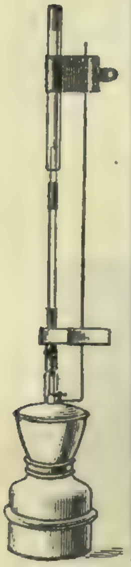

Fig 2.
Lamp for Singing Flame.

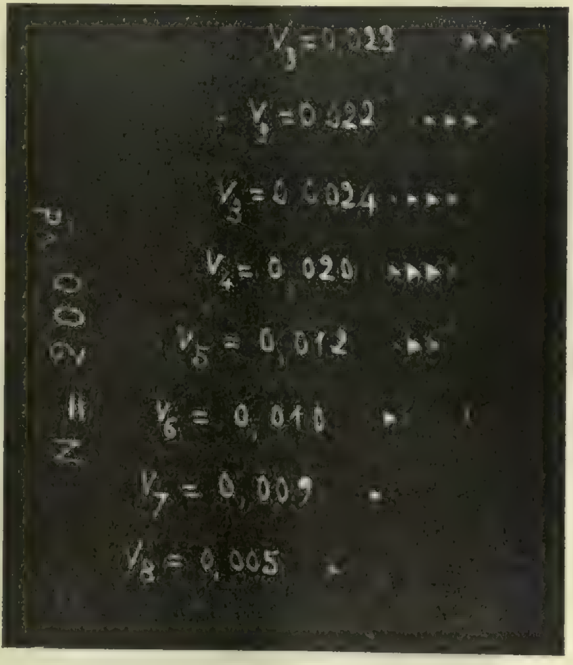

Fig. 3.
Exposure made in Shutter Test.

The note obtained being that which an open organ pipe, of practically the same length as the chimney, gives as a fundamental note, we shall obtain the length corresponding with the frequency N by the formula $L = \frac{V}{2N}$, where V is the speed of sound in a column of warm air such as that which fills the chimney. We can take as V the number 360 metres per second,[2] this number being in sufficient agreement for experiment.

For example, N=1,000vd is easily obtained with a chimney of 18 cm. length and 1.2 cm. internal diameter, the note being then included between $si_4$ and $ut_5$. It would perhaps be better to give it as a somewhat shorter length, and to obtain a somewhat higher note: then by means of a short metal tube working by friction on the glass chimney, the length of this latter is increased little by little until the note has the required pitch.

As regards the diameter of the chimney this may be anything, provided that it is not too great, otherwise the flame sings with difficulty. As a general rule the chimney should be narrower the shorter it is: a diameter about 1/15th or 1/20th its length is convenient. Moreover, if the tube is somewhat large the flame sings badly: the interposition of a disc of wire gauze in the upper part of the chimney will then secure good vibration.

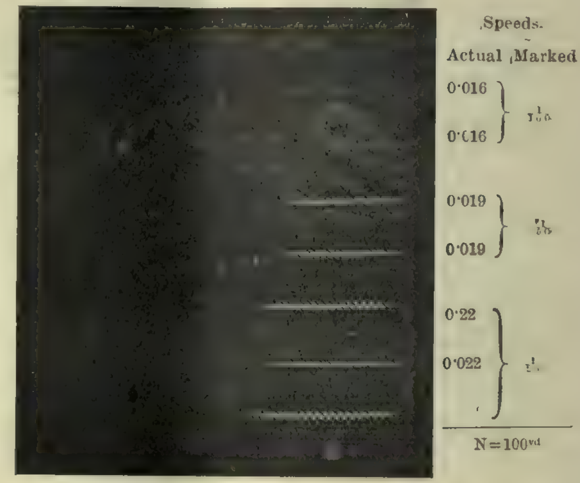

Fig. 3B.
Exposure made in Shutter Test.

As regards the tube from which the gas is burnt, it should be fine in proportion to the height of note required. It is well to make a series of these burner tubes from which to choose the best for each note.

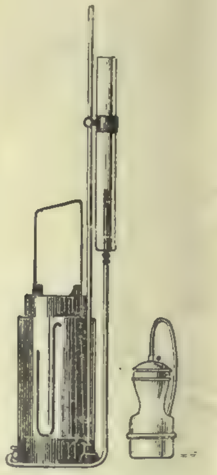

Fig. 4.
Regulating-Gasometer for Singing Flame.

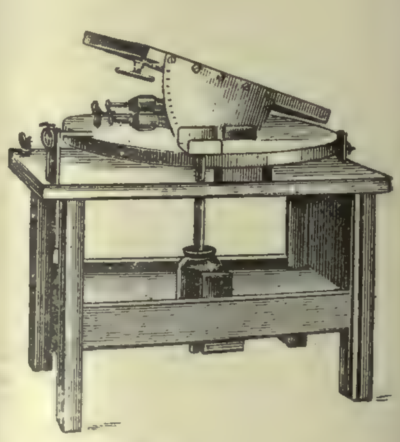

Fig. 5.
The Tourniquet Apparatus.

The position of the flame in the chimney should in general be in the lower quarter or third: it is easy to ascertain the best position in which the sound is the purest and steadiest.

As regards the pressure of the acetylene gas this should be greater as the note is required to be higher: by regulating the fall of the water in the lamp this pressure can be regulated sufficiently well.

On these lines, in a very simple form, and with materials which can be procured anywhere, we are able to produce a chrono-photographic source of light which forms an excellent substitute for the alternating arc in shutter-speed measurements. Moreover, in this new form, the method contains a greater degree of accuracy, since each unit may range from 1/85th or 1/100th of a second to 1/500th or even 1/1,000th. With the apparatus arranged as above any amateur photographer can apply the method and measure the speeds of his shutters. But also by adding certain accessories the method may be rendered one of great precision, of service not only to users, but to constructors of shutters, and this with the minimum of time and labour. For example, in less than a quarter of an hour a constructor may obtain a negative, such as that of Fig. 3, giving a complete record of all the speeds of a given shutter. This is the object of my describing the further apparatus shown in Figs. 4 and 5, the construction of which I owe to the very skilful aid of M. Louis de Ricard.

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[2] This is the speed of sound in air at 20 deg. C.

Fig. 4 represents the device permitting of the exact adjustment of pressure. It is a small gas-holder with a floating bell, which is filled with acetylene by connection with any generator, such as the lamp described above. The small water manometer measures the pressure under which the gas is delivered by a side tube carrying it to the fine glass burner. By adding weights on the bell this pressure can be increased. The glass chimney which surrounds the singing flame is held on a strong vertical rod fixed to the holder, and provided with a clamp and adjusting screw. Another arrangement, shown in Fig. 5, is for the purpose of carrying the photographic camera so as to give it the necessary rotating movement and, at the same time, an adjustable speed, also of releasing the shutter automatically at a given moment. This apparatus, which may be termed a chrono-photographic tourniquet, comprises a frame carrying a circular horizontal platform rotating on a vertical axis. On this platform is a board to which is fixed the camera. A grooved sector allows of this latter being given any required inclination, thus replacing any decentring of the lens and allowing of the plate being divided into eight or nine equal portions, each recording the measurement of a given speed. The rotary movement of the platform is produced either by a strong rubber spring or by the fall of a weight. A friction brake acting on the rim of the platform, or a pneumatic brake, serves to render this rotary movement practically uniform and to adjust its speed so that the period of opening to be measured is entirely included in the time which the axis of the lens is directed towards the light-source. A shock absorber is arranged so that the platform comes to a standstill without jar, when it has described a given angle. Lastly, an automatic disengaging gear, the release of which is produced by the movement of the platform, determines, by means of a flexible connection, the opening of the shutter at the moment when the vibrating flame comes in the field of the lens. It may be added that the above method in its different forms is applicable to all descriptions of shutter.

L. Benoist.

# SAFE-LIGHTS FOR THE DARK-ROOM IN THEORY AND PRACTICE.

## VII.

I now come to formulæ of safe-lights for different purposes. In the previous chapters, the historical notes have already shown that the increase in the variety of plates, films, and papers first tended to the use of a greater number of safe-lights in the dark-room, in order to allow of an emulsion being developed by a safe-light suitable to it. Then came attempts to reduce the number of safe-lights and to develop a greater number of emulsions of similar properties in the same illumination. Still later it has been attempted to obtain a safe-light for universal use, but so far this has proved impossible in practice. In practical work photographers have to make use of plates, films, and papers the sensitiveness of which to light is of such different character that it is necessary to use more than one filter. Certainly those who work only with orthochromatic plates can employ the same safe-light in developing, say, lantern-plates, but it is far from advisable to use, for these latter emulsions, a light of the "safety" necessary for an orthochromatic material: such a safe-light is more than sufficiently "safe," and lacks the necessary brightness for this class of work. It may, therefore, be laid down as a rule that every worker should possess a series of safe-lights which can be put in the lantern according to the type of plate which is being developed. On these lines I have selected the best of the known formulæ, that is to say, those in which so far I have not been able to make any improvement: I have likewise included another series of formulæ intended to replace those which have been in use hitherto and which seems to me more suitable to the end in view. Certain of these improved formulæ fulfil very well the requirements of "safety" and at the same time of brightness, but not to the extent desirable in respect to great permanence. More complete data of a much larger number of dyes than those at present known would be necessary to realise this third condition. In the following formulæ each filter is formed by two plates, I. and II., in most cases of different composition (the only exceptions to this being Nos. 1, 2, 8, and 9). These plates are bound film to film.

Filter No. 1.—Yellow I.

Two plates (I. and II.) each:—

| | |
|---|---|
| Gelatine, 8 per cent. sol. | 100 ccs. |
| Rapid filter yellow | 0.8 gm. |

Filter No. 2.—Yellow II.

Two plates (I. and II.) each:—

| | |
|---|---|
| Gelatine, 8 per cent. sol. | 100 ccs. |
| Tartrazine | 0.8 gm. |

Filter No. 3.—Orange.

Plate I.

| | |
|---|---|
| Gelatine, 8 per cent. sol. | 100 ccs. |
| Tartrazine | 0.8 gm. |

Plate II.—Orange.

| | |
|---|---|
| Gelatine, 6 per cent. sol. | 100 ccs. |
| Rose Bengal | 0.3 gm. |

Filter No. 4.—Red I.

Plate I.

| | |
|---|---|
| Gelatine, 8 per cent. sol. | 100 ccs. |
| Tartrazine | 0.8 gm. |

Plate II.

| | |
|---|---|
| Gelatine, 6 per cent. sol. | 100 ccs. |
| Xylene red | 0.8 gm. |

Filter No. 5.—Red II.

Plate I.

| | |
|---|---|
| Gelatine, 8 per cent. sol. | 100 ccs. |
| Tartrazine | 0.8 gm. |

#### Plate II.

| | |
|---|---|
| Gelatine, 6 per cent. sol. | 100 ccs. |
| Crystal violet, 4 per cent. sol. | 8 ccs. |

The crystal violet is dissolved in the water by previous addition of two drops of glacial acetic acid.

### Filter No. 6.—Red III.

#### Plate I.

| | |
|---|---|
| Gelatine, 6 per cent. sol. | 100 ccs. |
| Xylene red | 0.8 gm. |

#### Plate II.

| | |
|---|---|
| Gelatine, 6 per cent. sol. | 100 ccs. |
| Dark red (dark-room) | 0.9 gm. |

### Filter No. 7.—Red IV.

#### Plate I.

| | |
|---|---|
| Gelatine, 6 per cent. sol. | 100 ccs. |
| Rapid filter green II. (2 gms. in 30 ccs. water) | 20 ccs. |

#### Plate II.

| | |
|---|---|
| Gelatine, 8 per cent. sol. | 100 ccs. |
| Xylene red | 0.8 gm. |
| Tartrazine | 0.2 gm. |

### Filter No. 8.—Grey-Green.

Two plates (I. and II.) each:—

| | |
|---|---|
| Gelatine, 8 per cent. sol. | 125 ccs. |
| Dark-room green, 4 per cent. sol. | 25 ccs. |

### Filter No. 9.—Grey-Red.

Two plates (I. and II.) each:—

| | |
|---|---|
| Gelatine, 6 per cent. sol. | 125 ccs. |
| Dark-room dark red | 25 ccs. |

### Filter No. 10.—Green I.

#### Plate I.

| | |
|---|---|
| Gelatine, 8 per cent. sol. | 100 ccs. |
| Tartrazine | 0.8 gm. |

#### Plate II.

| | |
|---|---|
| Gelatine, 6 per cent. sol. | 100 ccs. |
| Patent blue, 2 per cent. sol. | 10 ccs. |
| Filter green-blue, 2 per cent. sol. | 10 ccs. |

### Filter No. 11.—Green II.

#### Plate I.

| | |
|---|---|
| Gelatine, 6 per cent. sol. | 125 ccs. |
| Dark-room dark-red, 4½ per cent. sol. | 25 ccs. |

#### Plate II.

| | |
|---|---|
| Gelatine, 6 per cent. sol. | 100 ccs. |
| Tartrazine | 0.4 gm. |
| Naphthol green | 0.6 gm. |

### Filter No. 12.—Green III.

The Safe-light No. 3 of Messrs. Wratten and Wainwright.

All the dyes indicated in the above formulæ may be obtained from Messrs. Meister Lucius and Brüning, Hoechst.

Filter No. 4 is intended for the same purposes as the light red filter of Dr. König prepared with solid red D, and is perhaps better, since the xylene red possesses an absorption spectrum more closely allied to type II. (see previous articles) than the solid red D.

Filter No. 10 is better than that of Haberkorn previously mentioned. The von Hübl filter is prepared with very permanent dyes, but it is very dense. From the point of view of putting safety before brilliance of illumination and putting permanence in the third place, I have compounded filter No. 10, which is less permanent than that of von Hübl, but much brighter and no less safe. Filter No. 11 is almost as dark as the dark green filter of von Hübl, but is much "safer," although less permanent.

If it is thought that permanence should be a more essential condition than "safety" or brightness, a worker should select the formulæ of von Hübl given in the historical notes in a previous chapter. But as these filters still allow some ultra-violet light to pass they should be combined with a filter No. 1 given above.

## Using the Safe-Lights.

In the table of dark-room safe-lights given below there is given opposite each filter brief mention of the class of plates, films, or papers for the development of which the filter is sufficiently "safe."

TABLE OF DARK-ROOM SAFE-LIGHTS.

| No. | Colour. | Part of spectrum transmitted.<br>μμ | Plates, etc., for which safe-light is suitable. | Notes. |
|---|---|---|---|---|
| 1 | Yellow I. ... | 800-490 | Only when fixing plates in acid bath. | Novak. |
| 2 | Yellow II. | 800-515 | Slow development papers; wet collodion plates. | |
| 3 | Orange ... | 800-575 | Rapid development papers; lantern-plates. | |
| 4 | Red I. ... | 800-620 | Rapid negative plates. | |
| 5 | Red II. ... | 800-650 | Ultra-rapid negative plates; ortho. plates, but not "Chromo" and "Verichrome." | Abney. |
| 6 | Red III. ... | 800-680 | "Chromo." Perchromo, and plates sensitised with orthochrome, pinaverdol, pinachrome, pinorthol I. and isocol. | |
| 7 | Red IV. ... | 800-700 | Colour screen-plates — Autochrome, Dufay, etc. | |
| 8 | Grey-green | 800-670; 550-515 | Extra-rapid plates ... ... | König. |
| [illegible] | Grey-red ... | 800-670; 540-520 | Ortho. plates, "Chromo," "Perchromo," and plates sensitised with pinaverdol, pinachrome, and pinorthol I. | König. |
| 10 | Green I. ... | 555 510 | Red-sensitive collodion plates. | |
| 11 | Green II. . | 545-515 | Pinacyanol and dicyanine plates. | |
| 12 | Green III. | | "Verichrome," "Spectrum panchromatic," and pinorthol and homocol plates. | Wratten. |

Filter No. 1 is of service only for operations in acid fixing, the activity of the developer decreasing rapidly under these conditions, so that there is no danger of fog being produced in the fixing bath. This filter should not be used for neutral or alkaline fixing baths, in using which it is best to employ the safe-light used for development. It need hardly be said that in the case of an acid developer no change should be made in any case in the safe-light when fixing. Some further brief explanations of the table are necessary.

The "safety" of the filters is not always of the same degree for the development of the plates named. Thus, for example, filter No. 8 is less "safe" than No. 4, although the two safe-lights are indicated as suitable for extra-rapid plates. The table should not be taken absolutely literally, for the reason, as has been previously mentioned, that the way in which the photographer works is an important factor. I have found it quite possible to develop extra-rapid plates, entirely without fog, by means of safe-light No. 3, although the table directs the use of No. 4, or No. 8. Also, it is quite practicable to develop orthochromatic plates by means of safe-light No. 4 without taking too great precautions.

As far as possible my aim has been to describe the kind of plate or paper for which the safe-light may be used without loading materials into dark-slides in the shadow of some opaque object placed between them and the lamp, and keeping the plate after the appearance of the image in development about sixteen inches from the light until obtaining normal density. This should not be taken as an exact standard since the results are bound to vary with different sources of light, and in selecting a safe-light it is well for each worker to make an experimental test. If this test shows that development is done without any fog a trial can be made of the next brighter safe-light. If, on the other hand, there are evidences of fog the next darker safe-light will naturally be chosen.

In the table safe-light No. 6 is given for the development of isocol plates, whilst for Autochromes—the colour sensitiveness of which is very similar to isocol plates—safe-light No. 7 is prescribed. In a previous chapter dealing with Autochrome plates it has been pointed out that both these safe-lights can be employed, but that No. 7 is "safer," and, at the same time, a little darker. I prepared No. 7 specially for the reason that the emulsion film of the Autochrome plate and of other plates of the same kind is so thin that the least trace of fog can act injuriously on the colour rendering. Also, the greater opacity of these plates is a temptation to keep them exposed for a longer time in proximity to the dark-room light.

For the majority of plates which one meets in practice three different colours of light may be used in the dark-room, namely, red, grey (of greenish or reddish tint) and green. These different safe-lights are not always equally "safe" for the development of a given plate. If in the following table we use the figure 1 to indicate safest, 2 to indicate less safe, and 3 to indicate least safe, we can then develop:

| | WITH SAFE-LIGHT. | | |
|---|---|---|---|
| | Red. | Grey. | Green. |
| Development papers ... ... ... .. | 3 (2) | 8 (1) | 10 (3) |
| Negative paper ... ... .. ... | 3 (1) | 8 (2) | 10 (3) |
| Lantern plates ... ... ... ... | 3 (2) | 8 (1) | 10 (2) |
| Rapid negative plates ... ... ... | 4 (1) | 8 (2) | 10 (3) |
| Ultra-rapid negative plates ... ... ... | 5 (1) | 9 (2) | 11 (3) |
| Orthochromatic plates ... ... ... | 5 (1) | 9 (2) | 11 (3) |
| Chromo plates ... ... ... ... | 6 (1) | 9 (2) | 11 (3) |
| Perchromo plates ... ... ... .. | 6 (1) | 9 (2) | 11 (3) |
| Pinaverdol plates ... ... ... ... | 6 (1) | 9 (2) | 11 (3) |
| Pinachrome plates ... ... ... ... | 6 (1) | 9 (2) | 11 (3) |
| Pinorthol I. plates ... ... ... ... | 6 (1) | 9 (2) | 11 (3) |
| Isocol plates ... ... ... ... ... | 6 (1) | 9 (2) | 11 (3) |

In this list, in which as far as possible we have selected the brightest safe-light for each colour, it will be seen that in general the red light is the safest and that the grey light of Dr. König is most frequently "safer" than green light.

### Arrangement of the Safe-Lights.

In the notes which have previously been given on the permanence of safe-lights in respect to the mixture of dyes, attention has been drawn to the importance of the arrangement of the filters. In other words, whether the filter plate containing dye A should be placed in front of the plate containing dye B, or *vice versâ*.

The most permanent filter of all those given, that is to say, the one which develops the least heat by the absorption of heat, is No. 1. This should, therefore, be placed in the lantern next to the source of light and any other filters inserted in front of it. In this way the nearest safe-light to the work can be readily removed, leaving No. 1 for use in fixing. As regards the other safe-lights it may be said as a general rule that their permanency to light is in direct relation with the absorption spectrum and the amount of dye employed. Dr. König has made experiments on the permanence of various dyes under the action of light, but denotes the most permanent as 1 and the least permanent as 5, intermediate numbers being given to dyes which fall within these extremes. The following are the results in regard to the dyes used in the above formulæ:—

| | |
|---|---|
| Rapid filter yellow .................................... | 2 |
| Tartrazine .................................... | 2—3 |
| Rose Bengal .................................... | 5 |
| Patent blue .................................... | 3 |
| Filter green-blue .................................... | 3—4 |
| Naphthol green .................................... | 1—2 |
| Rapid filter green 2 .................................... | 3 |

From this list it can at once be seen that filter No. 3 is the least permanent in consequence of the low permanence of rose Bengal when used in small quantity. On the other hand filter No. 4 falls among the most permanent, although the constancy supplied by xylene red is not exactly known, nevertheless, the larger quantity of this dye, coupled with its absorption spectrum, is favourable to permanence.

As regards the arrangement of the filters we will at this point mention only the following results. In the following table I indicate by A the part of the filter which should be turned towards the source of light, or, what comes to the same thing, the part which is turned towards filter No. 1, and by B the part towards the worker.

| Safe-light. | A. | B. |
|---|---|---|
| No. 3 | Plate I.* | Plate II.* |
| ,, 4 | ,, | ,, |
| ,, 5 | ,, | ,, |
| ,, 10 | ,, | ,, |

In the case of filters Nos. 1, 2, 8, and 9, it does not matter which way they are placed, as each half is the same. In the case of Nos. 6, 7, 11, and 12, the arrangement may be left to choice.

A. P. H. TRIVELLI.

*(To be continued.)*

## DEATH OF MR. SNOWDEN WARD.

THE death of Mr. Snowden Ward took place suddenly in New York on Thursday of last week, December 7. The cause of death is variously described as internal breakage of tissue between the ear and nostril, uræmic poisoning and pneumonia, and from some accounts appears to have been the result of an operation. For some year or two past he had contemplated an operation for nasal

*Photograph by*] [*Fred'k Hollyer.*

THE LATE H. SNOWDEN WARD.

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* The figures I. and II. refer to plates of the safe-light so named in the formulæ.

catarrh, but it is impossible to say from the brief cable messages so far to hand whether it had been performed during his last visit to America. Mr. Ward had left England at the end of October last to fulfil a series of lecturing engagements, which, in the ordinary course, would have been completed in March. In addition to appearing in his private capacity, he represented the Dickens Fellowship as a commissioner, and was to have taken part in a number of functions arranged by members of this body in the United States. According to one report, he was found unconscious in bed at the National Arts Club, New York (his headquarters in America), on December 5, after having lectured on "Dickens in America." He was interred at Albany on Saturday, December 9 last.

Within the last year or two Henry Snowden Ward had largely withdrawn himself from the photographic journalistic world, in which for many years he had been a leading personality. His interests and inclinations had gradually led him into literary fields, and he had found the lecture platform a welcome change from the editorial chair. Yet it is not too much to say that the news of his sudden death will arouse a more widespread sorrow and sense of personal loss than would that of any contemporary of his in photographic circles. Few men in any walk of life had his natural quality of charming all classes of people. His personality addressed itself without effort or affectation to all sorts and conditions of men, and made him not only the friend and adviser of many, but the receptacle of confidences from still others who found in him a sensitive and loyal sympathiser such as few are able to be.

The events of his life can soon be told. He was born at Great Horton, near Bradford, in 1865, and was thus only forty-six at the time of his death. His father's business of stuff manufacturing did not attract the literary bent of the boy. At eighteen he edited and published a magazine, "The Practical Naturalist," and a year or two later, in 1884, became connected with the firm of Percy Lund and Co. (now Percy Lund, Humphries, and Co.), at that time (1884) publishers and stationers catering specially for photographers. For them Mr. Ward founded and edited "The Practical Photographer," and by his active conduct of it did much from 1889 to 1893 in the interests—technical, commercial, and social—of professional photographers. In 1893 he married Miss Catherine Weed Barnes, daughter of Mr. William Barnes, of New York, and herself a most enthusiastic amateur photographer in the days when amateur photography was a more serious pursuit than it is now. Mr. Ward severed his connection with the Bradford firm, and, with his wife, founded the monthly magazine, "The Photogram." Their direction, which was one of great energy and originality, speedily caused the publication to take a leading place in photographic journalism, though its success as a commercial property is open to doubt. The sister magazine, "The Process Photogram," now "The Photo-Engraver's Monthly," was founded in 1894, and the pictorial annual, "Photograms of the Year," in the same year. Particularly in connection with photo-mechanical processes, then coming largely into vogue, Mr. Ward accomplished a great deal in advancing the craft, in resisting trade oppression, and in distributing a knowledge of technical advances in these processes.

Though these publications made great demands upon his personal attention, yet he took a most active interest in photographic institutions, among them the Royal Photographic Society, the Photographic Convention, of which for many years he was a member of Council and President at the Canterbury meeting in 1909, the Photographers' Benevolent Association (now defunct), and many photographic societies at whose exhibitions he was in great request as a judge. Nevertheless, he eagerly embraced every fresh opportunity of the technical journalist. For example, on the discovery of the X-rays, he was one of the first experimenters in England, wrote the first handbook of the subject, and was one of the founders of the Röntgen Society. He threw himself into the propagandist work of photographic record with Sir Benjamin Stone, was one of the first to draw attention to the use of photography in press illustration, and was ahead of his time in establishing a bureau for the supply of photographs to the press.

For some years past Mr. Ward, with his wife, had taken a keen interest in the application of photography to literary topography. The first outcome of their work in this field was the book on Stratford-on-Avon dealing with the life of Shakespeare, and illustrated by photographs by Mrs. Ward. This was followed by a volume dealing with the wider subject of the life of Dickens and the scenes of his novels, by the "Canterbury Pilgrimages," and by a photographically illustrated edition of "Lorna Doone." A natural step from the preparation of these books was lecturing on the subjects. For several years past Mr. Ward had visited the United States on a lecture-tour round the chief cities—a strenuous life, which, it will be remembered, led to the collapse of Dickens.

In what I have written above, I have not drawn a fancy picture of the full crowded life which Ward lived in the latter days of his association with photographic journalism, for I shared it with him from 1899 to 1905. I first met him at the Crystal Palace exhibition of the Royal Photographic Society in 1898, and a year later was happy in joining him on the staff of the "Photogram." No one could have wished a more inspiring or kindly chief, nor one more genuinely grateful for services rendered him. Perhaps I saw more of Ward during these years than most people, since for part of that time, on his invitation, I made my home with him on his establishing himself at Hadlow, Kent. Those who knew him only by his writings, or by correspondence, could form no idea of the fun, good spirits, and humour which were a part of his nature. He was most serious in doing anything to which he put his hand—indeed, to an excess, I think, so that things which might have brought relaxation and recreation to him were undertaken with a zest and nervous energy which often taxed his powers instead of relieving them. He lived a life of restless work. He would have subscribed, I think, to the sentiment of R. L. Stevenson :—"By all means, finish your folio, even if the doctor does not give you a year; even if he hesitates about a month, make a brave push and see what can be accomplished in a week." Yet engrossing as he found the pursuits he followed, his time and energies were eagerly placed at the disposal of any who asked help or advice of him. Indeed, to state a difficulty was enough to evoke the help and suggestions which Ward was ever ready to render, at the cost of putting his own immediate work on one side. He was quick and adroit to proffer material aid when it was needed, and I could tell of many private benefactions he bestowed spontaneously where he saw them to be needed. Though he was brought in contact with many phases of human life, nothing blurred his kindly outlook on men and their actions. His memory will long survive among those who knew him as a man of truly great qualities, without a shade of bitterness in his nature, and the firmest and most loyal of friends.

George E. Brown.

## THE "B.J. ALMANAC," 1912.

"Photography and Focus," in its issue of December 12, writes :—"The standard reference book for all classes of photographers is the 'B.J. Almanac'; and no pains are spared by its editor, Mr. G. E. Brown, to maintain and even to enhance, if that be possible, its usefulness. The volume just to hand embodies several improvements, as well as most of the features to which we are accustomed. The editorial article is an admirable summary of modern methods of lantern-slide making, the epitome of progress is as full as ever, while the makers' formulæ for developers, both for plates and papers, have been compressed, by a simple and ingenious tabular arrangement, to about one-eighth their former bulk. A new feature is the section entitled 'How to do it,' which gives a series of little line sketches showing how many of the photographic processes should be carried out.

"The advertisements, however, in modern times at least, have always been regarded as the most valuable section of the 'Almanac,' and they are quite as full and as varied as ever.

"The book should be secured forthwith, as it speedily goes out of print. Its value to professional and amateur alike is unquestionable. The price is 1s. nett in paper cover, 1s. 6d. in cloth, and the publishers Messrs. Henry Greenwood and Co., 24, Wellington Street, Strand, London, W.C."

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Erratum.—In the letter from Mr. F. F. Renwick last week, the word "creative" was wrongly printed for "curative."

# Photo-Mechanical Notes.

### A New Process Camera.

We have now had an opportunity of inspecting the camera for process engravers that has been designed and is being manufactured by Mr. J. Tilley, of 62, Eagle Street, Southampton Row, W.C. As recently mentioned in these "Notes," the principal feature of the camera is the method of focussing. In place of the usual rack and pinion is substituted a steel wire cable working on grooved wheels, which arrangement makes focussing very rapid. The wire is actuated by a handle placed at the side of the focussing-screen, one turn of this handle moving the camera eight inches. Although this movement is so rapid, it, nevertheless, can be very delicate, and adjustments be made to a nicety. Moreover, the method permits of an attachment for fine focussing, which, we understand, Mr. Tilley has designed, which should satisfy the requirements of the most particular photographer. The one handle that does the focussing is also made to do duty for moving the rising front, which is controlled from the back of the camera. The supporting rod for the front is placed immediately underneath in the best position to take the weight of the panel carrying the prism and lens. The front frame is a metal casting, which enables the lamps to be brought close up to the camera without fear of scorching any woodwork, and the conical shape of the bellows also permits the lamps to be closer than does the usual square pattern. The screen-distance indicator embodies another neat idea, as it is adjustable in a very simple way, so that the indicator can always be made to give the exact distance of the centre of the screen, no matter what the thickness of the glass of the screen, or the thickness of the plates holding the screen and the sensitive plate. The camera can be closed to very small dimensions, a useful quality when small reductions have to be made. Altogether, the camera appears well thought out for the purpose of doing rapidly the exacting work required of such apparatus by process engravers who have to supply high-class half-tone and three-colour blocks. The camera is thoroughly rigid, simple to operate, unlikely to get out of order, and the materials and workmanship put into the one shown to us promise a very durable instrument.

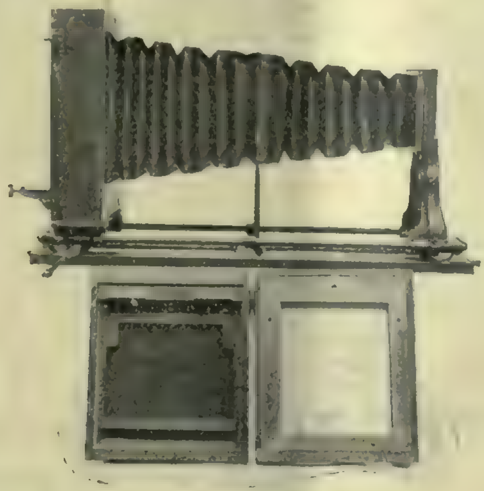


Fig. 1.
The camera, focussing screen, and dark-slide.

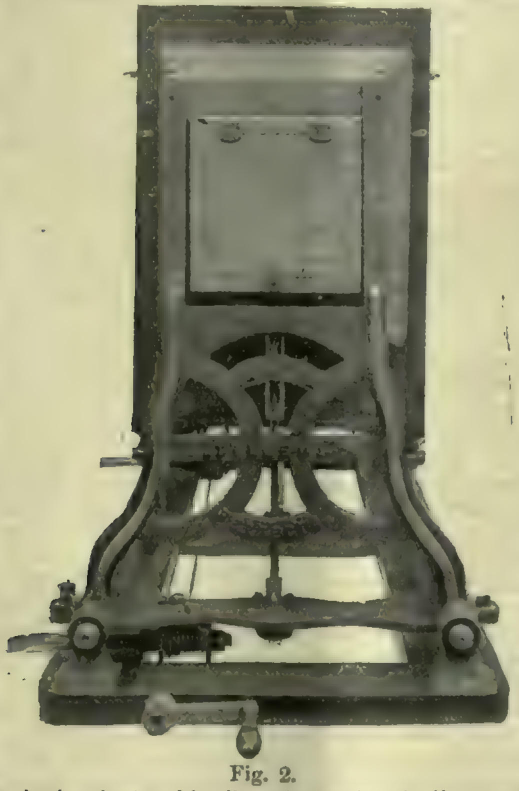


Fig. 2.
Showing iron front, and handle used to tension wire if necessary.

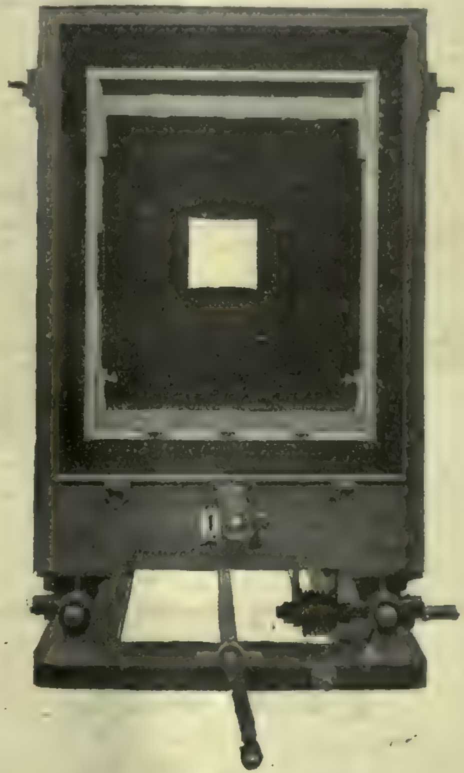


Fig. 3.
Showing back of camera. Handle used to operate rising front.

### A Brochure on Photo-lithography.

A. Hartleben, of Vienna and Leipzic, has just published "Die Photolithography," by C. Fleck (2 marks), which, in the course of its sixty-one pages of large type, contrives to describe not only those processes of direct printing and the special transfer processes which may strictly be called photo-lithography, but also the processes of photogravure, collotype, and half-tone in monochrome and colour. Considering the ground covered, it is certainly well done, but it is difficult to imagine what is the practical value of such a treatise. The descriptions of the processes are far too sketchy to be of much use to anyone who is not already familiar with them; on the other hand, the man who is an expert will not need the book, and would be sure to disagree with some of the details. The photogravure method described is the original one of Fox Talbot, in which the copper is coated with the sensitive gelatine solution, and not the modern one of Klic, in which a separate carbon print is developed on the copper plate. Nothing but dicyanine is recommended to make a panchromatic plate by bathing, a most difficult dye to use, and one that sensitises only for the extreme red; also it is suggested that the most satisfactory way of making colour-work is to prepare one screen-negative and etch five plates from it, adding black and green to the usual three colours. We do not see how the book can be of much use to any English worker.

### Half-tone Explained.

That the layman should not understand the way a half-tone is produced by now is very surprising in view of the large number of simple descriptions that have been published in newspapers and periodicals. "Knowledge," for December, is the latest to indulge the apparent craving of the public to know all about it, with an article on "The Process Block," by H. C. Rea. It is a very fair, popular account, with a series of well-printed illustrations of the various operations. These show some rather old-fashioned apparatus. For example, there is a table router, which has been displaced by the radial arm machine in all shops where speed is of importance, and there are no etching machines visible near the etching tubs.

Whether it is a good thing to tell the public everything concerning the modus operandi is naturally a matter of dispute. Some engravers attribute the low prices obtainable to the fact that the public know too much about it; on the other hand, one of the leading American engravers thinks exactly the opposite, and says that the customer would be willing to pay more for such work if he knew exactly how difficult it was and exactly what constituted the difficulty.

Perhaps both views are right to some extent—it all depends on what you tell the customer and how you tell it to him. Thus, if you tell him in a light and airy way that his work can be turned out in half an hour or so, he is led to overlook the very careful organisation needed to enable this to be done, and to want individual jobs rushed through at a loss; but a more complete explanation as to what it means to put through any particular job in the shortest possible time will possibly make him more reasonable in his demands, or willing to pay the cost which his exceptional requirements throw upon the engraver.

## Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between November 27 and December 2:—

**Hypo-Eliminator.**—No. 26,919. Means for use in eliminating hyposulphite from photographic films, prints, and the like. Charles Winthrope Somerville.

**Cameras.**—No. 26,714. Photographic cameras. Richard Walaschek.

**Cinematography.**—No. 26,786. Films for motion pictures. John Edward Thornton.

**Cinematographs.**—No. 26,947. Production of separate leaf cinematographs and means for use therein. Arthur Samuel Newman, Edward de Montel, and William Arthur Heyford-Smith.

**Cinematography.**—No. 26,953. Construction of apparatus for developing, fixing, washing, tinting or toning, drying, and cleaning cinematograph films. Alfred Henry Sowerbutts.

**Cinematography.**—No. 26,997. Apparatus for printing cinematograph films. John Edward Thornton.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

**Electric Photo-Printing Machines.**—No. 10,702, 1911 (May 3, 1911). The invention is an improvement in electric photo-printing or copying machines, in that the tracing and sensitised material are fed into the machine at the table, and are then drawn across a view-plate by means of a travelling band in place of the customary pressure rollers. The invention consists in the employment (in conjunction with a machine having a flat view-plate) of a composite band built up of two or more layers or plies of materials and stitched together at suitable intervals, the stitches running in parallel straight, curved, or waved lines, width-wise of the band. J. Halden and Co., Ltd., and Herbert Richard Watts, 8, Albert Square, Manchester.

**Developing Dishes.**—No. 4,959, 1911 (Feb. 28, 1911).—The dish is one which can be used in the ordinary way, also vertically. It has a receptacle into which the solution runs, and projections against which the plate rests clear of the solution in the inclined position shown in the drawing. On beginning the development the solution is poured into the boxed portion, whilst the dish is standing in a vertical position, and the plate placed into position behind the struts or stops above and clear of the liquid. On moving the dish from the vertical to the horizontal the plate automatically drops back into the dish and the solution instantly, and smoothly, floods it.

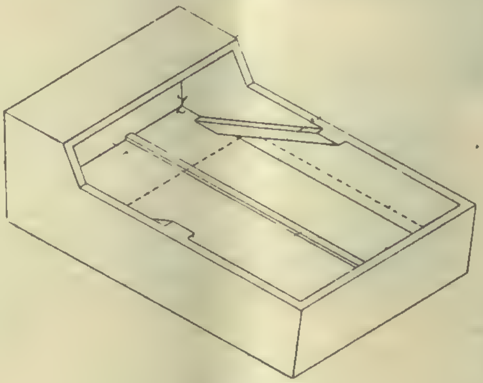


Fig. 1.

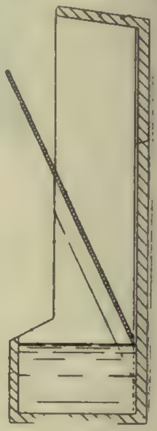


Fig. 2.

The virtues of the above dish are that the development, etc., of plates is considerably simplified; that an even flow of liquid is assured; that the negative can be examined at any period without risk of scratching or damaging film; that the solution may be weakened or strengthened at any moment without removing the plate or solution, and that the process of development is far cleaner than at present. Alfred Edwin Johns, 50a, Dagnan Road, Balham, London, S.W.

**Moving-Lens Cinematograph.**—No. 23,354, 1911 (November 12, 1910). This invention is a design of cinematograph apparatus in which a lens system is displaced in front of the animated pictures which are *stationary* instead of the pictures being displaced in front of a *fixed* optical system. The system is applicable both to apparatus in which the pictures are taken on bands of film and on sensitised glass plates. This system permits of providing cinematograph apparatus with very simple mechanism and of very small volume with which the views are obtained upon plates even of large size; the same apparatus serves for taking animated pictures and for projecting them. With this method the optical system is of very small weight, and thus does not involve defects of vibration nor great weight of apparatus. Gianni Bettini, 35, Avenue de l'Opéra, Paris.

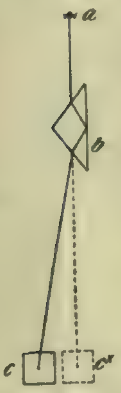
**Electric Photo-Printing Machines.**—No. 28,926, 1910 (June 12, 1911). The claim, in respect to a continuous photo-copying machine, is for the combination of a frame or frames carrying a series of rollers, an endless belt, and a sheet of plate glass, with a reciprocating connection rod operating the main rollers, through a double acting ratchet or grip gear. Frederick Besant Dixon, "Acadia," Donnington Road, Worcester Park, Surrey.

**Stereo-Cinematography.**—No. 23,163, 1910 (Oct. 6, 1910). According to the invention the band is provided with nearly following representations of scenes of action in laterally reversed formation such as left and right-hand pictures or versions, the picture area being divided into two equal parts containing the respective representations which are both taken from one end and the same negative.

The terms right and left-handed pictures or versions refer to prints taken from negatives which show respectively as direct representations or as inverted or reversed representations. The terms have no reference to the use of right and left-hand negatives as taken from two stereoscopic stations, but are applied to the arrangement whereby a lateral inversion of one of the representations adapts the print for being viewed through a prism or system of prisms.

The invention further comprises an arrangement of a singly reflecting prism for viewing the double image obtained and projected on the screen so as to afford a similar aspect view of the image and the desired lateral or vertical displacement for obtaining the stereoscopic or pseudoscopic effects.

In projecting stereoscopic effects for the lantern, several courses are adopted to bring the photographs, with suitable juxtaposition, on the screen. For example, two like bands of the same subject may be run through two cinematograph mechanisms, synchronised together, with complete separate sprocket wheels or a double mechanism which allows of two parallel bands of films, but so timed that one film is a step or more in advance of the other, and in such a way that the two moving images are side by side on the screen. These images are then united for each observer individually by the reflecting or refracting ocular device described below. Instead of complete separate sprocket wheels, the two films may be run on long sprocket wheels; or, as an alternative, two successive or adjacent or nearly successive images of the same band may be projected on the screen, these projected images being brought into suitable juxtaposition, whether over each other on the screen or side by side, the images for each observer being united by the improved ocular device.



The manner of using a singly reflecting prism is illustrated in the drawing, in which *a* indicates the eye of the observer and *b* the prism; *c* representing the actual position of the picture area, and $c^x$ the apparent position to the observer.

It will be understood that the prism would constitute one eyepiece of a double ocular, and would serve to correct the lateral inversion or reversal of the left-hand picture, and effect the necessary displacement thereof. The other eyepiece of the ocular would be adapted to present a direct view of the right-hand picture.

Similarly, if, instead of projecting from a band of paper, the projection is made from the usual standard transparent film, the stereoscopic pair is imprinted on the area usually occupied by one picture, one being right-handed and the other left-handed. Otto Fulton, 3, Rupert Street, Leicester Square, London.

DARK-SLIDES.—No. 483, 1911 (January 7, 1911). The type of dark-slide is primarily intended to be inserted, with the shutter withdrawn, bodily into the developer by means of a daylight developing device of suitable construction and the plate contained in the slide may be removed therefrom either before or after development by simply removing the light-trap.

The metal or card casing *a* of the slide is formed from a rectangular piece of material of slightly greater width and somewhat longer than the plate *b* to be held therein. The edges of this material are turned over on three sides, so as to form channels or rebates *c* thereon, which are slightly deeper than is necessary to take the thickness of plate to be inserted in the dark-slide. The open or fourth side of the slide or casing admits of the passage of the shutter *d* in the usual manner, and this slide is provided with a light-trap *e* to prevent the ingress of light between the shutter and the plate.

The light-trap may be formed from stiff paper wrapped somewhat loosely round a core of cardboard, but better from some soft resilient fabric, such as plush, baize, or felt, one surface of which may be left free as shown, so that it bears upon the undersurface of the shutter *d*. The material forming the light-trap *e* is of a length slightly less than the width of the casing between the opposite sides thereof, and it is conveniently held in position by being clipped or secured beneath the flanges *f* of a piece *g* of thin tin or other suitable metal or material.

For the purpose of enabling the light-trap to be readily removed when required for renewal or for any other reason it is made separate from the material of the dark-slide, and the method of securing it in position is shown in the drawings, where it will be seen that the material *g* has one end bent round on itself to form a flange or overhanging portion *h*, which is adapted to clip over the edge of the casing *a* of the slide, when the light-trap is inserted in position, one or more lugs or projections *i* formed on or from or secured to the clip *g*, being adapted to be inserted in slots *k* in the casing *a*, and to be bent over as shown in Figs. 3 and 5, for the purpose of holding the light-trap in position. When it is desired to remove the light-trap it is only necessary to bring the lugs *i* into a position at right angles to the clip *g* (as shown in Fig. 4), when the light-trap may be readily removed by way of the slots *k*, the latter being preferably formed with V-shaped ends *l* to facilitate the guiding of the lugs *i* when inserting the light-trap in position.

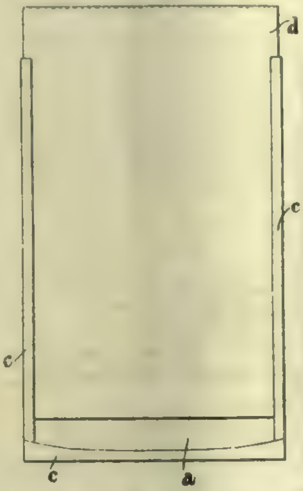


Fig. 1.

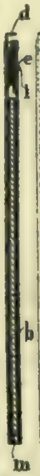


Fig. 2.

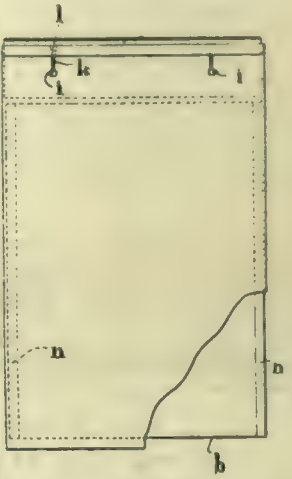


Fig. 3.

For the purpose of preventing the plate *b* from being inserted too far into the holder, a distance piece, or channel *m*, of metal or other suitable material, is inserted in the closed end of the dark-slide. The edges of the plate *b* are protected with channels *n* of metal, etc., which are placed in position upon the edges of the plate before the latter is inserted into the plate-holder, and they also form a convenient slide between their outer surfaces and the adjacent surfaces of the rebated or overhung portions *c*, and serve to protect the plates from injury when the shutter *d* is being inserted. Such a dark-slide or plate-holder will be loaded with a sensitised plate in the following manner, viz.:—The channel or distance piece *m*, being first inserted into the plate-holder, the plate with its protecting side pieces *n* is next inserted through the open end of the plate-holder in the usual manner, after which the light-trap *e* is secured in position, and serves to retain the plate in the holder, inasmuch as the plate can only be withdrawn therefrom by way of the fourth or open slide. Thereafter the shutter *d* would be inserted in the usual manner and the plate is ready loaded. James Wyndham Meek, and Sydney Alfred Drysdale, 124, Holborn, London, E.C.; and William Henry Phillips, 98, Truro Road, Wood Green, London, N.

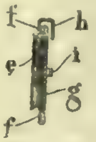


Fig. 4.

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The following complete specifications, etc., are open to public inspection, before acceptance, under the Patents Act, 1901:—

APPARATUS.—No. 19,743. Machines for reproducing drawings by artificial light. Follows.

CINEMATOGRAPHS.—No. 25,868. Moving-picture machines. Cameron.

## New Trade Names.

BIOFIX.—No. 336,030. Photographic apparatus included in Class 8. Biofix, Ltd., 28, Sackville Street, Piccadilly, London, W., manufacturers and dealers. September 5, 1911.

CINE-PHONO PATHE.—No. 336,188. Cinematograph apparatus and phonographic apparatus, films bearing taken photographs, and other transparencies, records, and other accessories included in Class 8 for such apparatus; electrical apparatus included in Class 8 for synchronising phonographs with cinematographs, and accessories included in Class 8 for such apparatus. Compagnie Générale de Phonographes, Cinematographes, and Appareils de Précision, 98, Rue de Richelieu, Paris, France, manufacturers. September 13, 1911.

TRIBAS.—No. 336,905. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. Alfred Prescott, trading as Prescott and Co., 63, Corporation Street, Manchester, manufacturer. October 14, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### A New Bromoil Bleaching Formula.

IN a recent issue (writes the editor of the "Amateur Photographer and Photographic News" for December 11) a correspondent suggested a formula for a bleacher for bromoil that did away with the acid bath. Several readers point out that this formula was not satisfactory with all makes of paper, so, as a result of experiments along the same lines, we have arrived at the following formula, which will be found to bleach rapidly, and is both reliable and economical in use :—

| | Parts. |
|---|---|
| Bromide of potash, 10 per cent. solution ............... | 4 |
| Sulphate of copper, 10 per cent. solution ............ | 6 |
| Bichromate of potash, 10 per cent. solution ......... | 2 |
| Water ............................................................ | 40 |

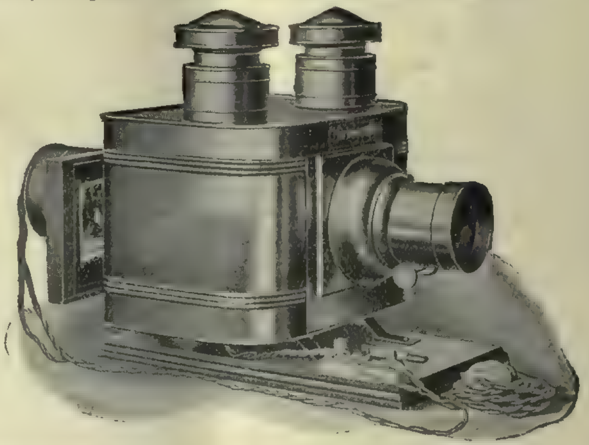
A drop or two of pure hydrochloric acid should be added to clear the cloudiness which forms. The solution may be used over and over again, and should be at the normal temperature of 65 deg.

When bleached, the print is given a short wash in water of the same temperature, or up to 80 deg., according to the amount of contrast required, and then fixed in hypo 3 ozs., metabisulphite of potash ½ oz., water 20 ozs., used also at a temperature of not less than 60 deg. After a final rinse the print is ready for pigmenting.

## New Apparatus, &c.

**The "Mirroscope" Opaque Projection Lantern. Sold by Carr Brothers, Ltd., 11, Queen Victoria Street, London, E.C.**

The "Mirroscope" is a form of aphengescope or opaque-projection lantern of the simplest possible construction, and designed primarily for showing picture postcards upon an enlarged scale on a screen. It is issued in a series of patterns, ranging in price from 15s. to 84s., and adapted for use with electric light, gas, or acetylene. We have had the opportunity of trying the cheapest form of instrument, namely, that sold at 15s., and fitted with two metallic-filament incandescent lamps. These, in conjunction with a metallic reflector behind each, throw a most intense illumination upon the postcard, and, the projecting lens being one of large aperture, a picture of quite satisfactory brilliancy upon a moderate scale is secured. An immense amount of entertainment can be extracted from a simple lantern like this, since almost every home will have a selection of picture postcards. And the "Mirroscope" will frequently be found of photographic service, since it conveniently shows in positive form what an enlargement to such and such a size will actually look like, and may also be conveniently employed when copying photographs up to about half-plate size. These, when placed in the "Mirroscope," are most evenly illuminated, whilst the sources of light are completely prevented from casting rays into the camera lens. In fact, the "Mirroscope" might, at a pinch, be quite well used for illuminating negatives to be enlarged, although for this it would be necessary to provide a white reflecting backing in place where the subject or postcard is usually put, and likewise provide a carrier in the front for the negative. But apart from this, we can advise those who wish to select a Christmas present capable of giving much pleasure, and at the same time without the drawbacks of noise or mess which attach to many gifts, to make a selection of a "Mirroscope."



**Double-Purpose Seats for the Studio. Sold by Kodak, Ltd., Kingsway, London, W.C.**

Among the many accessories in the way of furniture for the photographer's reception-rooms and studios which we might describe as the result of a visit to the professional show-rooms of the Kodak Company, in Kingsway, limits of space compel us to confine our selection to three, which from their excellent style, handsome appearance, and twofold utility seem particularly worthy of the professional photographer's attention. The "Stuart" chair, of the design shown in Fig. 1, is made so that the carved back can be placed at any height—and so adapted for use with both short and tall sitters—simply by disengaging a spring and placing the back

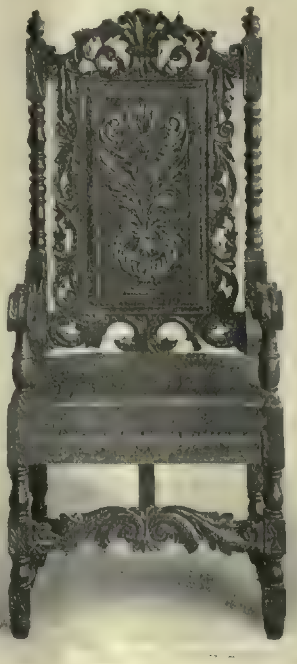


Fig. 1.

in the required position. Well made, in carved oak, the price of the chair is £4 5s.

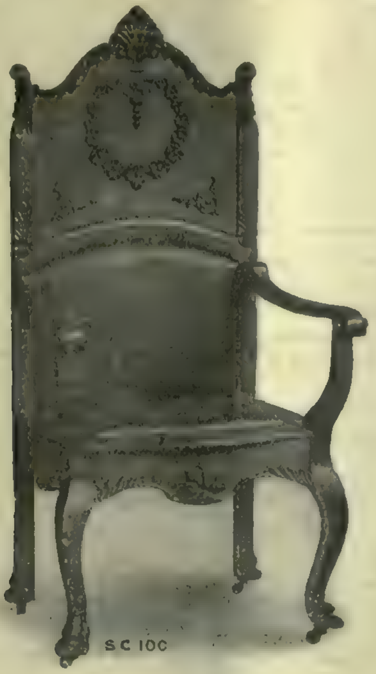


Fig. 2.

A second chair, which fulfils a somewhat similar purpose, is that shown in Figs. 2 and 3. The carved upper portion is hinged to the chair, and can instantly be turned back out of sight. Again well made in oak, the price of this double-purpose accessory is £4 10s.

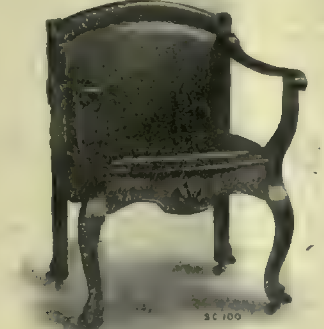


Fig. 3.

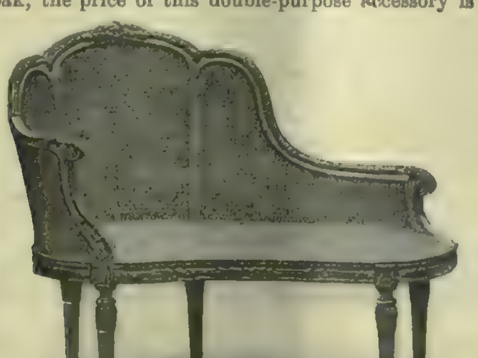


Fig. 4.

A further most artistic piece of studio furniture is that sold as the "Gossip" seat (Fig. 4), a settee made in walnut finish with dark cane seat and back, and of size and shape for the ready grouping of three or four people. It is of a style which aids the photographer in obtaining a graceful arrangement of the figures in such small groups as these. The price is £4 2s. 6d.

# New Materials, &c.

**Gevaert "Lustra" Platinum Papers. Made by Gevaert, Ltd., 26-27, Farringdon Street, London, E.C.**

In reviewing, on their introduction, the series of platinum papers manufactured by Messrs. Gevaert, we alluded particularly to the grades appealing to the professional photographer. To this large class of users also the introduction of two new grades of the paper is of special interest, since the surface is one which, while giving all the depth and richness characteristic of a platinum print, yet allows of the fullest rendering of detail. Thus, for portraits of moderate size, the new "Lustra" grades are altogether admirable. The surface cannot be called absolutely matt, but it is much nearer matt than glossy; it has, in fact, just that gleam, or shade, of lustre which brightens up a print, and particularly enhances subjects of which lace, silk, and similar fabrics form a part. The paper is issued both as black and sepia, and is manipulated exactly in the manner of the ordinary Gevaert papers, saving that development requires to be done for a little longer time, that is to say, it is not practically instantaneous, but is complete within a minute or a minute and a half. Apart from the final result, the new grades have the advantage of harder surface, and therefore of greater resistance against friction with one another in the acid and washing baths. This cause of spoilt prints—which may be said to be the only liability of platinum paper to failure after development—is avoided in the new grades. The richness of gradation and purity of high-lights are on a par with the ordinary varieties of the paper, and perhaps no better inducement than this could be offered to photographers by way of interesting them in the new "Lustra" varieties, sample tins of which are supplied by Messrs. Gevaert at 1s., including developing salts.

# New Books.

"Camera Work." No. XXXVI. New York: Alfred Stieglitz, 1,111 Madison Avenue.

The latest number of this magazine is unusually welcome because it contains—not reproductions of stupidities by mad painters, or any other impertinent humbug parading as art, but a collection of simple photographs, which, after all, is the kind of picture one is justified in demanding of a journal calling itself "Camera Work." These pictures are by Mr. Stieglitz himself, and so good are they, so refreshing, so honest, and so artistic, that one wonders where the editor finds the need to go outside his legitimate sphere at any time, to seek material for illustration. Unfortunately, there is one gangrenous spot even here, of which we shall speak presently. Mr. Stieglitz's views are frankly photographic. He fearlessly includes large-scale foregrounds, high horizons, and other characteristics peculiar to the lens view. This is quite as it should be. His uncompromising straight lines and simple tones do not offend because he imbues them with the spirit of the theme depicted. In views of New York one should not expect the suavity of classic compositions, whilst the harsh and repellent must needs be accepted as part and parcel of the subject matter. Where the greatness of these pictures lies is in the fact that the harsh and repellent are presented with an imposing dignity which changes our aversion to respect. The finest art could not achieve more. In the railway views, such as the well-known "Hand of Man," the poetic charm is a stronger factor than the mere modernity which the selection would seem to favour. The age we live in might well be called the steel age, and Stieglitz is its limner. Painters do not seem to have accepted, to any great extent, the new order or things. It is left to a few photographers to make pictures of what is popularly thought to be ugly. Mr. Coburn emphasises this point skilfully in his short article entitled "The Relation of Time to Art," quite the best of the literary contents of the book.

As for the rest, it is the same highfalutin rodomontade of which we confess we are more than weary. What purpose does all this far-fetched nonsense serve, even if the reader give himself the trouble to unearth a meaning from the involved and turgid word-clots? But before leaving the modernity question it must be stated that Mr. Stieglitz's "Aeroplane" and "Dirigible" are not pictorial successes. We cannot conceive that such subjects will ever be worth doing as mere silhouettes. With sunshine upon them they might perhaps be made to seem to have some sort of relation to the sky. The cloud in "The Dirigible" is a triumph.

The gangrenous spot in the volume is a plate after Picasso, unaccompanied by any word of explanation, praise, or apology. Title it could not have, for it has no subject. If a man makes idle marks with his charcoal that have a distant resemblance to railway signals struck by lightning, or a disintegrated airship, that is no reason why a photogravure plate should be made of it and prints therefrom foisted upon the subscribers of "Camera Work." To print by its side a Plato Dialogue as a justification only makes matters worse, for the apologia lies in this passage: "These (things) are not beautiful for a particular purpose, as other things are, but are by nature ever beautiful by themselves, and possess certain peculiar pleasures, not at all similar from those of scratching," etc. But this print *is* similar to those from scratching, and, therefore, not beautiful.

"The American Annual of Photography, 1912." Edited by Percy Y. Howe. New York: George Murphy, Inc.; and London: Routledge. Price 3s. 6d.

Of recent years the "American Annual" has taken the form of a nicely adjusted mixture of reproductions of photographs and of articles on practical photographic subjects. The 1912 issue continues on these lines, and presents to the reader a large number of half-tone reproductions of excellent subjects, in admixture with some 300 pages of contributions by English and American writers. Notable among the articles are the following:—"Copying Daguerreotypes," by J. A. Anderson, "The Lens Hood," by T. K. Kilner, "Botanical Photography," by G. T. Harris, "Photographing Furniture," by A. B. Stebbins, "The Kallitype Process," by G. P. Swain, and "The Illumination of the Dark-Room," by Marcus G. Lovelace. The volume likewise includes a formulary of developers, printing processes, etc., together with several pages of tables, and a brief list of American photographic societies, of which, in proportion to the population of the United States, there appear to be very few sufficiently active to respond to an invitation to give particulars of themselves. The whole get-up and printing of the "American Annual" are excellent, and will, we are sure, attract readers who like their technical instruction put in the most pleasing shape.

"The Scientist's Reference Book and Diary."—The 1912 issue of this handy pocket book, issued by Messrs. James Woolley, Sons and Co., Ltd., Victoria Bridge, Manchester, consists of two distinct parts, enclosed within one triple leather cover. One is a diary with a space for every day of 1912, and additional pages for memoranda, the other is a reference book of statistics, chemical and physical facts, electrical and optical data, etc. The volume is sold in stout leather binding, complete with tablet, pencil, and accident insurance coupon, at 1s. 6d.

Hazell's Annual for 1912 has just reached us, and is found to present all its accustomed features in the way of information. The political notes are copious, and include a summary of the Insurance Bill without, of course, the more recent amendments. New features are a review of the principal books published during the year, and a diary of events. Photography has a page enumerating the principal features of the year's progress. As a reference book this is an extremely useful publication, and by means of an inset recording the occurrences during printing, it is brought up to date as far as possible. It is edited by Hammond Hall, and published by Hazell, Watson and Viney, of 52, Long Acre, W.C., at 3s. 6d. net.

Abstracts of Photographic Patents.—From Messrs Rayner and Co., 37, Chancery Lane, London, W.C., we have received a further bound volume of abstracts of photographic patents, covering a period from 1901 to 1908. Messrs. Rayner, as patent agents who have specialised in photographic inventions, have taken the useful course of bringing together in one volume the official abstracts of the Patent Office, and of marking the patents which have become void, either by lapse of time, non-payment of taxes, or other cause. The volume with these additions is therefore a most valuable reference book to the photographic inventor and to firms to whom inventions of apparatus or materials may be offered for sale. The volumes are obtainable direct from Messrs. Rayner.

Photographic Lenses.—The "Simple treatise" on photographic lenses originally written by Mr. Conrad Beck and the late Herbert Andrews, has just been published in its seventh edition, the previous issues representing a sale of 20,000 copies. The new edition has been completely revised as regards the typographic arrangement, and we are glad to see has been provided with a full index, our only criticism of which is that the many entries under the single heading "Lenses" would have been better placed each in its alphabetical position in the general series of entries. The volume deals, as before, most usefully with the properties of a photographer's lenses, describing the chief types and the uses to which they are most advisedly put. The chapters on practical applications and lenses for special purposes afford a most useful guide to the choice of a lens for general or special work. Telephotography is not neglected in this review, and we must specially commend the pages dealing with the selection of a lens for portraiture. A full discussion of the principles which should guide a photographer in selecting a given type or focus of lens for portrait work is here provided, and a reading of these pages would give the many querists who address themselves to us in these matters more adequate information than we can offer them in brief replies. Though the volume, so far as it relates to commercial objectives, deals only with those of Messrs. Beck, it is, nevertheless, as good a handbook of photographic optics as a photographer can have, and a remarkably cheap volume at 1s. net.

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

### Friday, December 15.

Cardiff Camera Club. "Tabloids." Burroughs Wellcome and Co.
Cowlairs Co-operative Camera Club. Lantern Slides—Contact and Reduction.
Hampshire House Photographic Society. "A Talk on Trimming and Mounting Photographs." J. Brown.
Newcastle (Staffs) Camera Club. "Retouching." W. Bell, for Gevaert, Limited.

### Monday, December 18.

Kidderminster and District Photographic Society. Lantern Slide Making.
Southampton Camera Club. "Flowers, Cultivated and Wild." E. Seymour.
Scarborough and District Photographic Society. "Enlarging and Reducing." Frank Foster.
Leeds Camera Club. "Photography and Focus" Prize Slides.
Southport Photographic Society. "Colour Photography." D. E. Benson.
Bowes Park and District Photographic Society. "The Camera as an Aid to Nature Study." F. J. Ward.
Dewsbury Photographic Society. "London Parks and Gardens." A. Houghton.
Bradford Photographic Society. Members' Print and Society's Portfolio Night.
South London Photographic Society. Open Night. Print Competition.
Catford and Forest Hill Photographic Society. "Carbon." M. Arbuthnot.
Marylebone Camera Club. "Photographic Novelties." H. G. Bailey.

### Tuesday, December 19.

Royal Photographic Society of Great Britain. "Vintschgau and the Oetz Valley."
Worthing Camera Club. "Flashlight Photography," Illustrated with 50 Lantern Slides. H. Essenhigh Corke.
Doncaster Camera Club. 1910 Prints, Slides and Criticisms.
Halifax Camera Club. "Large Pictures from Small Negatives" The Members.
Hackney Photographic Society. "Flowers, Cultivated and Wild." E. Seymour.
Wishaw Photographic Association. Autotype Carbon Demonstration.

### Wednesday, December 20.

Croydon Camera Club. Lecturettes—"Stereoscopy." A. F. Catharine. "A Bag of Tricks." E. A. Salt. "Factors in Enlarging." J. M. Sellors.
Coventry Photographic Club. M.P.F. Folio.
Sale Photographic Society. "Light Filters." Discussion.
Partick Camera Club. "Trimming and Mounting." A. D. Wilson.
Ilford Photographic Society. New Affiliation Portfolios.
Ealing Photographic Society. "Bromide Enlarging and Combination Printing." A. G. Buckham.
Borough Polytechnic Photographic Society. Second Lantern Slide Competition.
Barrhead and District Amateur Art Club. "Nature as a Modeller and Sculptor." W. Jack.
North Middlesex Photographic Society. "Gaslight Process." A. R. Rollings.

West Surrey Photographic Society. "Cloud-Printing in Bromide Prints." Mr. Baskett.
Batley and District Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

THURSDAY, DECEMBER 21.

Rodley, Farsley, Calverley, and Bramley Photographic Society. "Post-Card Printing." G. Vase and T. Taylor.
Liverpool Amateur Photographic Association. "Slumming with a Hand Camera." Kenneth F. Bishop.
Bolton Camera Club. Autotype Carbon Demonstration.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, December 12, Rev. F. C. Lambert, M.A., in the chair.

Mr. Drinkwater Butt read a paper on "The Fitting-up of the Studio," in which he dealt particularly with the furnishing, equipment, and decoration of the studio, referring to his previous papers on studio design in past issues of the "British Journal of Photography." A most important item in the studio was the series of blinds for the control of the lighting. Mr. Butt expressed a strong preference for the spring-roller type of opaque blind running from the ridge to the eaves of the studio. Provided that the blinds were not of great width—about 2 ft. was a useful width—they allowed of all necessary control of the lighting area lengthways of the studio, whilst the lighting area vertically could be adjusted to a nicety. He showed drawings on the lantern screen of such an arrangement of blinds placed with the spring-rollers alternately top and bottom, so as to allow of a slight amount of overlap. Where the studio had a roof of very low pitch, such blinds could be arranged running festoon-fashion on wires, and this form of suspension was perhaps the most convenient for the second series of semi-transparent blinds required for modifying the lighting area left open by the first set of opaque blinds. Mr. Butt showed photographs of a number of studios in which the arrangement of both sets of blinds was carried out in different ways. Among these were the galleries of Mr. Kay, Manchester, Mr. Lankester, Tunbridge Wells, and others. After some remarks on the necessity of restricting the studio to its proper purpose, and avoiding using it as a retouching room or a store room of accessories, the lecturer proceeded to deal with backgrounds. He advocated the practice of making the walls of the studio, as far as possible, serve the purpose of suitable backgrounds, and showed drawings of a very convenient arrangement which he had installed in studios designed by himself for photographers, in which an alcove of quarter-circle form was built on to the end of the studio, and provided a natural background, which shaded from dark to light by the natural fall of the illumination upon it. Other parts of the studio were caused to form excellent backgrounds when made of oak panelling, various designs of which, prepared by himself, Mr. Butt described and illustrated, including one in particular, selected from a Dublin studio built by the lecturer for a firm of lace merchants. In some instances the whole end wall of a large studio could advantageously be built to represent the outside of a residence, and thus serve as an admirable background for large groups. The lecturer illustrated this arrangement by a photograph of the studio of Mr. Chapman, of Swansea. He went on to describe other important details in the fitting of a studio, which he, as a professional photographer who was also an architect and a designer of studios, had equipped for many photographers. Though modestly described as a talk on the subject, the paper dealt very usefully and comprehensively with its subject, and after a brief discussion a hearty vote of thanks was accorded to the lecturer.

## Commercial & Legal Intelligence.

A PHOTO-PRINTING BUSINESS.—At the West Riding of Yorkshire Assizes, before Mr. Justice Phillimore, on December 8, the case was resumed in which William Robinson, Leeds, brought an action against Henry Graham Glen and Douglas Graham Glen, photographic printers, also of Leeds, for the recovery of money due. The plaintiff alleged misrepresentation by the defendants. Mr. Scott Fox, K.C., and Mr. C. F. Lowenthal were for the plaintiff, and Mr. W. J. Waugh, K.C., and Mr. R. A. Shepherd were for the defendants.

The plaintiff's allegation was that he invested £300 in defendants' photographic printers' business, which had just previously been turned into a limited liability company. The plaintiff was assured that his £300 would bring him at least 15 per cent. profit, and the defendants promised that the £300 should be paid back if at any time he went out of the company. He received a salary of 30s. a week from the company as traveller and manager. When the plaintiff expressed a desire to withdraw he was informed that the company was not in a position to pay him out. It was further alleged that the company's balance-sheets were misleading.

On the resumption at a later hearing, Mr. Shepherd, for the defence, said that the plaintiff, on hearing that the Glens' photographic business had been turned into a limited liability company, himself asked to be allowed to have a position in it and to put some money in it. The defendants agreed, and gave the plaintiff every opportunity of examining the condition of the business. He actually took abstracts from the books. There never was at any time an agreement to give the plaintiff his £300 back if he wished to withdraw.

Douglas Glen, one of the defendants, bore out Mr. Shepherd's statement. He said the balance-sheets of the company were, in his opinion, quite fair. The plaintiff, when he was thinking of joining the company, saw the auditor and said he was quite satisfied. After the plaintiff had joined the concern, it was found that they were losing business, and the plaintiff, who was acting as traveller, was told that he was "unproductive." Eventually, Robinson said he was dissatisfied with the company, that he was "of no use," and he thought the best thing he could do was to go. There never was an understanding that Robinson's shares should be taken back.

In reply to Mr. Scott Fox, the defendant admitted that he knew the whole of the litigation would have been saved if the shares had been bought back. They did not buy the shares back because Robinson had practically made charges of misrepresentation.

Mr. Scott Fox: Would you take the shares at 18s. to-day?

The Defendant: I will buy them to-day at 19s. if he will withdraw the case and pay my costs and his own.

Henry Glen said the books which the plaintiff saw before deciding to put his money into the company showed clearly how much he and his brother were drawing. That was about £2 each per week.

The jury found that the plaintiff was induced to take up the shares by false and fraudulent representations, and that there had been a promise that he would receive his money back should he withdraw from the company.

The Judge: That will be a verdict for the plaintiff for £300.

LEGAL NOTICES.—Notices of intended dividend is given in the bankrupt estate of Frederick George Clapham, dealer in photographic apparatus, etc., The Medical Hall, 110, West Street, Farnham, Surrey. Proofs must be lodged on or before December 29 with Mr. E. W. J. Savill, 132, York Road, Westminster Bridge Road, S.E.

## News and Notes.

MR. J. DUDLEY JOHNSTON, President of the Liverpool Amateur Photographic Association, is shortly leaving Liverpool to take up his residence in London. A farewell dinner is to be given in his honour at the Angel Hotel, Dale Street, Liverpool, on Wednesday, 20th inst., at 7.45 p.m.

THE LATE MR. JOHN DAVIS.—We regret to record the death of Mr. John Davis, founder of the firm of Lancaster photographers of Davis and Sons. The late Mr. Davis, who was in his seventy-eighth year, had been connected with Lancaster all his life, and for many years occupied a leading position as a photographer. He was the first to introduce the carbon process into Lancaster in 1874. Mr. Davis had the honour of taking all the local views which were presented in a beautiful album to the King and Queen when they visited Lancaster to open the Royal Infirmary in 1896. Mr. Davis retired from the photographic business about four years ago in favour of his son, Mr. Thomas Storey Davis.

Death of Lithographic Pioneer.—Mr. William Griggs, an important figure in the development of the art of photo-chromo-lithography, passed away at his residence at Worthing on Thursday in last week, at the advanced age of seventy-nine. The deceased gentleman, having lost his father in his early days, sought his own education at the evening classes at King's College and other places. He did much to make popular a knowledge of objects of literary, antiquarian and artistic interest by the improvements he effected in the process of photo-zincography. It was two or three years ago that he retired from business, through the effects of an accident. Formerly, in his spare time, he could be seen at the British Museum and other similar institutions, taking photographs for reproduction. He used to colour them from memory. He published many reproductions, and his accuracy of detail in colouring was a feature of them. In 1874 he started the "Journal of Indian Art," a quarterly periodical, and although carried on for years with financial loss, Mr. Griggs considered his art before everything.

# Correspondence.

- *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*
- *We do not undertake responsibility for the opinions expressed by our correspondents.*

## PORTRAIT POSTCARDS FOR THEATRICAL ARTISTES.

To the Editors.

Gentlemen,—During the Christmas season there will be over 250 stationary and seventy-five touring pantomimes, each company averaging about forty performers. Add to these 800 variety halls, with an average programme of seven turns, and you have a total of 19,600 artistes. Should each one of these give but a dozen photo-postcards away it represents a total of over 235,000. Many of the leading artistes, however, give several hundreds away weekly.—Yours truly, H. McCalla.

51, Winchelsea Road, Tottenham, London.

## THE LATE HENRY SNOWDEN WARD.

To the Editors.

Gentlemen,—The news from New York on Friday last of the death of Henry Snowden Ward must have truly grieved a great many of his friends throughout the United Kingdom. His loss, from a photographic standpoint, is really a national one, for possibly no man worked more whole-heartedly in the interests of the professional photographer than the late Henry Snowden Ward, and I am sure that there must be many in agreement with this view.

I am writing this letter to suggest that I feel that if you were to promote a fund so that some lasting memorial to his memory could be raised, it would meet with hearty support. I shall, personally, be very happy to contribute if such a fund is opened.—I am, Sirs, yours truly, Professional Photographer.

## PRINTING TITLES ON NEGATIVES.

To the Editors.

Gentlemen,—Again many thanks for the use of the "B.J." in enlightening the ignorant, this time with regard to titling postcards. It was indeed gratifying to hear from a Canadian reader. Permit me, however, to make public a method which necessity has forced me to devise. It will be remembered that the difficulty was to find a method of getting printed characters on to postcards so that they appeared in the white margin, or border, and to do this when time was of no consequence. The method now adopted is both simple and practical. To begin with, the wording is either printed or applied with a rubber stamp (using black ink) to the base of a piece of white cardboard. The card (which should be proportionate to a postcard) is then photographed on a slow plate, preferably one of the process variety, and the plate developed with hydroquinone or M.Q. The resulting negative is then printed from when time permits. After printing, the cards are carefully returned to the box to be used as required. The process amounts to double printing, but imagine the convenience of first printing the titles. If the card negative is properly black, or in other words, opaque, and the title as clear as glass, it is obvious that exposure is unimportant beyond a certain time; also, this part of the business could be performed by somebody not necessarily a practised printer. The process commends itself to those having to photograph and complete the work the same day, which is a side line of mine during the coaching season, in which case the parties are photographed on their way out and the postcards supplied upon their return.

P. Fredk. Visick.

296, Union Street, Torquay,
December 8, 1911.

## THE "ALMANAC" INDEX OF GOODS ADVERTISED.

To the Editors.

Gentlemen,—We consider the "Index" to the "Almanac" quite all right, and fail to see why two of your correspondents should complain, for every advertiser cannot be expected to take a number of pages and give full details of everything that they handle.

We take it that the idea of the "Index" is to give customers particulars as to the dealers in and makers of the various articles mentioned, more than to give reference to the prices charged for these goods. From an advertiser's standpoint we should think the present "Index" is a good idea, and, after all, the "Almanac" is intended quite as much for the seller as for the buyer.—Yours truly,

Lilywhite.

[We must confess that we are in sympathy with the views of our previous correspondents, so far as they represent a desire that the "Index" should give information beyond that which any photographer has as the result of ordinary acquaintance with the photographic trade.—Eds. "B.J."]

# Answers to Correspondents.

- *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, *24, Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*
- *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*
- *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., *24, Wellington Street, Strand, London, W.C.*
- *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of 24, Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of 1s. 7d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photographs Registered :—

D. A. Grant, The Studio, Acre Street, Nairn. *Photograph of Kenneth MacRae, Esq., Nairn.*

I. Dexter, Geldham House, Felixstowe, Suffolk. *Photograph of Irish wolfhound "Felixstowe Gweebarra."*

Drawing Registered :

J. V. Thomas, "Langley," Lordswood Avenue, Southampton. *Drawing of the R.M.S. "Olympic" Steaming at Sea.*

Reader, P. C. H., and Others.—In our next.

H. W. L.—1. The card is gaslight or bromide, toned, we should say, by a sulphide method. 2. A very usual method is to attach by the margins only by means of an edging of strong glue. The prints can be dry-mounted, though it is not so usual to use this process for such very stout prints.

Australia.—Would you tell me in your "Answers" Column what you think of chances for an operator-retoucher in Australia or New Zealand, and if you would recommend going out in preference to staying at home?—Traveller.

See reply to "Carrington."

**Book.**—I shall be much obliged if you can tell me where I can purchase a copy of a book, the title of which is "The Evolution of Photography," and the cost.—W. D. Dighton.

The book is now out of print. You could doubtless obtain it from a dealer in second-hand books, such as Foyle, Charing Cross Road, London, W.C. The author is John Werge.

**Studio-Light.**—Will you kindly reply if you know of a light suitable for lighting a room studio, 20ft. by 12ft., outside of electric, as we cannot have the electric light laid on? I thought possibly you may know of a good substitute.—Illuminate.

The next best thing is a gas lamp, of which several patterns are supplied by the Kodak Co., the Tress Co., and others.

**London Postcards.**—Will you kindly inform me, through the "Journal," where I can purchase local postcards of London and suburbs? I am a buying agent and traveller, with a good connection in the postcard trade.—Cymro.

Most of the large postcard producers, such as Davidsons, Ltd., Golden Lane, and Valentine's, Dundee, hold a full series of London views.

**Miniatures.**—Kindly let me know where I can buy a book on ivory and ivorine miniatures, photographic basis, from start to finish. If not, can you give me full information of process?—Artist.

Messrs. Winsor and Newton publish a manual of miniature painting, whilst you must refer to the Autotype Co.'s, or Messrs. Illingworth's, handbook on carbon printing for preparation of the photographic base.

**Plate-marking Enlargements.**—Can you tell me of a firm or firms who undertake the mounting of enlargements on paper and the plate-marking of same? The size of print would be, say, about 24in. by 18in., and the effect aimed at would be that of an engraving or photogravure—a tint would be necessary.—Enquirer.

Any of the better-class trade enlargers or the Adhesive Dry-Mounting Co. could do this for you.

**Cinematograph Journal.**—I should be obliged if you would tell me through your "Correspondence Column" whether there is a professional journal published for the cinematograph trade, and where it can be obtained.—Cinema.

The "Bioscope" (Ganes, Ltd., Shaftesbury Avenue, London, W.) and the "Kinematograph Journal" (Heron and Co., Tottenham Street, London, W.C.). Each, 1d. weekly.

**Old Negatives.**—Will you please inform me through this week's Journal the names of buyers of ½-plates that have been used and are now negatives, as I have some 5,000 or 6,000 to sell?—"Perplexed."

Charles Bowen, 58, Grove Road, Holloway, London, N.; A. Smith, 72, Norton Street, Hockley, Birmingham; and J. and S. Smith, 6, Lennox Road, Finsbury Park, London, N.

**Fast Dyes.**—Would esteem it a favour if you could inform me where it is possible to obtain fast aniline dyes fast to light?—G. Rose.

If you mean absolutely permanent in light, we are afraid not; but among the more stable dyes used for filter-making are pinatype red, toluidine blue, toluidine green, pinatype green, filter yellow K, naphthol green, and rapid filter red.

**Silver Stains.**—Enclosed find a postcard, which you will see is all silver-print stains. When negative was wet, my assistant in error put P.O.P. on. Is there any possible method which you could suggest to rectify same?—H. Roe McMahon.

We know none better than that given on page 795 of the "Almanac" (1912). The second (iodine) method there given is usually successful, even in bad cases, but try it first on a waste negative.

**Sensitised Canvas.**—Will you please inform us who are the manufacturers of a sensitised canvas or linen, suitable for advertising purposes, with an illuminant behind. We believe a similar fabric was put on the market some time ago under the name of "Photolinol."—B. and Co.

So far as we know, "Photolinol" is no longer on the market, but write to the inventor, Mr. Otto Fulton, 9, Rupert Street, London, W. We believe Messrs. Wellington and Ward manufacture a bromide emulsion on canvas.

**Price for Work.**—A lady made an appointment with me to photograph her two dogs at her residence, 1¾ miles out. I made five half-plate negatives of them, and have now received an order for fifteen postcards, which are from three of the negatives. What do you think I ought to charge for such an order?—H. S. Purcell.

It is difficult, without knowing your ordinary prices, to fix a charge for the work, but we should think that, under the circumstances, you are entitled to charge at least 5s. in addition to the price of the postcards if taken at the studio. It is very unwise not to give the customer some idea of what your charge will be at the time of booking the order.

**Charge for Photographs.**—Your kind reply to the following in the next issue of the "B.J." will greatly oblige. I was called upon by a gentleman and asked to photograph a farmhouse three miles away. The gentleman went on before to make the necessary arrangements with the farmer. (We presume the copyright belongs to the gentleman.) I followed on bicycle, made two exposures from different points of view, on a half-plate. Results good. Two cabinet unmounted prints were supplied for reproduction in book, either one or both to be used. What would be a reasonable charge to make for the job?—Scotie.

See the leading article this week, which deals generally with this price question. We should say from 5s. to 10s. each subject.

**Stereoscopic Drawings.**—I am wishing to do some drawings of geometrical figures, etc., for viewing in the stereoscope. I should esteem your assistance, either by direct reply or through the "B.J.," as to how to get at the correct perspective for such drawing. I seem to recollect seeing some articles on the subject in "B.J." some year or so back, but cannot now trace. If you have such back numbers, or books on the subject, I shall be pleased to hear.—J. S. Cooper.

There is only one way to make such drawings, and that is by drawing each image by the ordinary rules of perspective, selecting slightly different station points in each case. If you select simple subjects, the work is fairly easy, but anything of an elaborate design involves much careful and very accurate drawing.

**Terms of Notice.**—I should be glad of your advice relative to the following:—1. If an assistant is engaged for a definite period, to a definite date, is it necessary to give him the usual notice when nearing termination of period, or should it be an understood thing? 2. If, having employed an assistant previously, with a month's notice conditional on either side, if on a later re-engagement, the condition holds good, not having been referred to by either on re-engagement, or is only the week, as is usual, necessary?—A Pro. Pho.

1. If the engagement is in writing—an agreement—and if there is no provision for notice of renewal of service, then we should say master and assistant are automatically absolved from obligation to give and receive notice respectively. 2. In the absence of a written or verbal agreement as regards notice for the second period, the notice required will be that of the interval between payment of wages, i.e., by a week for payment weekly, and so on.

**Studio Light.**—What system of artificial lighting would you recommend for studio portraiture where there is no electricity in the streets, but have supply of coal gas? Should you recommend incandescent lights, what number of lights, and what would be the approximate exposure at *f*/4, using H. and D. 400 plate?—Adaptation.

Under the circumstances incandescent gas burners are the only available source of light. You will require from nine to twelve inverted burners, fixed on a sort of gridiron or gas barrel, so that the draught from one does not interfere with that above it, the whole arrangement being about three feet by two feet. Any good gasfitter would make it for you, or you can buy it, complete with stand, from Kodak, Ltd., the Tress Company, or David Allen, for whose addresses see the "B.J. Almanac" for 1912. The exposure would vary according to the quality of the gas and nearness of light to the sitter; but with the lens and plate you mention we should say from three to five seconds would suffice. The burners should not be fitted with glasses or chimneys of any description, and the best mantles only used, these being renewed as soon as they show signs of deterioration.

Various.—1. Can you tell me the best material to use to colour an electric bulb yellow, to be used for bromide printing, as a safe light? 2. What speed of plate would be most suitable for focal-plane exposures on a voyage to New Zealand, via South Africa? 3. Is it necessary for the plates to be packed in any special wrapping, or will they be all right in a trunk?—C. B.

1. The simplest way of colouring the bulb would be to dip the bulb into a strong gelatine solution, dyed with tartrazine. When the gelatine is set and thoroughly dry, you could put on a thick, protective coating of celluloid varnish. An easier way of utilising the lamp would be to insert it in a bag made of yellow medium. In case of breakage you could then quickly replace with another lamp. 2. Plates of medium rapidity would serve the purpose best. Extreme rapidity would not be wanted unless you expect to meet with work requiring very fast shutter exposures. We should take plates of about ⅓ to ¼ speed, as listed in the "Wellcome Photographic Exposure Record," with a few of ⅛ speed for special work. 3. It would be safest to have a reserve of plates packed in tin soldered boxes for use towards the end of the journey, but ordinary packing will be good enough for those used at the beginning of the voyage if you develop on board.

Berth in Australia.—I should be glad if you could tell me through your columns the trade conditions of photography in Australia, preferably high class. Also, whether it would be possible to obtain a berth in Victoria or Melbourne, or elsewhere, before leaving England? I am a first-class, experienced receptionist, also colourist, miniature painter, etc. I am in a berth at present, but as my family are leaving England, I should like to do so, but do not care to relinquish my post unless there are good prospects abroad. If you could help me in the matter, and tell me what steps to take, I should be extremely obliged. I do not know whether an agency exists for obtaining berths abroad and supplying names of the leading photographers.—Carrington.

Trade conditions generally are good in Australia, and we should say from your qualifications that you could count on getting a berth without much difficulty. You must not expect to find high-class firms to anything like the number here, and prices for portraits are "cut" in Australia even more than here. Still, we gather that the conditions of assistants are better than here. We know of no agency. You should make use of the "Australian Photo-Review," or "Australian Photo-Journal," both of George Street, Melbourne.

Stains.—1. Are the dark-coloured stains on the enclosed postcards due to insufficient washing after hypo, or after bleach? 2. I have been told that enclosed highly enamelled specimen of the lady and gentleman is ordinary C.C. Is this authentic; and if not, how is the process carried out, including the enamelling? 3. Are there any good books on machinery photography? Kindly criticise enclosed specimen. If there are no books, what is the best lens for that class of photography? Thanking you for your prompt reply to my former question.—H. W. Latham.

1. Yes, obviously the result of prints overlapping, and so obstructing the action of the hypo, or not being covered by the fixing bath. 2. They may be collodion, but we should say they are gelatine prints glazed by the collodion process. Full directions for this latter will be found in our issue of March 31 last. 3. The photograph of the motor lorry is of very good quality. Usually makers of such vehicles require the background to be blocked out on the negative, so as to print white, leaving a strip of foreground for the car to stand on. There is no book on the subject; the best lens is the one of longest focus which is useable under the conditions of photographing. Many photographers make excellent use of a telephoto for such work.

Various.—1. I have a reflex, the focal-plane shutter of which works badly, and I would be glad of your advice. It works all right when it has been in a dry room for a hour or two, but on taking it out of doors it immediately becomes unworkable, opening about half-way and remaining there, and on being taken into a warm room becomes as vigorous as when new (in about a hour). If you could suggest a treatment that I could give it I should be much obliged, as I do not wish to go to the expense of sending it to the makers. 2. Will the Howellite portrait incandescent lamp need a special connection to the mains, or will connection with an ordinary bracket do?—Portability.

1. If you keep the camera in a thoroughly dry place for a week it should become all right. If it does not, we fear there is no alternative to sending it back to the makers. 2. A good deal depends on the size of the pipe which supplies the bracket. If the pipe is only just large enough for the one burner, it will not do for the cluster of lamps, and you will then want a special pipe put in. In any case, it would not do to connect on to the burner of the bracket, as this would certainly not pass enough gas. You want a special connection for this purpose, which should be either filled to the bracket near the wall, or, better still, be inserted in the pipe which supplies the bracket. If gas is laid on to the fireplace, this is the best pipe to get the supply from. We should consider a half-inch pipe desirable.

Electric Light.—Will you kindy advise us as to above? We have just taken over these studios, which are to be rebuilt in the spring, and we want to put in the cheapest form of electric light, just to get through the winter, for temporary purposes. We have been told that metallic filament lamps would do; either one of 1,000 candle power, or, in preference, nine in a cluster of 100 candle power, as it would be cheaper for renewals in case of breakage. Which would be preferable? I may add that the place is already wired, and has had a Houghtons' Ensign arc-lamp fitted, which the last tenant has, of course, taken away, leaving all the wiring intact. I may further explain that the bulk of our sitters are for cheap postcard work, half length usually, and single sitters, and the backgrounds and all surroundings are white. We do not mind a reasonably long sitting, up to five seconds. The lens we are using is a Petzval portrait, 20in. focus, working at *f*/6, specially for rather large work, as per enclosed specimens. To repeat what we want to know, if either one 1,000 candle power filament or nine each 100 candle power ditto, would be sufficient and suitable, as we have been told, as we have had no experience with them for portraiture.—T. Ager.

We do not know of filament lamps of so high a candle power as 1,000, and even if such is obtainable we should consider it foolish to install it or even a battery of 100 candle power lamps, since the cost of running and the renewals for breakage will be a serious item, even if exposures can be made sufficiently short, which we do not think is the case. The cheapest and most efficient light is an arc-lamp. It need not cost you more than £7 or £8, and it can be transferred to the new studio for further efficient use.

◆

## FORTHCOMING EXHIBITIONS.

### 1912.

March 12 to 16.—Sheffield Photographic Society. Sec., James W. Wright, 30, Oakhill Road, Sheffield.

May 3 to 11.—Photographic Arts and Crafts. Sec., Arthur C. Brookes, 15, Harp Alley, Farringdon Street, London, E.C.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2694. Vol. LVIII. FRIDAY, DECEMBER 22, 1911. Price Twopence.

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## SUMMARY.

The "B.J." Annual Index.—The full index to the text of the "B.J." and the "Colour Photography" Supplement for 1911 will be presented with next week's issue, December 29.

A paper read before a recent American Convention deals with the facts requiring to be kept in mind by a photographer in discovering the prices at which his work must be sold to afford a given margin of profit. (P. 966.)

Mr. A. J. Newton has resigned the principalship of the Bolt Court L.C.C. School of Photo-Engraving to associate himself (in July next) with Messrs. Wratten and Wainwright as business manager. (P. 977.)

Mr. H. Carter is retiring from the managership of Messrs. Sands and Hunter. His successor is Mr. A. Oglesby. (P. 984.)

Our recent article on the offer of the Autotype Company to provide free training in carbon printing has led to all the vacancies being filled, but there will be opportunities for further applicants about the end of February next. (P. 983.)

The death of Mr. George Taylor, head of the firm of Messrs. A. and G. Taylor, took place suddenly last week at the National Liberal Club. (P. 977.)

A later and more detailed account of the sad circumstances of the death of Mr. Snowden Ward is given on page 976.

A number of correspondents have written in support of a memorial to the late Snowden Ward. (P. 982.) We should be glad to receive suggestions as to the form such a memorial should most advisedly take.

Members of Japanese photographic societies held a collective exhibition recently, at which much notable work was shown, particularly in oil and Bromoil. We publish a full notice on page 977.

We revert again in some notes on page 966 to the preventive measures which may be taken to avoid the ill-effects of damp weather.

An inexpensive method of fitting a roller-blind light-tight within a window frame is described by a correspondent. (P. 982.)

An after-bath of weak hydrochloric acid is recommended by Mr. C. P. Butler as a preventive of skin affection by metol. (P. 983.)

## EX CATHEDRA.

**The 1912 Convention.** A preliminary circular just issued by the honorary general secretary of the Convention, Mr. F. A. Bridge, gives an outline of the programme of excursions to occupy conventioners during the visit to Amsterdam from July 8—13 next. In addition to the many attractions of Amsterdam itself, members will have opportunities of visiting Marken, Volendam, Haarlem, Bloemandaal, The Hague, Schevening, and Alkmaar. Under the presidency of Sir Cecil Hertslet and the vice-presidency of Heer Ignace Bispinck, the president of the Netherlands Amateur Photographic Society, the Convention should spend a highly enjoyable week among the quaint Dutch cities. Application to Mr. Bridge at Downshire House, Barry Road, London, S.E., will bring a copy of the preliminary prospectus and, on its later issue, of a more detailed programme.

* * *

**The Sticking of Blind Shutters.** A correspondent a short time ago described his troubles with a focal-plane shutter which had the habit of sticking half-way during an exposure. This is not an uncommon experience when the shutter is being driven at a low spring tension, and the causes may be damp, perished, and stiffened blind material, or insufficient power in the spring. If damp is the cause, a thorough drying should remedy matters, but, of course, the only cure for perished blind material is its replacement with new. If insufficient spring strength is the cause, this may be due to wrong setting of the spring, or to a weakening of it. We have frequently come across shutters that could not be relied on to close properly at their lowest tension, and this is a point that should frequently be tested, for in time the spring loses some of its power. If a blind-shutter is found to be defective in this way, it is generally easy permanently to increase the tension by resetting the time indicator so as to give a rather greater tension at all speeds, but if the owner is chary of attempting this operation, he must remember the weak spot in his shutter and carefully avoid using the lowest tension.

* * *

**Hot Shelves in the Dark-Room.** In a recent discussion on dark-rooms it was strongly advised by one speaker that every dark-room should be fitted with a hot-water supply. This is excellent advice, but if it is followed we may as well go one better and make further use of the hot-water pipes. Flat tubular gratings or shelves are made which need only to be connected with the hot-water supply to form a warm shelf, the heat of which can be regulated by simply turning a tap. In cold weather such a shelf would be eminently useful for carrying the developing dish, bottles, etc., that are in use, and its adoption would minimise some of the inconveniences of the winter months. They can be obtained of any size for a cost of £2 and upwards, and can be fitted anywhere so long as hot water is available. One firm that supplies them is J. D. Prior, Holliday Street, Birmingham.

* * *

**Drawing for Photographers.** The present fashion of finishing photographs in pencil or wash, especially the former, reveals a distressing lack of draughtsmanship on the part of many of the producers, who apparently have no notion of perspective, either linear or aerial. This is doubtless due to the system, or want of it, which obtains in the training of photographic finishers. A young girl usually starts with simple spotting, and by practice attains considerable proficiency in the removal of actual blemishes from the prints, proceeding from this to working up copies and enlargements in which more work is necessary upon the features, with occasional re-drawing of drapery. So far, all is well, but when it comes to adding a piece of furniture or a background showing any perspective, the result is usually disastrous. This week we have seen a beautifully worked sketch, in which the vanishing-point of parallel lines was in the foreground. Such work cannot fail to destroy any reputation for art which a photographer may possess, and brings discredit upon the "sketch" style, which is, after all, a pleasing and useful one, especially for copies from bad originals. We would urge our budding artists to devote a little time in the dull season which comes after Christmas to free-hand drawing, say to sketching the various chairs in the studio and corners of the studio, or reception-room, until they look right. If facility does not come with practice, a few lessons from a competent teacher will be necessary. Fortunately, there are now few towns in which some sort of art teaching is not easily obtainable. It is not necessary nor even desirable that the teacher should know anything about photographic work.

## DAMP.

During mild winter weather, such as we have lately had, the excessive humidity of the atmosphere is often the unsuspected cause of many troubles in the studio and printing-room. Many years ago Mr. Howard Farmer drew attention to the deterioration in the rapidity and quality of gelatino-bromide plates, which had been kept in a damp atmosphere, and demonstrated that they could be restored to almost their original condition by perfect desiccation. It should also be noted that sulphurous vapours from gas or coke fires more rapidly act upon sensitive surfaces in a damp atmosphere than in a dry one, bromide papers being very susceptible to injury from this source.

The carbon printer finds damp weather, especially when accompanied by a poor light, particularly trying. Not only does the tissue rapidly take on a general tint, but unless the prints are developed immediately on removal from the printing frames, it is difficult to secure uniform depth throughout an order, the continuating action being so energetic that earlier prints are invariably overdone. The remedy for this is, of course, to conduct the printing in a room in which the air is kept dry by means of steam or hot water pipes, or, where this is not practicable, by the liberal use of chloride of calcium. This material is known to most photographers only in the very expensive form used in platinotype storage tins, and its cost would appear to be prohibitive. Purchased in bulk from a wholesale chemist, it is very cheap, a quarter of a hundredweight, only costing a few shillings, being enough for a year's work in most businesses. A convenient arrangement is to have a large, zinc-lined box, three or four feet long by twenty inches wide and deep, in the bottom of which are two iron trays, say 15 x 12 size, with three or four pounds of the calcium in each. On the slightest sign of moisture, these must be taken out and placed on a gas stove until the calcium is again dry and hard, and at once replaced in the box. It is, of course, necessary that the lid should be practically air-tight, and the box should not be open a second longer than is needed for the insertion or removal of the contents, otherwise the calcium will quickly absorb enough moisture from the external atmosphere to render it useless. Some sort of rack or grid should be arranged to fit over the calcium trays to rest the plates, paper, or tissue upon without risk of contact with the chemical. An arrangement which has been found to answer perfectly is a large Silver's air-tight case with two 15 x 12 enamelled dishes, too badly chipped for other uses, with a light internal wooden frame-work which can be used for drying carbon tissue or to hold sensitive tissue, platinotype paper, etc., when not in actual use. These are in their ordinary preservative cases, but keep all the better for the additional desiccation they receive in the box.

We have made little reference to platinotype printing, as the evil effects of damp when working this process are so well known to all who use it, but in this, and, in fact, all printing processes, great care should be taken that all pads and backings used are kept dry; even a rubber pad will acquire a film of moisture if left exposed to the atmosphere, while felt and paper packings become saturated, although this may not be apparent until they are held near a fire or stove, when a cloud of steam will show their condition.

A useful storage cupboard can often be contrived by taking advantage of the pipes of the domestic hot water supply. These will give sufficient heat to keep plates and paper in excellent condition, care being taken not to place them too near the heated metal.

# THE COST OF PRODUCING PHOTOGRAPHS.

[In the following paper, read before the last Inter-Mountain Convention of Photographers, the author, Mr. M. F. Jukes, strongly urges upon his fellow photographers the need of basing prices upon a proper knowledge, not of the costs of material only, but of the proportion of fixed maintenance and establishment charges which such work has to bear. No better exposure of the fallacy and folly of price-cutting can be wanted.—Eds. "B. J."]

Competition is to-day so keen that in many lines of business it has practically ceased to exist, through the forming of combinations; economic conditions having compelled men engaged in like business to get together for mutual benefit. In almost every line where competitive conditions still exist, we find a spirit of co-operation more or less strongly entrenched. This Convention is in session because we, as individuals, wish to better our material or financial condition; in other words, we are here to learn from each other, if possible, new ways and means of getting hold of the ever-elusive dollar. And in what I have to say I shall seek to benefit the photographer in the average Western town.

I have selected this subject, "The Cost of Producing Photographs," for the reason that little or no attention is paid to it by the average photographer, and also because of the important part it plays in the fixing of prices. I would be willing to wager that not more than one out of twenty-five photographers can say that he knows to a certainty that his pictures of a given size cost him a certain definite price, or anywhere near it. He can guess at it. So can anybody. What is the result? Where there is one man doing good work and getting what some of us consider a high price, there are a dozen little fellows fighting each other on the price basis, each probably explaining to his customers that the big man is a robber; a nice state of affairs and one quite conducive to the betterment and uplifting of the business in general. You have all seen show cases full of cabinet photographs, priced at a dollar a dozen, or thereabouts. A photographer in one of our Western cities had, in 1906, on display in his show case, genuine platinum prints, 3 x 4 inches in size, mounted on a neat, flexible card, at the ridiculous price of seventy-five cents a dozen.

Let me cite another example of this frantic effort to get business, business at any cost. Some years ago, one of the photographers in another Western city thought it would boost business a little to put out a ticket. We are all acquainted with the ticket racket. In this particular case it worked out as follows: One of the other photographers took up tickets in self-defence; and, before it was over, about six were in the game and prices were literally "shot to pieces." The town was flooded with coupons, and finally one man put out a ticket by which he guaranteed to make good any offer made by the coupon of any other photographer. His agents went through that territory like a fine-tooth comb, and after the smoke had cleared away, two picture men were "flat broke," while the pickings that the rest could find were pretty slim for months. The two high-priced men in the town paid no attention to the trouble, and went right on putting money in the bank.

The average photographer falls into traps like these, most of them of his own making, because of one of two things, ignorance or thoughtlessness. Do you suppose for a minute a man would be anxious to get business if he knew that every dozen pictures he made at a certain price would take twenty-five or fifty cents out of his pocket? I should say not. Yet that is exactly what many photographers are doing to-day. What little business they do get at a profitable figure, goes to help pay the losses on other work at prices which, in some cases, are actually below cost. What is the result? There are a lot of men in the profession, call it a profession if you like, to whom the stock houses will not grant five dollars' credit. I know, because I have been there myself.

We used to figure out the price of our competition photographs on the following basis: The price of a couple of plates, a dozen sheets of paper, and a dozen card mounts, adding enough to cover retouching. This would approximate between fifty and seventy-five cents, according to the class of material used, and then we would fondly imagine that everything over and above that figure was velvet. After a more or less busy season at what we thought was a good enough price, we began to wonder what the trouble was, and felt like throwing up the picture business and going into something else. There was no money in the business, anyway.

To-day you will find, in any successful and well-organised business, a well-developed and sometimes intricate system of getting at the cost of the article produced or marketed. This becomes absolutely necessary when anything is sold on a narrow margin, and even if not sold under those conditions, it is a valuable asset in effecting economies and increasing profits. It is a safeguard in case price-cutting becomes necessary, as it sometimes, but rarely, does. Occasionally we have to fight fire with fire, but it is a good thing to know where to stop.

Ascertaining costs in a small business like that of the average photographic studio should be a very simple matter, and even in a large business it is not a difficult problem. About six years ago the old "Photo Beacon" had an article on the subject, quoting figures from various sources, and the conclusion arrived at was that, while the average man figured, or rather guessed, that the gross cost of his cabinet photographs amounted to a little over one dollar a dozen, the real cost was away above this. A Chicago photographer who had a splendidly arranged studio and well-organised force, and who did a business of one hundred thousand dollars for cabinets alone in one year, made the statement that his photographs cost him per dozen two dollars and fifteen cents. We now begin to see why the average photographer is not making any money with prices at three dollars a dozen. The chances are ten to one that his pictures are actually costing him more than this figure. The following will explain.

In figuring cost the photographer has, in the main, two items to deal with: actual cost of material consumed, and, excepting where retouching is done piece-work, his overhead or running expense. This latter goes on whether business is done or not, and it may surprise you to learn that, in the average studio, it is almost invariably higher than the first item, the cost of material. It includes the following: Rent, heat, light, water, insurance, taxes, postage, repairs, advertising, waste, depreciation, samples, re-sittings, etc. Then there are the bad debts, wages paid help; and did you ever figure your own time as being worth anything at all? Taking the prices obtained by the majority of photographers, we are forced to believe that many of you do not.

Looking at the following figures, we will get still closer to the subject. These comprise the cost of the material consumed in the production of one dozen ordinary cabinet photographs. Just take your pencil and put down these figures, for the sake of comparisons that will follow, and to give you something to go by in case you wish to investigate your own costs. Four plates, thirty cents; paper for twelve prints and proofs, twenty-five cents; envelopes and tissue enclosures, seven cents; retouching one negative, thirty-five cents; chemicals, ten cents; and mounts, thirty cents. Total, one dollar and, say, forty cents. These items may be cut down slightly, or added to, as the case may be. You will find that they are somewhere near the average. In any case, these slight changes will affect the total but very little, as we shall see later on.

We now come to overhead expense. This is for a studio where the business is such as to warrant the employment of one assistant, and, for one year, will be approximately the following: Rent, at twenty-five dollars a month, three hundred dollars; fuel, at eight dollars a month, call it fifty dollars for seven months; electric light, at a minimum of a dollar and a half a month, twenty dollars; water, at two dollars, make it twenty-five dollars; insurance, which every photographer should carry, fifteen dollars; taxes, ten dollars; postage and samples will probably amount to thirty dollars; depreciation, waste, and advertising will come to not less than two hundred dollars, and a fairly good assistant, in these days, will cost at least fifteen dollars a week. We will call it seven hundred and fifty dollars for the year, which is none too high. Now, if you value yourself as being worth anything at all to your business, you should charge up your own services, even if it is only at a nominal figure. We will put it, in this case, at seventy-five dollars a month, or nine hundred dollars for the year.

This brings the total overhead, or running, expense to twenty-three hundred dollars per year. I see that I have overlooked interest on investment, but we will let that go. This is the only business-like way of getting at one's cost; and if you will do a little more pencil work, you will find that, with a material cost of a dollar and thirty cents a dozen, and an overhead expense of twenty-three hundred a year, in order to make ends meet you will have to do a business of ten hundred and fifty sittings at three dollars and a half, or three thousand six hundred and seventy-five dollars. In other words, with this volume of business your pictures have cost you three dollars and a half a dozen. To be exact, the above business will show a profit of ten dollars for the year, or less than a dollar a month.

We all know the man who says to himself: "If I bring my price down to a little below that of my competitor across the street, I can get enough extra business to squeeze him and make a few dollars myself." Let us see. We will assume that he cuts his price fifty cents, thereby making it three dollars. We will also assume that he gets more business, three hundred sittings more than under former conditions. Now, the business, with the same overhead expense and at the same cost for material, will have to total thirteen hundred and fifty sittings at three dollars, or four thousand and fifty-five dollars for the year. This shows that, after having done almost a third more work, he has had to assume a loss of five dollars.

It is doubtful if a reduction of fifty cents a dozen would, in actual practice, bring such an additional volume of business as is shown in the above case. The probabilities being very strongly against it, we will see what effect reducing the price to two dollars and a half will have. Here we get a surprise. Assuming that the one dollar reduction did increase the business to practically double, making it reach nineteen hundred and fifty sittings, what has our price-cutting friend to show for it? His total expense for material has jumped to twenty-five hundred and thirty-five dollars, making the cost of running the business forty-eight hundred and thirty-five; but, at two and a half per dozen, the amount received for the year is only forty-seven hundred and fifty dollars, so that he had to pocket a loss of eighty-five dollars. Is it worth while?

Look at these figures as we may, there is only one conclusion that can be arrived at, and that is: when we are "monkeying" with price-cutting with prices anywhere around three dollars for cabinets, we are "fooling with a buzz saw."

A picture with a low price may be used as an inducement to get people into the studio, but every effort possible should be made to switch the customer to higher-priced work. Department stores use bait of this kind, as an advertisement; but when one goes to buy the goods, he finds he has to run a gauntlet of wonderful and attractive displays in other lines, displays that almost compel purchases. The advertised bargain is in some remote corner of the huge establishment, and the reason it was placed there is obvious. Unless we can handle our customers in this way, a cheap picture for a leader is a dangerous thing for the pocket-book, and it should only be used when the proprietor is a shrewd salesman or has a most competent receptionist in his service.

Have you had enough figures? We will look on the brighter side for a few minutes and make some comparisons, using higher prices. Taking the same expenses, and raising our price to four dollars, we find the figures show a profit of five hundred and thirty-five dollars for the ten hundred and fifty sittings. Raising them still another dollar, we show the still larger margin of fifteen hundred and eighty-five dollars. We are now mounting into the realm of profits, yet five dollars is not a big price. If you really want to soar, try eight dollars; many men are getting it for cabinets and 4 x 6 prints; and, to make up for the additional cost of higher grade material, we will add seven hundred and thirty-five dollars, which should surely cover it, bearing in mind that we are still making the same ten hundred and fifty sittings, and our profit for the year reaches the astonishing sum of four thousand dollars.

Is it worth while going after business on the price-cutting basis? Why not be a little more sensible and boost prices a trifle all along the line? What incentive is there for a man to produce good work when there is absolutely nothing in it for him? What can a photographer expect from the public when he has no more respect for himself and his work than to charge less than a day labourer's pay for producing it? How much profit, real profit, are you getting out of your business? I do not mean how much you can save on an income of fifty dollars a month, but how much are you getting to lay up against that time in the autumn of life when you may need it?

We can talk about art all we wish; it is an interesting subject, its study is essential to the production of better work and the attainment of higher prices, but the man who is weak on the business side of photography has a hard row ahead of him.

Do not take the figures given in this paper on the cost of material and the other different items as necessarily correct. They will vary according to the quality of goods you are buying and the volume of business you are doing; but do not omit any of the items under the overhead-expense column. Every one of them enters into the cost of a dozen photographs as surely as do the plate and paper you use. The figures are given merely to show that a small advance in price may often mean a big profit at the end of the year, while a corresponding reduction may spell an actual loss.

The cut price is one of the greatest evils we have in photography to-day. It can be attributed, in most instances, only to the rankest kind of ignorance or indifference. If the man appears satisfied with a bare existence, we may think: "All right, let him stay there," but that is not the way we should look at the matter. It is to our own interest to wake him up and dig him out of his rut. One price-cutter will demoralise a community; and, in doing it, do himself no good. Usually, if given enough rope, he will hang himself, but for the rest of the fraternity in that town it is a slow and painful process.

More getting together of the photographers in any given community will do a lot of good. There is nothing philanthropic about it. It is hard-headed business, and a method that is being pursued by business men in all lines. At such meetings, numerous questions of local interest can be taken up and disposed of. Competition should be more in the nature of friendly rivalry, with the photographers, as an organisation, standing shoulder to shoulder against the common enemy.

Really, now, when we stop to think seriously, is not price-cutting just about the very poorest way of getting business, especially the kind of business that pays? A little more knowledge as to the cost of producing, and the chances are we would not have so much of it done.

In conclusion, I would say that if you will yourself tackle the question of ascertaining the cost of production of your own pictures, you will find it an interesting, not to say surprising, problem, and you cannot but benefit by doing so.

M. F. Jukes.

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**Sheerness Photographer and the Military Sentries.**—Mr. Franz Heinrich Losel, a photographer of German nationality, who has been in business in Sheerness for nearly forty years, was on Saturday morning engaged on the foreshore, near Garrison Point Fort, taking a photograph of a foreign pulp ship, named the "Herm," on her departure from Sheerness Harbour after discharging her cargo at Queenborough, when he was discerned and questioned by the military sentries, who apparently were under the impression that he had been photographing the fortifications. Mr. Losel was asked by the military authorities to go to the County Police Station, where he informed Inspector Thompson, the officer in charge, that he was simply executing an order to take a photograph of the ship. On the negatives being developed by Mr. Losel in his studio in the presence of the police and military his statements were found to be perfectly correct, and, consequently, no further action was taken in the matter.

# DYE-TONING OF LANTERN-SLIDES AND OTHER TRANSPARENCIES ON GLASS.

[In the following paper, published in the "Bulletin de la Société Industrielle du Nord de la France," the author, M. Louis Lemaire, records the results of experiments made with the object of devising a process of after-toning for lantern-slides, etc., in which the image, developed and fixed in the usual way, is caused to serve as the base on which to deposit one or more dyes. The process is, therefore, on the lines of the "Diachrome" method worked out by Dr. W. Traube and others, of which, however, the author would seem not to be aware. Nevertheless, the full particulars as to the activity and permanence of commercial dyes suitable for the process should be of great value to those desirous of working this method. It will be noted that M. Lemaire makes use of a bichromate solution which does not fully bleach the silver image as do certain other of the prescriptions which have been recommended for such diachrome toning: nor does he mention the use of an after-fixing bath, usually of hypo, with the addition of some other metallic salts, for the removal of any silver salt formed from the image by the action of the bichromate bath.—Eds., "B.J."]

In the year 1882 Charles Cros published a photographic process under the name of "Hydrotype," based, according to him, on the following:—A glass plate, bearing a coating of gelatine, is immersed in a solution of bichromate, dried, and then exposed to light behind a positive transparency. The plate is then washed to remove the excess of soluble bichromate and then transferred to the solution of a dye. In these circumstances the dye solution is absorbed by the unexposed gelatine, the gelatine which has been exposed to light becoming impermeable and repelling the dye solution. The result is an image of the kind from which printing was done, that is to say, a positive from a positive, and *vice versâ*.

According to Cros the action is that of simple imbibition produced in those parts of the gelatine not subjected to light.

We have experimented with the process of Cros, using the many dyes which of late years have become available. The result of our experiments has shown that the process is much more complex than has been thought, and that the various colouring matters behave, in respect to it, very differently.

If we attempt to dye the prepared plate by immersing it in the dye solution we shall obtain, according to the dye employed, one of the following results:—

(1) The dye does not colour the gelatine and the plate acquires no colour.

(2) The colour is absorbed in direct proportion to the intensity of the image, yielding an image of the same range of tones as the original, the high-lights remaining clear.

(3) The colour takes almost everywhere equally, and there are no pure high-lights.

It is to be noted that in the second case the dye appears to combine with the gelatine: the dyed plate is then capable of withstanding protracted washing without the dye leaving the gelatine. It is not so in the third case: here the dye dissolves out on washing, and the plate finally becomes completely decolourised. This description of action takes place, for example, with rhodamine G, and, though to a less extent, with Ponceau 4 GB.

### Choice of Dyes.

The dyes to be examined should, for obvious reasons, answer to the condition of being soluble in water, giving a coloured solution. It is necessary to lay stress on this solubility since many dyes which, on a casual examination, appear to be soluble, are not really so, but exist in a state of fine division: these cannot be employed. We may thus eliminate the following classes of dyes:—Sulphur dyes, which require alkaline sulphides for their solution; bath dyes, which require the use of reducers, such as hydrosulphite, in order to render them soluble.

It is, however, to be noticed that among these latter there are certain sulphonic derivatives which are capable of use, for example, sulphate of indigo, which, although giving only medium results, may nevertheless be used.

In the following table will be found a summary of the results obtained with a large series of colours, but this list is incomplete since it was impossible to experiment with the innumerable dyes which manufacturers have placed at disposal. The number, however, appears to be sufficiently large for use in conjunction with the process.

In the table the first column gives the name of the dye employed: the second column gives the name of the firm from whom the sample was obtained: the following letters indicate the five chief dye firms:—

A—Action Gesellschaft für Anilin Fabrikation.
B—Société Anonyme des Produits Fred Bayer et Cie.
C—Manufacture Lyonnaise de Matières Colorantes.
M—Farbwerke Meister Lucius und Brüning.
P—Société des Matières colorantes et Produits chimiques de Saint-Denis.

The third column gives information on what may be termed the "electivity" of the dye in regard to exposed bichromated gelatine. The experiments were made as follows:—A glass plate, coated with bichromated gelatine, was exposed to light in four sections. The first was completely exposed, the fourth was completely protected from the action of light, whilst the two other sections represent intermediate degrees of exposure. The figures are employed to indicate the following differences of behaviour:—

| | |
|---|---|
| 0. The colour does not take at all ... ... | Dyes to be rejected. |
| 1. The colour takes to parts corresponding to the deep shadows (of a positive) giving half-tones which are more or less coloured ... ... ... ... ... | Dyes to be used. |
| 3. The whites or high-lights have a tendency to stain .. ... ... ... ... | Dyes to be rejected. |
| 4. The white stain ... ... ... ... | |
| 5. The colour takes equally on all parts of the plate ... .. ... ... ... | |

The fourth column supplies an indication of the permanence of the images on exposure to light.

0. No appreciable change at the end of three months.
1. No change after one month, but a slight alteration after two months.
2. Slight alteration in one month.
3. Slight alteration after one month and appreciable change after two months.
4. Slight alteration after fifteen days, destroyed after two months.
5. Appreciable alteration after fifteen days, destroyed after one month.

| Name of dye. | Maker. | Electivity. | Permanence. |
|---|---|---|---|
| REDS. | | | |
| Ponceau 3 R B ... ... | A | 1 | 4 |
| ,, 4 R ... ... | M | 1 | 1 |
| ,, 10 R B... ... | A | 2 | 5 |
| ,, 2 R S ... ... | P | 1 | 1 |
| ,, B E E ... ... | P | 1 | 4 |
| ,, N 2 R ... ... | P | 1 | 5 |
| ,, S extra ... | A | 1–2 | 0 |
| ,, breveté 6 R ... | M | 1–2 | 0–1 |
| ,, 5 R ... ... | | 2 | 1 |
| Amarante... ... ... | P | 2 | 5 |
| Coccine 3 ... ... ... | P | 1 | 5 |
| ,, 7 B ... ... | P | 1 | 5 |
| Grenat R ... ... ... | P | 1 | 5 |
| Azorubis S ... ... | A | 1–2 | 0 |
| Rouge St.-Denis... ... | P | 0 | |
| Cérasine ... ... ... | P | 1 | 5 |
| Azofuchsine G ... ... | | 2 | |
| Lanafuchsine 6 B ... | C | 1 | 0 |
| ,, brillante S L | C | 1–2 | 1 |
| Eosine ... ... ... | | 1 | 5 |
| Erythrosine ... ... | | 1–2 | 5 |
| Rhodamine G ... ... | | 4 | 5 |
| Cochenille ... ... | | 1 | [illegible] |
| BROWN-ORANGE. | | | |
| Ponceau 4 G B ... ... | A | 2–3 | 1 |
| Orangé I I ... ... | P | 3 | 3 |
| Brun acide ... ... | | 3–4 | [illegible] |
| YELLOWS. | | | |
| Jaune métanile ... ... | | 2–3 | 0 |
| Chrysoïne ... ... | | 5 | |
| Jaune acide ** ... ... | | 0–1 | |
| Jaune S S ... ... ... | P | 1 | 0–1 |
| Jaune solide diamine A | | 1 | 0 |
| Auramine G ... ... | | 4 | |
| Jaune naphtol S ... | | 4 | |
| Jaune Victoria ... ... | | 4–5 | |
| Tartrazine ... ... | | 4 | |
| Jaune de quinoléine ... | A | 1 | 0 |
| Jaune papier conc. ... | | 1 | 0 |
| ,, acide solide 2 G L | | 1–2 | 0 |
| GREENS. | | | |
| Vert solide ext.-bleuât | B | 2 | 0–1 |
| Vert Guinée B ... ... | A | 2–3 | 0 |
| ,, ,, 12167 ... | A | 1 | 4 |
| ,, ,, G ... ... | A | 1–2 | 3 |
| Vert naphtol B ... | C | 1 | 0 |
| Vert brill. d'Alizarine G | | 1 | 0 |
| BLUES. | | | |
| Bleu diamine 2 B ... | C | 1–2 | 0–1 |
| ,, ,, 3 B ... | | 1 | 1–2 |
| ,, ,, B X ... | | 1 | 4 |
| Bleu azoïque ** ... | P | 0–1 | |
| Sulfoazurine D... ... | A | 0–1 | 4 |
| Bleu soluble R B ... | C | 1–2 | 5 |
| Bleu carmin surfin ... | M | 3 | |
| Bleu de Bavière D P S | | 0–1 | 2 |
| Bleu tzarine Cr * ... | | | |
| ,, ,, R X * ... | | | |
| ,, ,, 5 R ... | | 1–2 | 4 |
| Cyanol d'Alizar. B F brev. ... ... ... | C | 1 | 0 |
| Bleu d'Anthracène au Cr * ... ... ... | B | 0–1 | 1 |
| Sulfate d'indigo ... | | 2–3 | |
| VIOLETS. | | | |
| Violet acide 5 B ... | | 1 | 4 |
| ,, ,, 6 B ... | A | 1 | 1 |
| ,, ,, 10 B ... | | 2–3 | 5 |
| Violet au chrome * ... | | | |
| Violet cristallisé ... | M | 2 | 5 |
| Violet Lanacyl B ... | C | 1 | 0 |
| Violet formyl S 4 B ... | | 1 | 5 |
| ,, ,, S 5 B ... | | 1 | 5 |
| DARK BLUES AND VIOLETS. | | | |
| Noir naphtol 3 B ... | C | 1–2 | 2 |
| Noir naphtaline 5 B ... | F | 1–2 | 1 |
| Noir amine 4 B... ... | A | 1–2 | 0 |
| ,, ,, 10 B ... | A | 1–2 | 0 |
| ,, ,, S 4 B ... | A | 1–2 | 0 |

* Not soluble enough. ** Insufficiently intense.

### Influence of the Chemical Composition of the Dye.

In examining the results summarised in the preceding table we sought to answer the question whether there existed any connection between the chemical composition of the dye and its behaviour towards the bichromated gelatine. On reference to the work of MM. F. Curtis and P. Lemoult,[1] it is seen that there exists a relation between the composition of a dye and its behaviour towards collogenous tissue. The more sulpho groups which the dye contains the more marked its action. It would thus appear possible that we have here a phenomenon of a similar kind. Both M. Lemoult and the present writer have recognised that the dyes which "take" best were always the sulphonic bodies, whilst those which gave bad results were nitrated dyes, such as rhodamine and auramine, i.e., contained no sulphonic groups. It would seem that the law of Curtis-Lemoult could be extended to the process under consideration, but further experiments did not confirm this assumption since certain non-sulphonic dyes, such as eosine and erythrosine, behaved quite normally towards the bichromated gelatine. It is certainly true that these latter bodies are somewhat exceptional and perhaps owe their properties to the presence of bromine or iodine in the molecule. Whilst one may be right in giving the preference to sulphonic dyes one should not exclude some other dyes which are not of this group. There is thus no absolute parallelism between collogenous tissue and bichromated gelatine.

### Resistance of the Dyed Gelatine to Air and Light.

The published facts regarding the behaviour of these dyes are of little use here. One can easily imagine that the qualities of fastness of dyeing on a fabric obtained by working in the heat, and adding to the bath substances to precipitate the dye as a coloured lake, will be different from those obtained by simple reaction in the cold and in aqueous solution. Also, many dyes which are generally considered as permanent in the light when applied to fabrics are shown to be very inferior on gelatine. Reference need only be made to the preceding table to see which are the dyes of sufficient permanence to be employed. These experiments were made on gelatine-coated paper exposed to the air, that is to say, under conditions which are more unfavourable than those in practice, inasmuch as transparencies as a rule are protected by a cover glass. It may be noted that the alteration takes place only in the presence of air. We have exposed to light dyed gelatine protected by a glass plate. Whatever the dye used the alteration is produced very slowly, whilst a companion test, made with exposure to the air, decolourised much more rapidly. This difference is quite in accordance with current knowledge, since experiments on the permanence of dyed materials have given analogous results. We have likewise stated the action of various chemical bodies on the dyed gelatine. As will be seen in the following table, some of them, for example chrome alum, exert a preserving effect. After-treatment with a suitable substance would thus permit of the use of dyes which, if used directly, would yield images of too impermanent a character:—

| Dyes. | Comparative test exposed to air and light without treatment. | With exclusion of air. | Treated with copper sulphate. | Treated with chrome alum. |
|---|---|---|---|---|
| Bleu soluble R B ... | 4 | 2 | 1 | 1 |
| Erythrosine ... | 5 | 4 | 0 | 4 |
| Ponceau 10 R B ... | 2 | — | 0 | 1 |
| Ponceau 3 R B ... | 5 | 3 | 1 | 3 |
| Amarante ... ... | 4 | 3 | Couleur altérée | 2 |
| Lanafuchsine S B ... | 2 | 1 | 0 | 1 |
| Brun acide... ... | 3 | 1 | 0 | 1 |

### A Practical Process for Dye Transparencies.

The above method thus allows of transparencies in colours being made for lantern projection, stereoscopic work, and the decoration of windows. The great advantage of this method over the various toning processes recommended for producing different colours in transparencies is that it is the only one which allows of obtaining any imaginable tint by a suitable mixture of colours. The worker is in the same position as the dyer who, by ringing the changes on his dye baths, secures a whole range of colours on fabrics. Just as is the dyer, we are in the position of reproducing a sample colour, or to modify it in any required manner.

In order to obtain positive transparencies by this plan we can employ one of the two following methods:—

(1) Sensitise a plate coated with a film of gelatine in a bath of brichromate. For this purpose a plate fixed in hypo and well washed may be used. The dyed plate is sensitised in the bichromate bath, exposed behind a positive transparency, washed, and then dyed as directed below.

(2) The second method is that which we regularly use, since it is simpler and gives better results than the preceding. It consists in making a glass transparency direct in the ordinary way by development, fixing, etc., then placing it in bichromate, drying, and exposing to light.

In order to determine the degree of exposure, when using this second method, the worker should proceed as follows:—A piece of ordinary P.O.P. is placed behind the bichromated transparency: when the parts corresponding to the highest lights of the transparency are quite black the exposure may be considered finished.[2] It may be noted that too much exposure is preferable to too little. It now remains only to wash and dye the positive. Whichever of the two above processes are used this last operation is the same.

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[1] F. Curtis and P. Lemoult, "Sur l'affinité des matières colorantes sur le tissu conjonctif." C.R.A.S., June 13, 1905. Soc. de Biol., June 24, 1905.

[2] This process has been suggested by M. L. Didier in an article, on "Simplified Pinatype," "La Photographie des Couleurs," May, 1907. See also "La Photographie des Couleurs," October, 1906, and February, 1908.

The plate is sensitised in the following solution:—

| | |
|---|---|
| Ammonium bichromate | 10 grs. |
| Ammonia, 22 deg. | 50 ,, |
| Water | 250 ccs. |

This operation is done in daylight, the bichromated gelatine not being sensitive till dry. The plate is then put to dry thoroughly in the dark, after taking off any adhering drops of water, which would produce stains. It is then exposed to light. The plate is then washed until quite colourless, either in ordinary water or, more rapidly, in a solution of about one per cent. strength of sodium bisulphite, afterwards thoroughly washing. It now remains to dye the plate.

### Dyeing the Plate.

We employ the following dyes, which give good results as regards taking well to the gelatine, permanence in the light, and richness of tone.

| | | |
|---|---|---|
| Reds | Lanafuschine 6 B | (Casella) |
| | — brillante S L | ,, |
| Blues | Cyanol d'alisarine B F breveté | (Casella) |
| Yellows | Jaunes pour papier M | (Meister) |
| | Jaune solide 2 G L | (Casella) |
| | Jaune de quinoéline | ,, |
| Bluish black | Noir amine 4 B | ,, |
| | 10 B | (Actien) |
| | S 4 B | ,, |
| Violet black | Noir naphtol | (Casella) |
| Greens | Vert naphtol<br>Vert brillant d'alizarine | (Casella) |
| Violet | Violet lanacyl B | Casella) |

As will be seen from the table previously given, many other dyes may be used, but in practice the above are more than sufficient. It is not recommended to dye the plate by plunging it into a dye bath; it is more convenient to work as follows:—Prepare two per cent. solutions of the various dyes and pour a little of each into a cup, and then, with a soft brush, apply this solution to the plate as if making a water-colour wash and without paying any regard to the outlines of the subject. Only the image portions of the positive will take the dye, the whites remaining intact. If dyeing is not quick enough the plate may be slightly warmed by holding it over a gas flame. When it is thought that the dyeing is sufficiently intense the plate is washed and its colour can then be modified, or its intensity increased, if thought necessary, by a second application of the dye solution.

### Using Mixtures of Dyes.

The worker will know that all the various colours may be obtained by employing the three primary dye solutions of red, yellow, and blue. If the colour obtained is too vivid we can correct this by adding some of its complementary, following the practice of the dyer. For example, we get a green by mixture, or by successive dyeing, with the yellow and the blue. If it is found that the green obtained is too vivid it will be easy to correct this again by giving an application of the complementary of green, namely, red.

The same procedure is applied in the case of all other colours. Those, perhaps, which constitute the elements of the art of the dyer are sufficiently well known to render it unnecessary to dwell further upon them.

### Other Applications of the Method.

So far we have applied this process simply to the dye-toning of positives on glass. In the case of prints on paper the process does not give directly a satisfactory result.[3] The whites become coloured whatever the degree of exposure to light, and the general appearance is much inferior to that of prints obtained by processes such as carbon, gum-bichromate, or oil. We have likewise endeavoured to transfer the colour of the plate on to tissues, the transparency acting after the manner of a printing plate. The results obtained show that the process, although giving so far very imperfect results, is susceptible of application in this way.

Lastly, it is possible to modify the method for the intensification of negatives by using dyes which are of an inactinic colour and not subject to alteration in the light. The superimposition of the image of the negative and that of the colour produces an intensification which will have the advantage of not coarsening the grain of the image as do most intensifiers.

In conclusion I must express my thanks to Professor Lemoult, who has kindly lent me numerous samples of dyes for the above experiments, and who, moreover, has rendered me much useful help.

Louis Lemaire.

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[3] In the pinatype process, which rests on the same principle, prints are obtained on paper with perfectly pure whites by printing not directly by aid of a dye solution but by applying the paper to receive the image to a print plate containing the dye.

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# A BRIEF HISTORY OF THE HAND-CAMERA AND ITS POSSIBILITIES.

[A paper read by Mr. James A. Sinclair at the Croydon Camera Club. We have taken the liberty of slightly altering the original title (evolved in advance from the fertile imagination of the club's honorary secretary) to render it more in accordance with the subject matter.—Eds. "B.J."]

After some preliminary observations of the light discursive sort, Mr. Sinclair said:—

Let us first go to the root of the matter and see what the hand-camera is and how it came into being—retrospect historical, yet not without interest. Our definition would not be that of the late J. Traill Taylor, when he occupied the editorial chair at the "British Journal of Photography." Traill Taylor had to give evidence in an action brought for infringement of patent. The great man was being examined, and was asked: "Now, Mr. Taylor, and what is a hand-camera?" The doyen of photographic journalism replied: "A hand-camera is one of those cameras you buy very cheaply and place into a school-boy's hands, and he expects to produce works of art." I am afraid the description would not hold good to-day, at least, in some instances, so far as the "very cheaply" is concerned. But to retrace our steps. The hand-camera was not born a hand-camera; it was evolved from the detective camera, much as a frog is evolved from the tadpole. When the detective camera was designed, no one foresaw its development. In those dark ages plates were far slower than they are to-day, and some support for the instrument was essential. Thirty-five years ago, at the American Centennial Exhibition, a series of photographs was obtained without a permit by means of a camera in a covered box, but this was done by standing it on any convenient pedestal. Mr. Thomas Bolas was one of the first to realise the possibilities of the detective camera. In 1881 he showed at the R.P.S. a real twin-lens camera. It was fitted with two lenses, actuated by the same rack and pinion: one was used to take the picture while the other formed a focussing finder, but without a reflecting mirror. The mechanism was enclosed in a box, which also contained thirteen double dark slides. Why thirteen I do not know, unless it was, through the inventor having been connected with reporting and publishing, he wanted a booksellers' dozen. Later in the same year he made another camera with only one lens, with focussing arrangement and diaphragm shutter, and slides contained inside the box. His focussing scale was characteristically timed by driving tin-tacks into the side of the camera round the milled head of the focussing screw, on which a mark was made to act as a pointer.

His third camera was a great achievement in design, and was the forerunner of the focal-plane shutter. It consisted of two spheres, one inside the other, the outer one having a lens at one pole and a dark slide at the other. The inner sphere revolved, and was cut away to allow of an opening for the lens and another for the plate. Two Petzval portrait lenses of equal foci were connected with a rack and pinion, and the central rays from one of these lenses were centred on a right-angled prism connected with a magnifying eyepiece,and this formed the finder. It was suggested that this camera could be held in the hand, whereas the former models were intended to be used on the ground. Bolas also announced an opera-glass camera, one eyepiece forming the focussing finder.

After 1881 the photographic world became somnolent so far as "detective" cameras were concerned, and when, in 1884, a patent was taken out for a photographic gun stock, Traill Taylor pointed out there was nothing new about it, and the readers of the "B.J." would remember how one Skaife had obtained pictures with a pistol camera about twenty years previously, and then, no doubt remembering the doings of Bolas, he added it was quite possible to hold a camera at the eye level and take perfect instantaneous views, using the edges of the camera for sighting purposes. He assured his readers that if they made the attempt the results would surprise them. Progress towards a hand-camera world seemed slow, but nevertheless the way was being prepared, for the tendency was towards lighter cameras and apparatus. In 1882 one writer complains "that a thoroughly efficient pocket apparatus seems to be still a great want. The so-called pocket cameras are a delusion, a mockery, and a snare. My idea of a pocket camera is one that can really be put in a coat pocket." Still, the writer of these remarks had no thought of using his camera in the hand.

In the same year we find improvements in shutters, and Hunter and Sands' diaphragm shutter, with regulating spring, giving exposures of from 1 to 1-200th second, meets with much approval. In 1885 at the Inventions Exhibition there were two photographic novelties of first-class importance, and Shew very deservedly received a medal for the first really efficient commercial hand-camera, known as the "Eclipse." The other exhibit of interest photographically was the Eastman roll-holder, developed and improved from the inventions of Melhuish in 1854 and Captain Barr in India in 1855. The latter worker had so far anticipated daylight loading spools that he used impervious black material at the ends of his rolls of sensitive paper in order to preserve them from light before and after use. Although both Warnerke and Mackenstein had made roll-holders for continuous films, and Morgan and Kidd advertised one about the same time, yet the Eastman holder seems to have been the first that was ready for sale in this country, and for it Eastman was awarded the R.P.S. medal. The following year (1886) another detective camera appeared, known as Smith's Patent Monocular Duplex. It was much like a reflex in appearance when in use, but the makers stated in their advertisement "*that it looks like a small portmanteau when carried.*" At this period the idea of a detective camera was paramount. In 1887 Melton Prior, describing his experiences in the Kaffir War with an ordinary camera, thought that quite possibly in the future a detective camera might be actually used in an engagement, and suggested lines on which such a camera should be made. Can we imagine a war correspondent to-day burdening himself with an instrument which necessitated the ground glass and tripod stand? 1888 and 1889 were years of great advance, and at their close what was considered to be a photographic ugly duckling may be said to have entirely emerged from its egg, and was prepared to stand buffets from every quarter, and such buffets were heartily given by all the high priests of the craft. In the former year, 1888, the North London Photographic Society had a show of the new cameras, and the "B.J." gave an extended notice to the last claimant for photographic favour. Scovill and Anthony, of New York, both had important contributions, the former's camera being simply of the box form, while the latter was resplendent with an alligator skin covering. There was also a camera by Sharland, with Samuel's bag changing, the plates being in sheaths, as in many of the more modern types; Beck's camera, with a shutter designed by Newman, pneumatically controlled, and working in the diaphragm slot, the whole, including slides, being contained in a black leather covered box; and Marion's camera, designed by Brooks, which had a large direct-vision finder. These cameras were also shown at the Photographic Convention, and made considerable stir. The most important event of 1888 was, however, the birth of the Kodak, but it does not seem to have been brought to England in time for these demonstrations, and I imagine that no one who saw what was at that time purely a photographic toy, could anticipate what an important impression it was to make on the development of the science, the art, and the industry of photography.

Our review of this year is, perhaps, incomplete did we not mention the Kerr camera—one of the first of the automatic changers. The hand-camera was at this time suffering from the unfortunate name conferred upon it at birth. The idea of a detective or spy is repugnant to most people, but there were not wanting enthusiasts who endeavoured to prove the instrument worthy a better name and status. One of the most ardent of these was Dresser, quite a free-lance, and whose memory will live in the minds of some of us by an advertisement that Fry, of Kingston dry plate fame, issued concerning a developer they manufactured. Mr. Dresser says: "Send me another two gallons." There is a refreshingly enthusiastic touch about this that is very admirable. Dresser preached hand-camera in season and out of season. He wrote of the pleasure he had in using an American hand-camera—the best he could procure—and how an improvement of his own design was made by one Thistleton, and was on the market. He concluded, "I think in the future there will be a great demand for ½-plate detective cameras." This was only a very few years ago; the demand for the cameras has come, while Dresser is merely a memory, and Thistleton seems to have passed into the limbo of the unknown.

The following year (1889) Hepworth expressed great gratification that, unnoticed, he had secured a photograph of a man pouring water into a milk can, and suggested there was a great future for the hand instrument. His suggestions as to the perfect instrument were, however, somewhat primitive, and I am afraid he never got much beyond this early coup.

An American writer, Alexander Black, in "Anthony's Magazine," dreamed of the detective camera of the future, and his picture is surprisingly correct, and applies to many cameras today. Hear what he says:—"The ideal detective camera will be a greater triumph of mechanism than any we have yet seen. It will have a certain number of features that we can only conjecturally enumerate. It will have two or more lenses—long and short focus—within the box and quickly interchangeable. It will have a quickly operated focussing adjustment for both lenses, and a simple system of stops, quickly changed from the outside of the box. It will have a shutter with great versatility of speed and a changeable aperture for different conditions of exposure, operated between the discs of the lens, or behind both, with a spring that will never vary in strength. It will have a substitute for glass plates in holders, yet better than the present paper or film. It will carry sensitive surfaces for at least a dozen negatives, and the more the merrier. It will change the position of the sensitive surfaces without opening the box at any point to the light. The camera of the future will at least have these features, and all these operations will be effected from the outside of the box by mechanism not discernible to the passing glance. The camera will be inconspicuous in form, light weight, and moderate price."

During the '80's the great feature was the perfection of gelatino-bromide emulsion, without which hand-camera work would have been impossible. Every maker of plates had been striving to obtain speed, and at the close of the decade everything was ripe for the advance which has since been continuous. 1890 saw the commercial introduction of celluloid as a base for photographic emulsions, and perhaps to this fact more than any other must we chronicle the rapid development of hand-camera work, and, indeed, of all photographic industry. Even if none of us use "Kodaks" we must recognise the acumen and foresight of Mr. George Eastman, and it is not too much to say that the Kodak has caused the development and success of many businesses that at first sight may appear to be rivals. How often do we find that a beginner with a "Brownie" develops into an enthusiastic photographer, who wants something more than a Kodak can supply. The Kodak popularised hand-camera work as no other camera had ever done, and only two or three years after its introduction we have Dr. Nicol, of Chicago, saying "that he considers the present hand-camera craze as an almost unmitigated evil," and stating further that its uses are extremely limited. Should the good doctor be still living (He is not.—Eds., "B.J.") I wonder what he thinks of the state of affairs in this present year of grace. I imagine him sighing for the silver bath, dark-tent, and perambulator of early days.

In 1891—twenty years ago—Burton suggested the "reflex" type, but did not see how it could be made to work satisfactorily. Grubb had used a camera with a reflecting mirror about twelve years previously, and Thomas Sutton at an even earlier date, but their cameras were not for hand use. Burton thought that the double reflection from the mirror would be the chief drawback, and curiously did not think of one silvered on the surface. It is interesting, in view of the phenomenal speeds demanded by purchasers to-day, that Burton thought 1-10th of a second would be fast enough for all ordinary purposes. Watson at this time was advertising the Van Neck, and Loman, of Amsterdam, had also a form of reflex, but both of these makes were very primitive in the matter of shutters. Ross started their twin-lens and also had a detective camera in a bag, but the triumph of their advertisement was a small box detective, with lens, finder, and shutter complete for £2 10s. I never saw this triumph of Bond Street cut prices, and I am hardly disposed to think that the objective was made of Jena glass, which was then beginning to attract the attention of opticians. We also find Adams bringing out a box camera with bag changing and shutter, designed by Newman, and the following year saw a development of the Kerr automatic changer in the form of the Adams "Ideal," one of the best cameras of this type ever placed on the market. Zeiss lenses made the next great advance in 1893, and the same year saw the introduction of the Newman and Guardia "B Camera," an instrument never surpassed for sterling workmanship. Things now moved forward in the direction of improvements in the design and convenience of existing models, and it was not till 1901 and 1902—ten years after Burton's suggestion—that the reflex began to make its mark on the trade. Since those years there is very little that is startlingly novel to chronicle, unless we may be allowed to except the "N.S. Patent Reflex," introduced in the spring of the present year. In all previous reflex instruments which gave the necessary range of adjustments for high-class hand-camera work, the focal-plane shutter was necessary in order to protect the sensitive surface of the plate until the actual moment of exposure. The focal-plane shutter is excellent for the high speeds which are rarely necessary, but is not desirable for the slow speeds which are so often required with a reflex. Moreover, blinds being made of perishable material have a somewhat limited life, particularly in hot and cold climates. In the "N.S. Reflex" the blind for any purpose is dispensed with, and a diaphragm shutter is fitted. This is rendered possible by a supplementary flap that follows the mirror up after pressing the shutter release, but such flap does not come into play until the shutter, which has been open for focussing, has moved to a shut position. The various movements which take place follow each other so rapidly that no allowance has to be made in actual work for the possibility of the subject passing out of the field of view. Of course, for those who require a camera for high-speed work this camera is useless. Its advantages are, however, so obvious to the ordinary worker that it is hardly necessary to refer to them here.

So to sum up we may say that owing to the invention and perfection of

gelatino-bromide emulsion,
celluloid films,
and modern lenses,

a modern hand-camera is the principal factor in our photographic life, and the patterns most favoured to-day are:

Pocket cameras, such as the "Block-Note," "Tenax," "Bébé," "Sybil," and "Vesta";
Folding film cameras of the Kodak type;
Folding cameras of the Universal Type, embodying every range of movement, and suitable for hand or stand, such as the "Sanderson," "Correspondents'," or "Una";
Focal-plane folding cameras, typified by the "Goerz-Anschutz," "Palmos," and "Panros";
And reflex cameras.

Such be your photographic gods, O ye camera men, and each will select according to his own idiosyncracies, and declare that his particular object of worship is the most fit for himself and his fellows. In thus outlining the development of types of modern hand-cameras, I have only mentioned such features of the scene as appeal to me most desirable to mention in a brief sketch. The numerous lacunæ I will leave you to fill in, each according to his own ideas.

Thus the hand-camera being the most important manifestation of modern photography, it may seem almost a work of supererogation to discuss its uses. They are manifest to us all. The world to-day without the hand-camera would be like a world without the telephone or electric light. It adds to the amenities and pleasures of life, and is one of those things which make us thankful that our lot has been cast in the twentieth century. The only regret I have is that it did not exist at an earlier stage in the world's history. How supremely interesting would be prints of Boadicea defending her people against the invaders, the landing of the Conqueror at Hastings, Chaucer wending his way to Canterbury, Shakespeare crossing the fields to Shottery, Cromwell addressing his Ironsides, to say nothing of the interesting records which might have been secured of London, its streets, its pageants, and its people in those early days. Future times will be blessed in this matter, in that they will have effective records of to-day, due to the spontaneity of the results obtained with the hand-camera.

Consider what would happen to modern journalism without the hand-camera. Some of our daily illustrated papers have built up a large circulation by its means, and the most striking and interesting of the weekly illustrateds are dependent on its help.

Then the hand-camera is a great educational factor. It quickens both eye and brains. To obtain perfect success in the photography of moving objects requires rapidity of thought and quick decision—attributes of the greatest value in life. It teaches us to see what would otherwise fail to attract our notice. The making of a set of views on a holiday stimulates the observation, and even if the worker has no glimmerings of artistic appreciation, his results will afterwards serve to bring back with startling distinctness all the incidents of time, place, and hour where and when the photograph was taken.

Think of the great developments of commerce and industry due to the hand-camera. The producers of silver, of gelatine, of glass, of celluloid, of paper, of metal, of leather, to the number of many thousands, are directly interested, and are exchanging the results of their labour for other commodities the wide world over. Block makers and printers are daily working to reproduce the results of the craft. In fact, so great is the hand-camera influence on industry at large, that everyone is to some extent dependent upon it. You doubt me? What does yonder greengrocer or draper owe to the hand-camera? Watch a moment. A girl goes to the former and buys some bananas and to the latter for trimming for a new hat. Her money is received owing to an amateur in Burma or Siam using a hand-camera in which are Wratten plates. Mr. J. Buchanan gives £10,000 to the Tariff Reform League. Gentlemen, some of it has been taken from the pockets of members of this club. You see how we are all bound together in one great and world-wide influence. This is a matter for gratification. Our horizon of life is broadened, and we are none the worse when we recognise that we are inter-dependent.

But to come nearer home. The hand-camera has given all of us in this room many pleasing moments. It records the fleeting glances of relatives and friends, and the results are more life-like than the formal presentations of the studio. I must confess that I enjoy the photography of children in their happy hours of play. The development of a child is a wonderfully fascinating subject, and one which I trust I may always be young enough to enjoy. And then I think another use for the hand-camera may be as a solace to old age. This time will come, and even if physical disabilities prevent active work, I fancy that I shall sit and enjoy again the rambles I have been at home and in foreign lands. Then the pleasures will be those of imagination, but they will be none the less real on that account. I shall revisit all the places of my youth in company with those who accompanied me, but have preceded me on the long, last journey, happy for what was done while strength yet availed. And all to this end I make little books of platinum prints to illustrate most of my journeys, much as the squirrel lays by stores of nuts for the winter. Should the fates not have such a period in store for me, these books will be handed down for the enjoyment and enlightenment of future generations.

Gentlemen, I fear I am tiring you, but we have arrived at thirdly and lastly, the possibilities of the hand-camera. Do I think we are at the end of development? Far from it. We may only be starting, but I would here say that all growth must, of necessity, be from the scientific side. Pictorially—artistically, if you will—use any label you like, you will get change and nothing more. As I pointed out, art moves in a circle, and the future is not likely to produce anything better in the realm of art than has been produced in the past. But science is always advancing. Could Volta or Faraday see the world to-day how amazed they would be at the triumphs of electricity. Imagine Watt contemplating the engines of an "Olympic," or Daguerre or Niepce watching a living-picture show. The developments of applied science are stupendous, and I see little reason to doubt that there is a glorious future before us. To this end I am not without hope that some day we shall have much faster sensitive surfaces than at present. I say sensitive surfaces advisedly, for I want a perfect film, thin, light, as transparent as glass, that will keep flat and not itself deteriorate or cause deterioration of the emulsion spread upon it. As for speed, it should suffice to take rapid snapshots in a street at night, just reproducing the effect of such light as may be present. Then we look forward to the time when we shall have a perfected colour process, by which snapshots can be taken and printed. I imagine, if ever such a process is feasible, that the artistic soul of the worker would have as much power of control over the finished result as is possible in our more elementary work to-day.

Then we may expect to see development of hand-camera cinematographic work. The cinematograph camera, as at present made, is not suitable for hand-work because of the necessity for turning a handle. In the future we shall change all this—the mechanism will start and stop at the will of the operator, and he will be able to use his camera in both hands, or, at least, on a unipod, directing the instrument in any desired direction. Such a camera will enable moving-picture results to be secured which are impossible to-day.

Gentlemen, here I leave the matter in your hands, simply referring to the hand-camera as did Horace Smith to the goose :—

> "For ever thou art giving
> Solace to man in life's brief pilgrimage."

On the conclusion of the paper, at the suggestion of Dr. Mees, Mr. Sinclair showed the working of the "N.S." Reflex.

### Discussion.

This was opened by Mr. H. P. C. Harpur, who spoke mainly in reference to the camera just alluded to. Whilst favouring its many good points, he expressed disappointment at not seeing a swing-front fitted. With a *f*/4.5 lens of suitable focus for a quarter-plate, it was quite possible with this attachment to get good definition in all planes from 3 feet to infinity.

Mr. J. M. Sellors suggested that focal-plane shutters might be fitted with two springs—one for slow, and another for high speeds. He could not understand why makers persisted in using a perishable fabric like rubber cloth for the blind, when Pegamoid was available. He had a home-made focal-plane shutter, with a thin black Pegamoid blind, which had been in constant use for over eleven years, and was apparently in as good a condition as the day it was made. Thin, soft calf leather was also suitable. As regards Mr. Harpur's contention, a swing-front undoubtedly was useful in exceptional cases, but if any foreground objects such as trees were present, it could not be brought into requisition. He thought every hand-camera should be fitted with finders, permitting it being employed either at the waist or eye level. The importance of this had been forcibly brought home to him in recent years.

Mr. E. A. Salt regarded the "N.S." lens shutter as being of a very satisfactory type. It might not be so efficient at large apertures as some others, but for accuracy of speeds and non-liability to derangement, it could not be beaten. With this type it was quite feasible approximately to scale the shutter-speeds purely relative to light action on the plate, which scale would be true for any stop employed. If a test were made for "duration of exposure," at a small aperture, say *f*/4.5, then the duration of exposure and the "effective exposure," to all intents and purposes, coincided. If the shutter scale was marked in accordance with the test, although the actual time of opening and closing of the shutter would be lengthened with larger stops, yet, owing to the drop of efficiency, the effective exposure would remain constant. Here the stops preserved their relative value, which was not the case with diaphragm shutters opening and closing from the centre. Mr. Salt here attempted to explain the difference between the duration of exposure and effective exposure, and made a really good start. In a very short time, however, he, so to speak, found himself tied up in a mental knot, and, realising this, resumed his seat, expressing a hope that he had been understood.

Dr. Mees said that he thought it would be convenient if two scales were provided—one for the "duration," the other for the effective exposure. Mr. Salt suffered from a knowledge of the subject, which so frequently seemed to deter its being conveyed to others. It would give him pleasure to explain in simple words what the last speaker really meant but had not said. Whether Dr. Mees succeeded or not must at least be open to doubt, as at the conclusion of the explanation Mr. Salt rose and said that if Dr. Mees had correctly interpreted his meaning, then he (the speaker) deserved to be put under restraint. This lead to an animated controversy between the two, and a pretty exchange of compliments.

Mr. C. Welborne Piper, reverting to the historical aspect, pointed out that "Skaife's Pistolgraph" was apparently the first genuine hand-camera, and that soon after it other small cameras were introduced by French and English makers. One of these, of French origin, measured only about three inches cube, approximately the size of the modern Brownie. The fact that it was made entirely of metal was interesting. It was, however, curious that after the introduction of these very early small cameras, no others seemed to have appeared for many years. Evidently the early workers had not much confidence in the possibilities of the small camera.

Mr. W. H. Smith said he had made lens-shutters twenty-six years ago. He well remembered getting an order once to fit a half-plate camera in a box, and to make a good shutter, which in itself weighed over one and a half pounds. The hand-camera when finished was nearly two feet long, and containing, as it did, a battery of heavy lenses, it was as much as one could do to lift it.

Mr. S. H. Wratten, in reference to a remark which had been made as to heavy cameras being a preventive of shake during exposure, said he did not regard weight as being of such importance in this connection as the position in which the camera was held and its shape.

Mr. F. J. Terry was glad to note that the lecturer had referred to the question of slow shutter speeds. Personally, he had never found it necessary to use a faster speed than 1-16 second. Many workers habitually under-exposed through driving their shutters at an unnecessary high speed.

Mr. Sinclair having briefly replied to the many points raised, a most cordial vote of thanks was accorded him.

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**Christmas Holidays.**—On account of the Christmas holidays, Messrs. J. H. Dallmeyer, Ltd., are closing their new factory and also their showrooms at 25, Newman Street, Oxford Street, W., from Saturday afternoon, December 23, to the following Thursday morning, the 28th.

**The Free Enlargement Dodge.**—"It is the old story," said Judge Hill Kelly, at the Newport (Mon.) County Court last week; "people are promised free enlargements, and then are asked to pay for the frames." There were a number of cases on the list, in which people of the working-class were sued for photographs or frames supplied. Defendants' case was that they understood they were going to have free enlargements given them as an advertisement. The enlargements were supplied, but in frames, for which payment was demanded. His Honour adjourned the cases, saying he did not approve of the business methods adopted, but if the frames and photographs were returned by the next Court he would strike out the cases.

# AIR-BRUSH CONSTRUCTION AND CLEANING.

[In the following article which we reprint from the Process Year-Book just issued by Messrs. A. W. Penrose and Co., Mr. C. L. Burdick deals with the construction and development of the modern air-brush, of which he, as designer of the aerograph, and head of the company bearing that name, has made a life-study.—Eds. "B. J."]

There are many old workers with the Aerograph who will remember the early models. I think they will agree with me that the machine we made seventeen years ago (which we then called the Fountain air brush) was capable of doing as fine work as the latest improved model. Three years of hard labour were given to developing the invention, but the broad principles of construction were arrived at with a high degree of certainty, before the manufacture of the machine was begun. Yet the structural improvements which have since been carried out are of very great importance in a practical way, although they concern themselves only with arrangements for cleaning, repairing, and details of construction which do not materially affect the working of a machine when in perfect order.

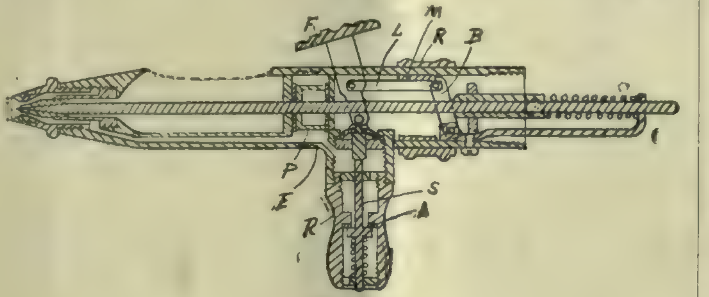

Fig. 1.

These improvements are principally of the kind which secure longer life for the instrument, that is, render repairs less frequent and give greater facility for cleaning and regulation.

In order to explain these details better, I have prepared a sectional view of our twentieth century model "A," together with an enlarged view of the colour delivery point.

Our earliest model had only a low bridge separating the colour receptacle from the working parts. As long as the instrument was held with the point down this was all right, but we soon found that workers by accident or inadvertence got the colour on the working part. Our illustration (Fig. 1) shows the precaution we now take to prevent this occurring. We insert in the centre of the instrument between two solid partitions a small drum (P) having leather washers at each end. I do not need to say that this very great precaution has absolutely cured this early defect.

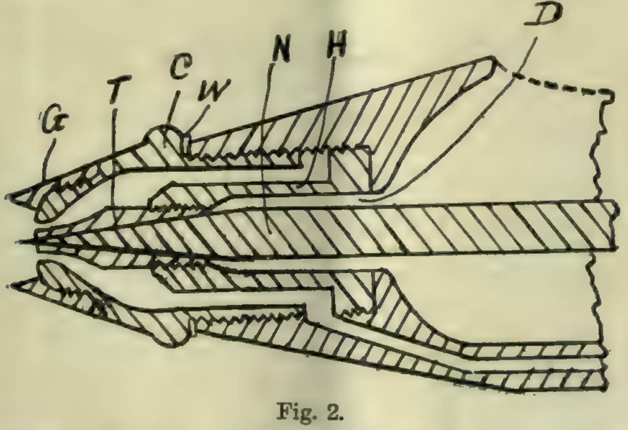

Fig. 2.

Some old workers will remember the double or sliding finger lever which was first used. I show the form in the small sketch (Fig. 3). This lever was mechanically perfect so far as the control of the instrument was concerned, but unfortunately the rubbing of the two levers together caused wear, and after a year or two new levers were needed. Our present method of connecting the two levers by a link (L, Fig. 1) reduces wear to practically nil. This form of construction incidentally gave us the opportunity of setting the needle for the fine line by means of a knurled band (R) and an interior cam (M), connected through the casing by a screw. The early models had also a means for regulating the line, but not so perfect as this. While on this subject, let me say that any machine for drawing or finishing which does not have a regulator for the line is of little use for small or delicate work; sprays of such a type may do all right for some background work or broad tints, but are quite unreliable for small and delicate work.

The old air valve with a rubber packing was a source of constant annoyance; some workers would put oil in it, and then there was trouble. The present long valve stem (S, Fig. 1), working in perfect alignment through holes in nuts at either end of the valve stem, secures such a perfect seating for the valve at A that we are able to use leather instead of rubber; this construction also enables the tension of the air valve spring to be adjusted—incidentally permits of removing the hand piece without detaching the valve stem from the rubber air tube.

Coming now to the spraying nozzle and the needle valve. We have reduced the diameter of the cap, and thereby minimised the danger of the tip not coming central in the air outlet. A large cap, through having a broader seating, must always be less accurate, as a slight unevenness or particles of dirt getting under one side would throw the point out of alignment.

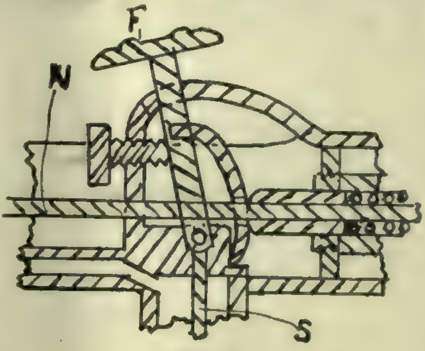

Fig. 3.

We have heard much talk about air brushes in which the needle is easily removable for the purpose of cleaning. As a matter of fact, a needle rarely or never needs cleaning, except when very sticky colours are used there is never enough dirt attaching to the needle to prevent good work. The *bête noir* of the air-brush worker is lint and dirt which lodge in the point of the instrument; the needle comes away from such dirt because it is tapered, but the dirt forms in a ring at the point indicated by D in Fig. 2. In order to get at this part conveniently to clean it, we detach the front of the instrument at E, the needle then comes away with the back portion of the instrument, and it is easy to get at the seat of the trouble; to remove this dirt a hooked wire is necessary, but must be used with great care, or the platinum tip may be damaged.

It is necessary that the tip, which is made of pure platinum, should be small and perfect in construction, in order to obtain fine, soft tints with the minimum of air pressure. We have adopted 7-1,000th of an inch as the size of the taper opening in the extreme point. If we were careless in the construction of this or the size of the air opening, it would not be practicable to work the machine with a foot pump; it would run away with so much air and require a very high pressure to secure satisfactory fineness of spray.

From our long experience we have adopted 3½ deg. as the angle for the needle point. Sometimes this point gets accidentally bent; it may be straightened if not too much damaged, and smoothed upon an oilstone or soft emery paper. If this is sharpened or ground out of shape by someone who does not understand the construction, there is danger of spoiling the working of the instrument, as well as damaging the tip.

No one may claim perfection for their work, but we should not change our present type of construction except as the result of further experience suggested by the requirements of the many thousand workers with the instrument.

The Aerograph is, and always must be, a delicate and sensitive instrument to meet the nice requirements of artists. I am very grateful for the many expressions of appreciation which our efforts have met with from artists all over the world.

CHAS. L. BURDICK.

## THE LATE H. SNOWDEN WARD.

FOLLOWING the announcement last week of the death of Mr. Snowden Ward in New York on December 8, we are now able to give authenticated details of the illness to which Ward succumbed within two days. Mr. S. H. Horgan, of the "Inland Printer," in a letter to the Editor of the "British Journal," writes as follows on the day of Ward's death :—

The cable brought you the sad news that the splendid, healthy-looking, hearty H. Snowden Ward was dead. I just want to supplement it hurriedly, so as to catch the first steamer, by stating some of the circumstances connected with his death as far as they could be gathered to-day. The first intimation I had of it was from Mr. Ward's best friend in the following dispatch to my country home :—

"MY DEAR HORGAN,—You will be deeply pained to learn that our mutual friend, H. Snowden Ward, died early this a.m., after a short illness during which he was unconscious. So passes one of the bravest of spirits and the most lovable of men. R.I.P.

"New York, December 7, 1911. JOHN A. TENNANT."

Hurrying to New York, it was learned at the National Arts Club, where Mr. Ward was stricken, that he had been working very hard in his room on a lecture on "Charles Dickens in America," which he was to deliver before the Photographic Section of the American Institute on the evening of the 5th inst. He had left orders that he must not be disturbed, so when a telephone message came for him it was answered that he "was not in." But for his strict orders not to be disturbed, his serious illness might have been discovered sooner.

Dr. J. W. Bartlett, President of the Photographic Section of the American Institute, became alarmed when Mr. Ward failed to appear before the splendid audience that awaited him; so, after the audience was dismissed, he went with some other friends of Mr. Ward to the National Arts Club and up to Mr. Ward's bedroom. They found him lying on the bed unconscious. Two physicians were summoned, and when Mr. Ward was aroused he told them in a dazed way that he had a severe pain in his ear; that he had caught a little cold in Buffalo two weeks before, and that he had a severe ear-ache. Then he became unconscious.

He was removed to a private hospital and an ear specialist called in. A test was made of his spinal fluid, and it was found to be swarming with pneumonia germs. The mastoid operation was performed in the hope of draining off the germs from his brain, but the doctors said that the pneumonia germs increased so fast that they were, it seemed, actually devouring him.

Mrs. Catherine Weed Ward, who had been telegraphed for early, arrived from Albany, 150 miles away, and was with him when he died, though he was unconscious to the end. This afternoon his body is being taken to Albany, where the funeral will take place tomorrow afternoon from his brother-in-law's home.

Mr. Ward's sudden death is particularly sad from the fact that this was to be a most successful lecture season for him here. He had worked up considerable enthusiasm over Charles Dickens and his centenary, and he was enthusiastic over the engagements he had already received, which extended into next April.

No single individual had done as much as Mr. Ward to acquaint us with the homes and haunts of Shakespeare, Thackeray, and Dickens. His Canterbury Pilgrimages and his lectures on photography were popular, and his place with us, it is likely, will never be filled.—Sincerely yours, S. H. HORGAN.

New York, December 8, 1911.

Mr. Pirie Macdonald, from whom we received the first cable message of Ward's death, in sending us a corrected press account of his decease, adds :—"Of course, you in England feel the loss of the dear fellow even more than we in America, though his going will leave a most distinct void in our circle. . . . I was very fond of him."

## PLATINUM PRODUCTION IN RUSSIA.

The "Times," in the highly informative "Supplement" of its issue of December 15, dealing with the industries of Russia, gives the following particulars of the production of platinum in Russian territory :—

The bulk of the world's supply of platinum is obtained from Russia, and the output is important, as the highest price recorded for the metal has been reached this year. The world's supply falls far short of the demand, which is growing both in Europe and the United States, the price in America being £8 17s. to £9 5s. per ounce and in Great Britain approximately £8 12s. The main supply is obtained from the Ural Mountains; last year it amounted to 175,720 ozs., according to the official records, but the actual supply is greater, as a quantity is sold without being officially recorded. The platinum is found in placer deposits in several districts, the output being as follows :—

| | | | |
|---|---|---|---|
| Tcherdin ... ... | 6,352 oz. | South Verkhotur ... | 110,800 oz. |
| Perm... ... ... | 46,022 ,, | North Verkhotur ... | 11,575 ,, |
| South Ekaterinburg | 965 ,, | North Ekaterinburg | 6 ,, |

There has been a steady increase of the output for several years, influenced, no doubt, by the higher prices which have been obtainable, as shown by the following figures :—

| — | Output. | Increase. |
|---|---|---|
| 1910 ... ... | 175,720 oz. | 11,602 oz. |
| 1909 ... ... | 164,118 ,, | 7,326 ,, |
| 1908 ... ... | 156,792 ,, | — |

The output of these districts is changing; some are falling off, whilst others are increasing. The annexed schedule will make that clear :—

| — | Output, 1910. | Output, 1908. | Increase. | Decrease. |
|---|---|---|---|---|
| Tcherdin ... ... | 6,352 oz. | 7,452 oz. | — | 1,100 |
| Perm ... ... ... | 46,022 ,, | 36,735 ,, | 9,287 | — |
| South Verkhotur ... | 110,800 ,, | 97,747 ,, | 13,053 | — |
| North Verkhotur ... | 11,575 ,, | 13,932 ,, | — | 2,357 |
| South Ekaterinburg | 965 ,, | 1,826 ,, | — | 861 |
| North Ekaterinburg | 6 ,, | nil | 6 | — |

It may be assumed that the actual output is about double the official given above, as large quantities reach the market clandestinely. The richer placer deposits have been derived from the weathering of a variety of olivine, which occurs in the Ural Mountains in a somewhat narrow zone, and they occur along the mountain slopes in the river beds. The average yield appears to be falling off throughout the district, as it is now only 0.07 oz. of crude platinum per ton of gravel; formerly it was considerably greater. The workers have now either to exploit poorer placers, or to develop richer ones, which from their position are more difficult of access and to work.

Prospecting last year in the chief platinum region has shown that additional deposits are not likely to be found; other districts have now been worked for seventy-five years and new discoveries are not likely; the olivine districts of the Northern Urals have not been explored, and it is only there that additional placers are likely to be found. More modern methods of working the deposits are now being introduced, dredgers as well as excavators being employed.

In the opinion of experts the price of platinum should be no-higher than that of gold, in order that the market may be retained; for at the present high price the various industries using platinum will attempt to find substitutes for all purposes for which it is not absolutely indispensable.

### DEATH OF MR. GEORGE TAYLOR.

In the death of Mr. George Taylor suddenly from heart failure at the National Liberal Club on Friday, December 15, a notable figure passes from the ranks of commercial photography. Mr. Taylor was head of the firm of A. and G. Taylor, pioneers in the supply of cheap photographic portraits and enlargements. A Scotsman by birth, Mr. Taylor was possessed of keen business instincts, yet the story of his success must sound like a romance in the ears of photographers who are put to hard shifts in making a bare living out of photography. According to notices which have already appeared in the daily Press, the late Mr. Taylor started life as a carpenter's apprentice at Aberdeen, his employer being associated with the building of the castle at Balmoral.

Having dabbled as an amateur in photography, it occurred to young Taylor that it might be worth while to secure photographs of Queen Victoria and her family. Taylor enlisted the aid of John Brown, whose friendship he had made while engaged on the castle works, and as her Majesty willingly consented, a series of valuable copyrights were obtained. Upon the sum realised from the sale of these photographs Mr. Taylor opened a studio and apparatus-store in London, and within a few years was well on his way to the command of a great fortune. He opened studios in a number of the principal towns of the country, and having organised a complete system of "clubs" in connection with factories and workshops and offices, the working people in all parts of the country were photographed, either singly or in groups, on a vast scale. By his own confession he was, at the end of four years, making £5,000 a year, at the end of ten years £10,000 a year, at the end of 20 years £20,000 a year, and for a few years succeeding (at which time he was doing a huge trade in pictorial postcards) he made even £30,000 a year.

He invested a substantial fortune in the purchase of a large estate in the most commanding part of Reigate Hill, adjoining Walton Heath golf course. He presented Queen's Park to the people of Reigate, and recently offered Colley Hill, on his estate, to the public on generous terms, that the magnificent view might be preserved for the nation.

# Photo-Mechanical Notes.

### Retirement of Mr. A. J. Newton from the L.C.C. School of Photo-Engraving.

The annual supper of the L.C.C. School of Photo-Engraving and Lithography was held on Saturday last, at the Gray's Inn Larder, under the chairmanship of Mr. Cecil Rea, the former art master of the school. Sir George Frampton, R.A., who has hitherto always presided, telephoned his regrets and sent his cordial good wishes. Among other guests present were Messrs. D. S. Maccoll, Nelson Dawson, Rickards, E. M. Rich, S. Hicks, Wm. Gamble, Frank Colebrook, Dr. Mees, and Dr. Garnett. The feature of the evening was the disclosure in the speech of Mr. Recknell, the student who proposed the health of the principal, that Mr. Newton was resigning his position after the end of the present session. Dr. Garnett, Mr. Bayes, Mr. Bull, and Mr. Baxter, all referred in a most sympathetic way to this event. Mr. Newton, in reply, and speaking under emotion, said that, while he knew he would be disappointing many of his friends, he felt certain that he would be doing as much for the community at large in co-operating with the firm to which he was going as he had been doing at the school. He was not leaving from any dissatisfaction or disappointment with the conditions of his service under the Council, nor from motives of greed, but because, after very serious consideration, he did not think he ought to refuse the invitation to associate himself with the firm of Messrs. Wratten and Wainwright, which, under the direction of Mr. Wratten and Dr. Mees, had already done so much, and was likely to do so much more, for the photographic industry. He sincerely thanked them for their reception of the toast, and assured them that he could not have spent a happier time than the strenuous ten years he should have had as Principal of the L.C.C. School of Photo-Engraving.

# Exhibitions.

### COLLECTED PHOTOGRAPHS BY MEMBERS OF JAPANESE SOCIETIES.

(*From a Kyoto Correspondent.*)

The following clubs united in organising an exhibition this autumn in the grounds of the park at Mino, near Osaka:—

Kyoto—The Photographic Society.
Kyoto—The Camera Club.
Osaka—The Japan Camera Club of Osaka.
Osaka—The Naniwa Photographic Club.
Kobe—Camera Friends' Club.
Kobe—Club for Photographic Study.

The time and place were appropriately chosen. Mino is a few miles out of Osaka, and is one of its most popular resorts. Osaka itself is on a dead flat plain—the delta of several large rivers—and is a very hot and trying place in the summer. Mino is a little way up the slopes of the chain of hills that run from Kyoto to Kobe, and is the nearest resort to Osaka where one can get a little cool air, and in the summer evenings the excellent electric car service brings thousands of people out. Then in the autumn the wonderful tints of the maples, which with the picturesque pines, are all around the waterfalls that abound, attract the people in great numbers, not only from Osaka, but from Kyoto and Kobe, both of which are equidistant, so it will be seen that the maple season was an appropriate time for an exhibition, and that Mino was a most suitable place, being convenient for all three cities.

In order to view this exhibition and report to you, your correspondent took up a Japanese photographic friend, and journeyed down by road in a motor car in two hours, the country being in its full autumn beauty, and the rice harvest in full swing. The hall provided was a most suitable one, and the pictures, some hundreds in number, were well hung for light, the only fault being that so little space was left between the frames; and the display was quite the most important one ever held in Japan, and altogether reflects great credit on the six societies concerned.

As has been said before several times, the Japanese have never struck out any special line for themselves in photography, which is rather to be wondered at, considering the skill they have in certain phases of pictorial art. Photography has been greatly practised in Japan in a professional way, but there has never existed anything like the great school of amateurs such as we possess, though during the past few years amateurs have greatly increased, and many clubs and societies have recently been formed.

The professional photographer is mainly a portraitist, and is in about the stage of 30 years ago in England. In the towns they abound, and every village has one. The extent of this trade may be gauged by the immense imports of plates and papers; though now protected by a 50 per cent. duty, the Japanese are trying (not very successfully) to make these things themselves. In some of the larger cities great businesses have been built up for supplying picture postcards and prettily coloured photographs, the latter much purchased by the passing tourist. The limitations of the Japanese in the higher branches of the photographic art have been brought about mainly by the restriction to the older processes, such as silver and P.O.P., and latterly, bromide, carbon and platinum have been a little used, and it is only within the last two or three years that gum-bichromate, ozobrome and bromoil have given the Japanese a chance to show what they can do, and there does seem a little probability that something characteristic may be evolved during the next few years. Of course most of the pictures in the exhibition were bromides, none bad, but the bulk just fair good work; perhaps 20 per cent. would be accepted and hung at an English exhibition. But the gum-bichromate, the carbon and the oils rank very much higher, and 75 per cent. of these exhibits may be classed as excellent, both artistically and technically. With their wonderfully supple hands, the Japanese ought to greatly excel in the of the brush. There is one exhibitor who seems to be quite a master, head and shoulders above all the others, for he excels in all branches of the work, and not one of his numerous exhibits but is of a very high standard of excellence—this is Mr. T. Naike, of Kyoto.

Beginning with the bromides, the two that seem to stand apart from the rest, one a toned bromide by S. Ikitani, of Osaka, "Boats and Reflections," is a very fine composition, and is in every way artistic and harmonious; the other, by Mr. Matsumoto, of Osaka, "A Waterfall," the water being rendered in a most wonderful manner, the whole picture besides being well composed. Mr. Nakai, of Kyoto, has some large coloured bromides treated in a very uncommon way, and very artistic. Of the carbons, the only one requiring mention is by K. Teishu, of Osaka, a typical Japanese landscape in green, with a fine sky. In platinum there are few exhibits, and here the disadvantage is seen of having to use what appears from the result to be Japanese made papers, for no pictures shown would be considered to be exhibition examples of the process. Attempts to make platinum paper in Japan began in the time of Mr. Burton, and very little improvement seems to have been made with it since his death.

In ozobrome the exhibits are but few. By far the finest is the study of trees and houses by T. Naike, of Kyoto, in every way of high quality, and shows of what the process is capable in the hands of a master. "The House Wall and Persimmon tree," by K. Kumagai, of Kyoto, also shows well the same points.

In gum-bichromate, rice stubble field with bare trees in distance, by K. Sabaki, of Osaka, is very pleasing, and Mr. Komitani has a similar theme well done. C. Aoki, of Osaka, has a fine pine tree study.

Coming now to oil and bromoil, we have a large exhibit both in monochrome and multi-colour, showing every phase. A great number of grades of paper have been used, some apparently quite unsuitable for the process; but considering that no Japanese ever received a lesson from any master in pigmenting, and that the brushes used here are very imperfect tools, and most of the ink not well adapted for the process, the exhibition in this section is a highly creditable one, and certainly 50 per cent. of the pictures would be eligible for an English show, and there are many, too, that would have had certain entry to the Salon in days gone by. Most worthy of mention are :—

T. Naike, of Kyoto, in green, a path between two walls—a fine broad effect of sun and shadow.

By the same, 18 x 12 print, workman hanging up dyed cotton yarn to dry outside a cotton mill—a very effective and bold piece of work.

By the same, a domestic scene, displaying much feeling—very artistic and technically perfect.

C. Aoki, of Naniwa Photo Club, Osaka, a very artistic street scene in the village of Yumoto.

K. Ashida, of Osaka, a winter landscape with fine cloud effect.

K. Kumagai, of Kyoto, a roadside shrine with plumes of autumn grass (Suzuki), rendered in a very conventional style—quite a fine picture.

Y. Tsukamoto, of Kyoto, autumn roadside scene, with grass plumes and a Kaki tree—a fine print in every way.

U. Tsuzuki, of Kobe, in dark blue, water with reflected pines—very effective.

G. Tsugiura, of Kyoto, a very pleasing domestic scene, after the day's work.

K. Seki, of Kyoto, a river with island and mountain beyond—a good composition.

K. Kuriyama, of Kyoto, temple gate and pine trees—one of the most artistic pictures in the exhibition.

S. Okuda, a massive effect of cumulus clouds, and a sharp ridge with pines on the sky line.

T. Yuki, of Kobe, a study in green of a stream with trees reflected—very delicately rendered.

T. Hata, of Kobe, snowy landscape with house by roadside—snow extremely well and crisply rendered.

G. Mochizuki, in red brown, temple wall with trees.

S. Miwa, of Kobe, good study of boats and reflections, in dark een.

Harada, of Kyoto, old pilgrim coming along a snowy road—nes well rendered and snow particularly effective.

Neu, of Osaka, seascape in green, with beautiful sky effect.

By the same, house and snowy road—in every respect good.

By the same, town street, with modern, foreign style buildings, on a rainy day, with figures reflected in the wet—a picture worthy of a place in any exhibition.

S. Kusakabi, fisherman in boat at sunset—very fine natural sky, but a bit overdone by perhaps being added to.

Other workers with good pictures are J. Kiriyama, of Osaka, S. Kitano, and Khibi, foreign exhibits. There were said to be pictures by Hoppé and Mr. Dührkoop, but we could not see them. Only one foreign resident contributed; this was Mr. T. B. Blow, of Kyoto. He sent six bromoils, 12 x 10, as follows: "Godmanchester Mill" (England), "A Fountain in India," "At Orta, Italy," "River Boat Drifting, Japan," "A Scene in Cairo," "Homeward at Evening, India," this latter being a picture exhibited at the Royal Photographic Society three years ago. These pictures by a foreigner attracted great attention, as it was the first opportunity the Japanese had of seeing foreign work. We believe that Mr. Blow and Mr. Crowther, of Kobe, are the only two bromoil workers at this end of Japan. It was much to be regretted that Mr. Crowther could not send, as his style of work is the exact opposite of that of Mr. Blow, and it would have been of much service to the Japanese to have seen examples of both alongside.

Of multi-colour pigment pictures there were about a couple of dozen. The best were those in which too much had not been attempted, and the master worker seemed to be Mr. Mochizuki, of Kobe. His pine trees and bare ground was the best, but it was followed very closely by his roadside house. In both cases about four colours seemed to have been used, and the browns and greens were treated with great skill, and both pictures were very pleasing.

C. Karasawa, of Kobe, had a pretty little landscape, in which the colouring was rendered in a very delicate way. H. Setouchi, of Kobe, man working at anvil, was effectively done. Some examples had the colour simply painted on, and we think this was clearly so in the picture by a student with a lamp.

The time was all too short, and we left the building with regret, for it was a great treat to find such a display of artistic work; so after taking our lunch under the scarlet maples by a waterfall, we returned to our car, and reached Kyoto again just at dusk.

# Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between December 4 and 9 :—

CAMERA.—No. 27,230. Photographic camera. Ernest Zollinger.

PRINTING-FRAMES.—No. 27,264. Printing-frames. Herbert Morris Pilkington, Clark Aubert Miller, and Alfred Henry Motley, jun.

FILM PACKS.—No. 27,365. Photographic plate and film packs. Hugo Ritter Gabler von Adlersfeld.

ENLARGING APPARATUS.—No. 27,490. Photographic enlarging apparatus. Michael Kreuzer.

CHEMICALS.—No. 27,589. Photographic chemicals. Albert Andrew Kelly.

APPARATUS.—No. 27,5[illegible]3. Photographic apparatus. Harry Ashton Wolff.

TELEGRAPHIC TRANSMISSION.—No. 27,474. Method and apparatus for the electric transmission of pictures. Ludwig Tschörner.

PHOTOMETER.—No. 27,089. Photometer for ascertaining the time necessary for the exposure of sensitive material to light in photography. George Frederick Cook.

CINEMATOGRAPHY.—No. 27,173. Bioscope film examiner. Harry Edwards and George Augustine Cladingbowl.

CINEMATOGRAPHY.—No. 27,256. Films for use with cinematograph apparatus. William Jackson Pope.

CINEMATOGRAPHY.—No. 27,389. Apparatus for photographing and projecting cinematographic views. Rudolf Berthon and Maurice Audibert.

## *COMPLETE SPECIFICATIONS ACCEPTED.*

***These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.***

***The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.***

**Studio Gas Lamps.**—No. 2,033, 1911 (January 26, 1911). According to the invention the lamp is constructed of a horizontal bar mounted upon a stand or pedestal, having a suitable provision for height adjustment. On the horizontal bar is fixed a plate bent into step-form, that is to say, composed of alternate vertical and horizontal portions; the burners are arranged in rows along the inner side of this plate, which forms a reflecting surface for the light.

When the light is to be supplied by gas burners the horizontal bar can be made tubular so as to conduct the gas thereto.

Fig. 1 is a front elevation, partly in section of a lamp, constructed according to the invention, for use in photographic studios, the light being supplied by gas burners. Fig. 2 is a central vertical section of the same. *a* is the horizontal bar, made tubular, as shown in Fig. 2, so as to conduct the gas to the burners *b*, *b*, the said bar being secured to a board *c* of the stand or pedestal *f*, suspended upon chains *g*, *g*, running over pulleys $a^1$, $a^1$ provided in the uprights *e*, *e*, and furnished with counterweights *h*, *h*, moving in pockets *i*, *i*, in the stand, so that the board can move up and down in guides *d*, *d*, in the stand, it being provided with a handle *j* for facilitating its manipulation; *k* is a flexible gas supply pipe, connected by a union *l* to the tubular bar *a*, to allow freedom of movement to the said board; *m* is the plate bent into step form as most clearly seen in Fig. 2, and fixed at the back of the tubular bar *a*, and having the burners *b*, *b*, arranged in rows along its inner side, which forms a reflecting surface for the light. G. T. Brennan, 18a, Oakmead Road, Balham, sole executor under the will of the late Henry Howell, 22, Farringdon Avenue, London, E.C.

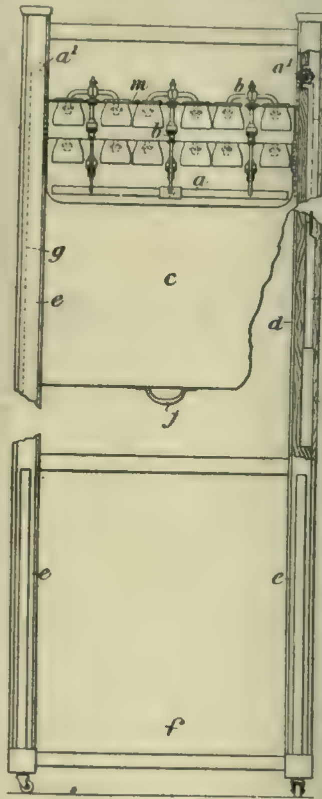

Fig. 1.

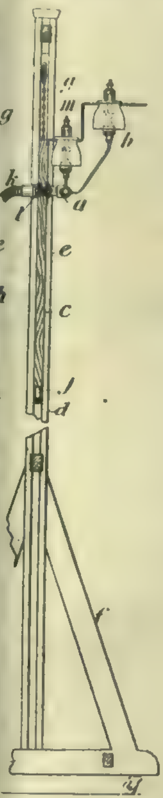

Fig. 2.

**Cinematograph Mechanism.**—No. 21,608, 1911 (September 30, 1911). The invention has for its object a cinematograph band or film, which comprises moving pictures and stationary pictures in alternation, and for the purpose of exhibiting one or more stationary pictures can be caused to stop in front of the lamp without danger on one or more occasions for a long time. The invention also comprises an apparatus for automatically stopping the picture band, which ordinarily runs through the projection apparatus at a high speed, at the places at which stationary pictures are located. H. W. Lake, 7-8, Southampton Buildings, London, E.C., for Prana Gesellschaft für Tageslicht-Projektion m.b.H., 18, Glockengiesserwall, Hamburg, Germany.

**Colour Photography.**—No. 26,608, 1910 (November 16, 1910). The first of the three claims is for "the method of superposing the yellow negative-colour-record into register with the red or blue negative-colour-record, or the superposition of the blue negative-colour-record into register with the red negative-colour-record, and obtaining from such combination composite and residuary positives." In other words, the patentees seek to "obtain by photographic means each a negative-colour-record for blue, yellow, and pink, from which the prints when superposed give a three-colour print; to give a better luminosity in red, they superpose the negative for yellow and pink (also called red), and print through both these negatives; this will bring forth a composite positive-colour-record for an accentuated red, to be also superposed on the other three prints; by balancing and adjusting the two reds a more correct and pleasing result in such a four-colour-print will be obtained, and especially so if one of the ordinary negative-colour-records is not absolutely correct." Otto Pfenninger and Eyre Coote Townsend, 105, Hythe Road, Brighton.

**Film Packs.**—No. 11,611, 1911 (May 30, 1910). The claim is for a design of film-pack "in which the exposed film is drawn behind the unexposed film over a bridge piece by means of pulling strips characterised in that the light-tight slot for the pulling strips corresponds in its length to the whole breadth of the pulling strip and of the film and the stops for the expansions of the pulling strips or of the films can be moved away from the ends of the slots." Hans Tönnies, 21, Rappstrasse, Hamburg, Germany.

## New Trade Names.

**Viotint.**—No. 337,153. Cinematographs, etc., in class 8, including transparencies, etc., in class 8. John Campbell, 59, Gartmoor Gardens, Wimbledon Park, Surrey, chemist. October 25, 1911.

**Biotint.**—No. 337,154. Cinematographs, etc., in class 8, including transparencies, etc., in class 8. John Campbell, 59, Gartmoor Gardens, Wimbledon Park, Surrey, chemist. October 25, 1911.

**Kinatint.**—No. 337,155. Cinematographs, etc., in class 8, including transparencies, etc., in class 8. John Campbell, 59, Gartmoor Gardens, Wimbledon Park, Surrey, chemist. October 25, 1911.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### Winter Photography in Switzerland.

With regard to dark-slides (writes Mr. H. R. Hannay in the "Amateur Photographer and Photographic News" for December 18) there is one fact which is seldom recognised, and that is the unsuitability of pull-out vulcanite shutters. One season the writer had a camera the dark-slides of which were fitted with these; many plates were fogged, and more had mysterious markings across them. The cause of this was difficult to trace, but was run to earth one night when the dark-room lamp failed to do its duty. In the extremely dry atmosphere the passage of the vulcanite shutter over the plush light-trap caused quite a brilliant electrical display right across the sensitive surface of the plate, thereby fogging it. The remedy was found in closing the window and hanging a damp towel over the central heating apparatus about a quarter of an hour before the plates were changed, so as to counteract the dryness of the air.

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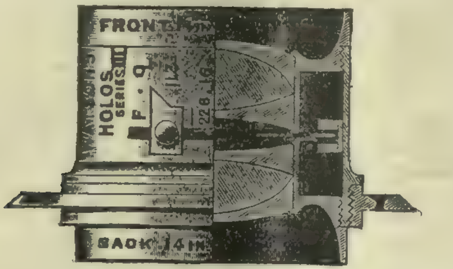
**Traffic** in High Road, Streatham, was held up for an ho
Thursday in last week owing to a fire at the studio of
Wykham, the top floor of whose premises was gutted.

# New Apparatus, &c.

### The "Holostigmat" Process Lens. Made by W. Watson and Sons, Limited, 313, High Holborn, W.C.

This Series III. "Holostigmat" lens is issued at the aperture of *f*/9.5 for the purposes of those requiring critical definition over a full field, together with correction of chromatic, astigmatic, and spherical aberrations, all important matters to makers of photo-engraving blocks for monochrome and colour work. We have tested the No. 5 lens of the series of 22¼ inches focal length, and covering a plate 20 x 18 inches. The covering power we found to be excellent, and, in fact, better than a 24-inch lens of high repute for process work. Testing the lens for equality of size of image when using the three-colour filters, we found the images absolutely the same size. Even at the full aperture of the lens the definition over the whole plate is remarkably good, whilst the illumination at the edges of the field is much better than in many lenses fitted with larger mounts. The lens is thus an altogether excellent one for the process operator and copyist, whilst for general photography it has the advantage of allowing the use of the single components as lenses of about double the focus of the complete objective. The price of the lens we examined is £24. Others of shorter focus are as follows :—11¼ inch, £7 15s. ; 13¼ inch, £9 10s. ; 15¾ inch, £14 ; and 18¾ inch, £18.

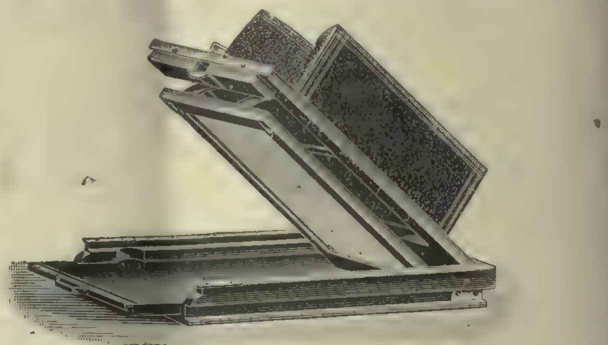


### The "Studio" Advertising Album. Sold by Kodak, Ltd., Kingsway, London, W.C.

An album, which may be said to form part of the photographer's permanent equipment, is supplied under this title by Messrs. Kodak specially for sending to customers' homes, containing a selection of the photographer's work. Its size is 16 x 11 inches, and it is made up of five grey and five brown leaves separated by most artistic figured tissues. The whole style of the album, if the photographer's work be in keeping, should make a most favourable impression upon prospective customers, and a liberal use of such direct advertising methods as this should be of advantage to any studio. The albums are supplied at 5s. each.

### The "Nettel" Adapter and "Koerma" Metal Slides. Sold by John Sherwood, 26, Red Lion Square, London, W.C.

A very convenient form of carrier for single metal slides and glass focussing screen is supplied under this name for use in the "Nettel" cameras, but readily adaptable to any make. In the quarter-plate size it consists of a frame, the outside dimensions of which are 6 x 4¼ x ⅜ inches, enclosing the focussing-screen, which is pressed into and held in register with the metal slides by a pair of springs. When the exposure has to be made the ground-glass is simply turned back, the dark-slide laid in the frame and the latter again pressed in, the work of only a few seconds. The slides themselves are of improved pattern, the catch for holding the plate in position being spring-hinged to the metal back of the slide and thus allowing of plates, both thick and thin, or even negative paper, being held in the slide, whilst for autochrome work the plate can be laid glass side outwards with, or without, the use of a backing card. The price of the adapter, complete with focussing screen and hood, is £1 in quarter-plate size. The price of the dark slides is 1s. 9d. each. Both slides and adapter are made in all sizes from 3½ x 2½ to half-plate.



# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

FRIDAY, DECEMBER 22.

Cardiff Camera Club. Members' Night—Criticisms, &c.
Cowlairs Co-operative Camera Club. Toning Bromides.

MONDAY, DECEMBER 25.

Dewsbury Photographic Society. No meeting.

TUESDAY, DECEMBER 26.

Royal Photographic Society of Great Britain. No meeting.
Padiham Camera Club. Autotype Carbon Demonstration.

WEDNESDAY, DECEMBER 27.

Croydon Camera Club. Conversational Evening.
Sale Photographic Society. Portfolio Night.
Edinburgh Photographic Society. "Enlarging." C. D. Paton.
North Middlesex Photographic Society. Nomination of Officers and Technical.

THURSDAY, DECEMBER 28.

Rodley, Farsley, Calverley, and Bramley Photographic Society. "Weights and Measures." H. Hodgson.
London and Provincial Photographic Association. Open Night.
Liverpool Amateur Photographic Association. "Night Photography." A. H Blake, M.A.
Coatbridge Photographic Society. Autotype Carbon Demonstration.

## ROYAL PHOTOGRAPHIC SOCIETY.

MEETING held Tuesday, December 19, Mr. George Lamley in the chair.

A series of lantern slides, lent by the Munich photographic journal "Kamera Kunst," were exhibited. They dealt with the scenery in the neighbourhood of Vintschgau and the Oetz Valley, and included a large number of subjects, many of which represented some of the finest mountain and landscape scenery in Europe.

LONDON AND PROVINCIAL PHOTOGRAPHIC ASSOCIATION.—At the meeting on Thursday, December 7, Mr. A. E. Smith in the chair, Mr. T. E. Freshwater showed to the members slides made by Professor R. W. Wood, by the light of the ultra-violet and infra-red ends of the spectrum. The greater number of the slides had not before been shown, and included many landscapes recently taken in Italy. In describing the slides Mr. Freshwater said that the contrast was found to be considerably diminished when photographs obtained by the ultra-violet light were compared with those obtained by visible light, whilst, when using the infra-red, there was absolutely nothing visible in the shadows.

For the taking of the photographs by the ultra-violet rays there was only one substance at present known which would fulfil the requirements, and that was a quartz lens with a film of metallic silver chemically deposited upon it. Such a lens enabled a certain amount of ultra-violet radiation, between 3,000 and 3,200, to struggle through and form an image upon the plate. For the infra-red there were, however, several substances which could be used, and a screen of very dense cobalt glass had been used, transmitting a narrow band in the region of wave-length 7,100 to 7,600. This, however, passed blue and some green, and to remove these rays a solution of potassium bichromate was combined with that of the cobalt glass. The slides taken by the ultra-violet light gave white paper as darker than the blue sky against which it was taken, and great reduction of the depths of shadows, whilst the infra-red gave green leaves of trees in sunlight as much brighter than the sky. The foliage was almost as bright as if covered with snow, and even the illumination of the leaves is so much brighter than the twigs and branches that these can be clearly traced as they ramble through the shadows, far more so than in an ordinary photograph. The foregrounds in the pictures resembled an early fall of snow before the leaves were off the trees, yet they were taken in full sunlight. The sky was quite black at the zenith, and lightened up as it came downwards towards the horizon, where the slight atmospheric scattering began to manifest itself. Mr. Freshwater also pointed out the extreme blackness of the shadows in the pictures, these being coal-black and very similar to the effect which would be obtained on the moon or any other planet devoid of atmosphere, where the whole of the light comes from the sun, which, with its full brilliancy, beats upon a sky as black as midnight. Some thirty to forty slides were shown of Italian scenery, and Mr. Freshwater then passed on to the ultra-violet rays which were passed by the quartz lens. A contrast slide of a man on a road lit by ordinary sunlight showed, in the case of ordinary light, heavy shadow, but in the case of the ultra-violet light the shadow was entirely absent. Another contrast slide taken through a window showed the landscape outside by ordinary light, but when the ultra-violet was used the glass proved to be opaque to the rays. White flowers taken by these rays showed almost black, and it was a surprising fact that, whilst some white flowers appeared as black as coal in this light, others appeared much lighter in colour. Images reflected in a mirror practically disappeared in the ultra-violet rays. A photograph of a glass jar containing cigars showed in natural light the whole of the contents, whilst, when the ultra-violet rays were used for the exposure, the cigars were unrecorded, owing to the opacity of the glass to the rays. One slide was of a shallow glass dish, chemically silvered on the inside, and part then nickel-plated by electrical deposition of the metal upon the silver. The silver was removed from another part, and the dish was then set up in front of a mirror of polished speculum metal, and both placed at such an angle as to reflect the light of the sky into the camera, which was furnished with a quartz lens. The first result was made with the lens unsilvered, and the silver and speculum both reflected brilliantly the nickel to a lesser degree, and the glass not at all, or only to a very slight extent; another result with a slight film of silver transmitted light in the region at which it refused to reflect. In another example a magazine had had words written upon it in Chinese white; when visible light was used for the taking of this, the lettering appeared, if anything, whiter than the paper, but when the ultra-violet rays were used it came out absolutely black.

### CATALOGUES AND TRADE NOTICES.

Aeroplan Lenses.—A four-page circular issued by Mr. W. Ziegler, South Norwood, London, S.E., announces the introduction of the well-known "Aeroplan" series of anastigmats of Schulze and Billerbeck, Gorlitz. The series include lenses of F/6.5, F/6, and F/4.5 aperture, in addition to a wide-angle of F/15. The prices are most moderate.

* * *

Royal Institution.—The annual Christmas Course of Juvenile Lectures at the Royal Institution begins on Thursday next (December 28) at three o'clock, when Dr. P. Chalmers Mitchell will deliver the first of six lectures on "The Childhood of Animals."

## Commercial & Legal Intelligence.

Edward Pittingale, 29, Moorfield Grove, cinematograph hall manager, and lately a photographer at 72-74, Bark Street and Starkie Road, Bolton, appeared for his public examination at the Bolton Bankruptcy Court last week, before the Registrar. The statement of affairs as filed by the debtor disclosed gross liabilities amounting to £167, and the deficiency was estimated at £166. The causes of failure as alleged by the debtor were "want of capital and insufficient business, which caused my expenses to exceed my income." The Official Receiver (Mr. T. H. Winder) reported that the receiving order was made on November 14 on debtor's own petition, and he was adjudged bankrupt the same day. The examination was declared closed.

## News and Notes.

Cooke Lenses.—The Eastman Kodak's prize of $500 for the best work of a professional photographer has been secured by Mr. S. H. Lifshey, of Brooklyn, New York, with a negative which was made with a Cooke portrait lens, Series VI., of 13in. focus.

Night Photography.—A surprising advance in the photographic art is, says "The Inventive Age" (Washington, U.S.), marked by the production of moving-picture films by artificial light. Flashlight photographs are common enough, but in all such work the subjects must remain still, and the results have by no means been perfect. The production of artificial light strong enough to cause the exact imprint of the image on the sensitised plate is not new, but the making of a perfect moving picture, which shows a number of objects in every detail, is distinctively new. With true Western hustle, a committee in Kansas City, who wanted to advertise their metropolis, determined to overcome the obstacles in the way of perpetuating the night parade on a certain festival. A platform twenty feet high was erected on one side of a street through which the parade was to pass. On this were strung sixty arc lamps in two rows, backed by a monster sheet-tin reflector, seventy feet long and six feet high. On the opposite side of the street was another embankment of light almost as powerful, so that for a distance of about 100 ft. the street was brilliantly illuminated. The machines were started when the parade began to pass, and a film 600 ft. long was made, showing every detail. Snapshots taken by private cameras were found to be as good as similar pictures made in daylight.

Metol Poisoning.—In reference to the recent letters and queries on the subject of metol skin poisoning, Messrs. Burroughs, Wellcome write:—"The generic name of 'metol irritation' is usually given to this developing nuisance, but metol is by no means the only offender. The alkali is responsible for a good deal of the trouble; it partially dissolves the skin, and robs it of its flexibility, the result is that fairly deep cracks are formed, and the sensitive under-layers of the epidermis are laid open to the attack of the metol, or other developing agent used, and to the products of oxidation formed in the developing bath, which may be even more irritating in character. As stated, 'Hazeline' Cream is an excellent palliative when the trouble has already been set up, but it is better still to prevent the irritation by making a routine practice of rubbing the hands and fingers well with this preparation before commencing work. This affords an excellent protective coating. When well rubbed in it fills the pores of the skin, thus preventing the absorption of the developer, and obviating the caustic effect of strongly alkaline solutions. Owing to the peculiar affinity of 'Hazeline' Cream for chemical substances, the irritating matters are taken up by it, instead of getting to the skin itself, and on washing the hands both the cream and the chemical with which it has become stained or impregnated come off together, leaving the hands smooth and clean."

Death of Mr. James Leadbeater, of Rotherham.—The Rotherham Photographic Society sustained a great loss by the death of their founder and most active worker, Mr. James Leadbeater, optician, on Tuesday, the 12th inst. For many months he had been in failing health. In certain special branches he attained to a considerable reputation, and examples of his work have been sent to various parts of the world. Photographs of frost on window-panes—a series of which found their way to the Royal and attracted attention—of crystallisation, of lightning, of discharges from an induction coil, and designated electric splashes, were some indication of the bent of his mind. He was particularly fascinated with the developments following on the discovery of the X-rays, and had one of the first equipments in the district. His photographic experience went back to the wet-plate days. As a society member he was always willing to give of his knowledge; in fact, he was very greatly attached to the organisation, which he founded in 1889. He reached his seventieth birthday in August last. The members of the Rotherham Photographic Society, at a special meeting on the 13th, passed a resolution of sympathy and condolence with the widow and friends, and also recorded appreciation of the services he had rendered. The funeral, on the 14th, was attended by Mr. C. H. Moss, J.P. (President), and the officials, council, and a number of the ordinary members.

**Ensign Smoking Concert.**—The sixth annual smoking concert (Houghtons, Ltd.) was held on Friday evening last in the Grand Hall of the Criterion Restaurant, Mr. Edgar W. Houghton in the chair. The tables were most tastefully decorated, a feature of which was the display of small silk "Ensigns," symbolic of the firm's trade mark, and during the evening a vote of thanks was passed to Miss Henry for so ably carrying out this work. The attendance at this popular function is ever increasing, and among the guests was a large number of representatives of the manufacturing and retail trades. As usual, a most entertaining programme had been provided by the musical director, Mr. Phil Payne. Among the artists were Miss Mary Law, who rendered several charming violin solos, Mr. Alexander Prince, with his operatic classical concertina selections, Miss Lena Hutchings, Miss Ruby Wilson, Mr. Randell Jackson, and Mr. Philip Ritte, each of whom gave several highly appreciated vocal turns. Mr. Frederick Pardoe gave some original character impressions, and Messrs. Charles Wreford, Will Edwards, Harry Hall, Walter Walters, George Blackmore, and Wilden Knight contributed excellent and highly humorous songs and patter. Mr. Arthur C. Brookes proposed the toast of the firm, which was responded to by the company with great enthusiasm. Mr. George Houghton, senior, and Mr. Edgar Houghton briefly replied, and were cheered to the echo. During the evening there was a collection in aid of the Playgoers' Pantomime Fund for Poor Children, which resulted in the substantial sum of £13 0s. 6d. A well-deserved vote of thanks to Mr. Phil Payne and the artists was proposed by Mr. Percy Wright. Thus, shortly before midnight, another of the successful and much-enjoyed "Ensign" concerts was brought to a close by the singing of the National Anthem.

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## Correspondence.

**** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

**** We do not undertake responsibility for the opinions expressed by our correspondents.*

### THE LATE MR. SNOWDEN WARD.

To the Editors.

Gentlemen,—If the suggestion of "Professional Photographer" in your to-day's issue is adopted as to founding a memorial to the memory of this gentleman, I shall be glad to contribute my subscription to such a worthy object. How would a yearly lecture on the Traill-Taylor lines do for a suitable object?—Yours truly,

December 15, 1911. A Scottish Professional.

To the Editors.

Gentlemen,—You did no more than simple justice to the memory of the late Mr. Snowden Ward when you said that the news of his unexpected death would arouse widespread sorrow and a sense of personal loss. He was eminently a man of fine human feeling, with a warm heart for distress and a hopeful cheeriness in helping to alleviate it. The hard work he put into the carrying on of the Photographers' Benevolent Association was but part evidence of the way in which he sought to help those on whom a hard lot or evil times had fallen. You properly draw attention to the way he and Mrs. Ward worked together, and evidence of this may be quoted in an extract from a letter he wrote a sick friend when he was in the United States last winter. This short extract brings out the points you make in reference to his character.

Said he: "We are having a very busy, anxious time. . . . I wish I could write you at more length, telling some of the interesting experiences we are meeting, but time is much too short. We are both delighted to hear of your progress toward recovery, and to note your cheerful vein. Keep it up; in fact, keep 'em both up."

Could anything be more hearty and cheering than the spirit here indicated? But, as showing how near to the sunshine he always was, he sent, in his own handwriting, some rhymes by Captain Jack Crawford, the poet scout. These are manifestly of Transatlantic origin, but they have the true ring of a heart that wants to help those needing it. I hope many may make a copy of this bit of Crawford's—and use it—in memory of a good, warm-hearted Englishman, Henry Snowden Ward. I hope some tangible memorial to him may be forthcoming. This is Crawford's contribution:—

"When a bit o' goodness gits ye,
An' yer spine is feelin' proud,
Or a ray o' sunshine hits ye,
Peepin' underneath a cloud;
Just you pick it up an' fling it
To a feller feelin' blue;
For the minute 'at ye sling it
It's a boomerang to you."

R.

To the Editors.

Gentlemen,—Not a word of your eloquent notice of poor Snowden Ward's life is overdrawn; you do but bring home once again to his sorrowing friends a vivid impression of what they have lost by his sad demise. Has ever a kinder hearted man lived among photographers? And surely the influence that he exerted, encouraging, helpful, and always sympathetic, will not fade with the flowers on that newly-closed grave.

Personal contact with Snowden Ward was a welcome privilege. His features were cast in a mould that absolutely forbade pessimism on any subject or on any occasion, and one dreads to think how much we shall miss him. His greatest tribute is in our hearts, but the suggestion of a "Professional Photographer" in your issue of the 15th inviting you to start a fund for a memorial is probably endorsed by many of us who would like to subscribe also. I trust you may be able to open such a fund, and I enclose a cheque herewith in anticipation.—Yours sincerely, T. C. Turner.

Regent House, Anlaby Road, Hull.
December 19, 1911.

### A LIGHT-TIGHT WINDOW BLIND FOR THE DARK-ROOM.

To the Editors.

Gentlemen,—In reference to the paper by Mr. John H. Gear on "Fitting Up the Dark-room" in your issue of December 8, I purposely waited for a week to see whether anyone would make any other suggestions for blocking out the light from the dark-room windows, but having seen nothing on the subject I venture to send you a description of my own arrangement.

The room, 13 x 12ft., is on the first floor, and contains two windows facing east. As it is used for other purposes, I did not intend to have loose shutters, which, in my opinion, are very much in the way when not in use.

I had spring roller blinds (black) made of what is known as "Lancashire" blind material and fixed in the usual manner. At the top of the window frame there is screwed a strip of wood to which is fastened a piece of the blind material that forms a flap over the roller. At each side of the window there is a piece of wood hinged to the frame, and this, when the blind is down, folds against, and holds the blind tightly against the woodwork at the sides of the sashes. The blind should be made long enough to lie on the sill so as to exclude light at the bottom.

With the summer sun on the windows, a faint greenish light came through the blinds, but this was entirely overcome by having two thicknesses of the material on the same roller.

Mr. Gear complains of the expense of fitting proper blinds, but those described above can be fitted for about 5s. or 7s. 6d. each for an average size window, and if one is in a position to plane up the wood required, the cost would be lower still.—Yours truly,

E. Illingworth.

17, Avenue Road, Brentwood,
December 16, 1911.

### HALATION EFFECTS WITH IRIS DIAPHRAGMS.

To the Editors.

Gentlemen,—In your editorial remark on page 889 on the halation effects from small apertures, you say that it is not quite clear how the number of rays from an aperture with an even number of sides is equal to the number of sides, whereas an odd-sided aperture gives double the number of rays. This is simply due to the fact of all diffractional phenomena being symmetrically formed spectra, formed on either side of the central uncoloured image. Thus in the case of any aperture with an even number of sides the rays due to the diffraction from opposite sides coalesce.

In the case of an aperture with odd sides giving diffraction, however, the two directions of diffraction from each side are both effective in producing rays, so that in this case the number of rays is twice the sides of the polygon, as no two sets coalesce and neutralise, as in the even-sided aperture.

This is especially prominent in all astronomical instruments which depend on secondary mirrors suspended by wires or springs placed in the path of the light, and is the cause of the long rays seen projecting from the brightest of the stars in star photographs. In former times a three-wire support was used, and this always gave six rays, very disturbing to the picture, whereas when the modern four-wire support was adopted, we have now only four disturbing rays.—Yours truly,

C. P. Butler.

London,
December 12, 1911.

### METOL POISONING.

To the Editors.

Gentlemen,—It is rather curious that there should be at the present time numerous cases of metol poisoning among those who have been practically immune for many years, in spite of continued work with the chemical. In my own case this has occurred, and, I am glad to say, after the detection of the trouble, I have found a much more agreeable and certain remedy than the evil-smelling ointment application. Immediately the developing is finished, well rinse the hands in a weak solution of hydrochloric acid (about 2 to 5 per cent.), and then wash the hands, preferably with warm water. This decomposes the developer left in the skin, and in my case, at least, has completely cured the trouble.—Yours truly,

C. P. Butler.

London,
December 12, 1911.

### THE AUTOTYPE TRAINING SCHOOL FOR CARBON PRINTERS.

To the Editors.

Gentlemen,—In connection with our training school for carbon printers, to which you were good enough to refer in the "British Journal of Photography," of November 3, we are glad to inform you that the scheme met with an excellent response, and we have already booked the first six candidates to commence their training here on January 15. The applicants are all young people of exactly the class we were seeking, their ages ranging from 19 to 24. Some of them have signed on for two or three months, others for one month only. We expect by the end of February or the middle of March to have further vacancies to fill, and we shall be pleased to send particulars of our scheme to any further applicants who are interested in carbon and wish to take up the process professionally.

In connection with this idea we also propose to start a register of carbon printers. We are constantly receiving from our numerous customers inquiries for competent printers, and we hope by means of our register to place the parties in communication.—Yours faithfully,

The Autotype Company.

Autotype Works, West Ealing, W.
December 18, 1911.

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1s. 7d. *each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photographs Registered :—

W. Berry, 101, South Street, Rochdale, Lancs. *Photograph of Mr. J. Baxter, Captain of the Rochdale Hornets Football Club, with the Lancashire Senior Cup, won by the Hornets Team this year.*

Shutter Blinds.—Can you suggest efficient remedy of pinholes in blind of roller shutter?—Shutter.

Apply "Blox," sold by Kentmere, Ltd., with a camel-hair brush to the blind at two applications, allowing first to dry before putting on the second.

Canadian Copyright.—Would you please let me know if by registering a photograph in England I am protected in Canada, as I am told that I must copyright photographs in Ottawa to be protected here in Canada?—R. Dasnieres.

A leading authority on copyright, W. A. Copinger, states that the British Act of 1862 does not confer imperial copyright, and a British artist can only obtain copyright in his pictures under the Canadian Acts. These require two copies to be deposited at the office of the Minister of Agriculture.

Black Varnish.—Will you kindly give me the best and easiest way of making and applying black varnish for glass and inserting a gold line round the edge for old-fashioned prints, etc.—Reader.

So far as we know, no method of doing this has been published, but we are informed that the line and margin round the opening are done first in gold leaf, and when thoroughly dry the black varnish is painted on. The details are a trade secret, but we should imagine that the gilding should be done upon an aqueous medium such as albumen, so that it would not be disturbed by the black varnish. You would find Bates's black answer well for the latter.

Intensifying Paper Negatives.—I want your help on a matter I think I have mentioned to you before. I intensify a paper negative with mercury, and blacken with ammonia. I wash well, but don't use any acid. On exposure to a bright light for a few minutes the paper discolours badly in patches (see enclosed). Please help me to prevent this. There must be some sort of process that will stop it. I leave it with you.—E. G.

Stain is to be expected if you use no acid. Pass the print through three or four baths of 4 per cent. hydrochloric acid after bleaching, then wash well before using the ammonia.

Dark-room Top-light.—I have been most interested in the recent notes in the "Journal" on the fitting-up of dark-rooms, particularly in relation to the lamp placed near the ceiling of the dark-room so as to show its light upon the latter. Taking it as a fact that the room can be made absolutely dark, I should be obliged if you would state what you think would be the best shade and character of colour in which to paint the ceiling and walls in order to be helpful to the above lamp, and for general comfort in working.—A. H. L.

An ordinary light paper. If the illumination then given (by reflection from the walls of the room) is too much, and proves unsafe for plates, it is an easy matter to put another thickness of canary or orange fabric on the top-light.

**Efficiency of Focal-plane Shutter.**—I have a half-plate camera, with a 10½-in. lens. Will you kindly tell me the efficiency of the focal-plane shutter, which works ¾ inch from the plate, and indicate the formula by which the shutter efficiency is determined?—H. W. S.

If you refer to the leader in our issue of November 3 you will find this matter fully dealt with. The efficiency cannot be determined independently of aperture and slit width, and the figures you give only enable us to tell you that the diameter of the light pencil in the plane of the shutter blind is one-fourteenth the diameter of the effective aperture of the lens. If $a$ is the slit width and $b$ the diameter of the pencil, the efficiency is equal to

$$\frac{a}{a + b}$$

**Bromide Printing.**—Would you oblige me with the information I require to the query as under? 1. Is a machine, and what sort, necessary for printing toned bromide cards in quantities at cheap rates? 2. Are the cards printed in sheets, or separately? 3. Is the machine necessary? 4. Can you recommend a machine, and at what price? Any information you can give me will be greatly appreciated.—Bromona.

Certainly, a machine is necessary. The type depends on the proposed scale of working. For moderate numbers, a thousand or two a week, a hand feed type of machine may be used, printing each card separately, but for greater editions a machine for exposing the bromide paper in the roll is necessary. One of moderate size, such as we should judge suitable for your requirements, is made by E. Graber, Tunbridge Wells. Negatives for thus printing in the roll are mounted together, evened up as regards density by working on the back, and printed twelve or sixteen or twenty at a time.

**Resistance for Arc-light.**—We should be glad if you could let us know what we ought to have with photographic arc-lamp on alternating current. We have received with this an ordinary resistance, but two electricians here who fit for this current both say that it is the wrong thing, we ought to have a compensator or choking coil (I think they said), something like an induction coil. Are the electricians wrong, or is it that the lamp makers have not understood and sent the wrong thing? We sent full particulars as to the kind of current, voltage and periodicity. Why we ask is because we required this for printing, but cost (2s. 3d.) per hour at 3d. per unit puts this out of the question.—P. C. H.

A choking coil is often recommended for use with arc lamps working on alternating current, as there is less waste of current than with the ordinary resistance, but without particulars as to make of lamp, etc., we cannot say whether it would be desirable to make the alteration in your case. Why not inquire from the firm who supplied the lamp why they fitted a resistance, and whether the amount of current consumed is abnormal?

**Flashlight.**—In taking flashlights of subjects at different distances from camera (for example, a dinner held in a long room), I fail to get enough density on negative of the receding distance, due, of course, to the illuminant (used behind camera) falling off. Have tried more powder, in fact, enough to cause a general veiling over plate, with result that foreground gets choked up and the distance still does not seem satisfactory. Could you advise me on this matter? Should like to see an article in the "Journal" by an experienced flashlight operator.—Novice.

The rapid decrease in illumination of which you complain is due to the well-known fact that light decreases in its intensity in proportion to the square of the distance. Thus, when photographing a dinner group, if the nearest figures are 8ft. from the camera, and the most distant 40ft., the latter only receive one-twenty-fifth of the illumination, compared with that which falls upon the foreground. The only way to remedy this is to have a second light screened from the camera about half-way down the room. Much may be done in development, by using a weak solution so as to secure all detail before the nearer figures are too dense. With such subjects the persulphate reducer is invaluable. Keep your light as high as possible.

**Intensifier.**—1. Which intensifier is most suitable to use when intensifying part of plate? I find mercury and ammonia leaves a slight difference in colour between the part that has and that which has not been treated with intensifier. 2. I also find intensifier negatives show considerable graininess on enlarging. Can you give formula of method to avoid this defect.—Norvic.

When intensification is employed locally a difference in colour is almost inevitable, but it is not of the least consequence in a negative, though it renders local intensification quite an impossible operation in the case of a positive. We do not think that it matters much what intensifier you use. Single solutions, such as uranium, are generally favoured, because when a process which involves bleaching is employed the bleaching action is apt to spread during the washing between bleaching and blackening. If the bleacher is thickened with glycerine and applied very carefully this trouble can be avoided. We have used most intensifiers locally without trouble. 2. This is a common effect with most intensifiers. Uranium is perhaps the one that gives least graininess, but it is a little uncertain in this respect.

**Ives' One-exposure Camera.**—On page 649 of the 1912 "Almanac" there is a brief description of a camera devised by Mr. Ives for three-colour work. In the text, the function of the large condensing lens, 4, is said to be to render the cone of light from the objective, 2, parallel. If this is done, obviously the image will not be brought to a focus on the plates, and it greatly puzzles me to perceive the use of the large lens. As I take a great interest in three-colour work I should be greatly obliged if you could say a little more about this particular camera on your "Answers to Correspondents" page. If the camera had not been designed by Mr. Ives, I should have concluded that the design was based on erroneous optical notions.—J. G. Capstaff.

According to the patent specification the lens is intended approximately to parallelise the light pencils diverging from the objective, which, of course, it can only do by rendering the pencils themselves more convergent. In effect, it shortens the focus of the optical system, and also renders the angles of reflection from the mirror more nearly equal. This is necessary, otherwise the division of the light by the transparent mirror into reflected and transmitted rays would be very unequal in different parts of the image. If you look up the "B.J." for June 9 of this year you will find the matter fully explained in the patent specification.

◆

**The Re-decoration of a Studio.**—Since publishing the article on the studio of Messrs. Gregg, Couper, and Co., of Watford, we have been interested in learning that the re-decoration was carried out by Messrs. Marion and Co., Soho Square, W.

**Retirement of Mr. H. Carter.**—Owing to the retirement into private life of Mr. Carter, who for many years was in charge of the old-established business of Sands, Hunter, and Co., its control will from January 1, 1912, be vested in Mr. A. Oglesby, who has gained valuable experience in leading firms elsewhere, and in whose hands the high reputation of this well-known business (formerly carried on in Cranbourn Street, and now in Bedford Street, Strand, London, W.C.), will doubtless be fully maintained.

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# THE BRITISH
# JOURNAL OF PHOTOGRAPHY.

No. 2695. Vol. LVIII. FRIDAY, DECEMBER 29, 1911. Price Twopence.

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## SUMMARY.

The Index to the 1911 volume of the "British Journal," and to that of the "Colour Photography" Supplement, are presented with this issue. A note on the method used in compiling the index appears on page 985.

In an editorial article on page 986 we endeavoured to point out the advisability of a photographer annually taking stock of the furniture, apparatus, materials, specimens, etc., in his establishment. Such a work calls for a very moderate amount of labour, but is of considerable benefit in many ways.

The most common causes of brownish stains on prints and negatives are dealt with in a leading article on page 987, from which it will be seen that the composition and mode of use of the fixing bath is a prime cause of such stains.

Major-General J. Waterhouse, in a valuable paper in Penrose's "Process Year Book," deals with the work of Poitevin and shows immense application of discoveries by the French experimenter in photo-mechanical processes. (P. 993.)

Drs. E. Stenger and H. Heller have made experiments on the quinone reducer, which they find not to give the pronounced action on the higher densities, such as is obtained with persulphate under certain conditions. Addition of chlorides, or of much sulphuric acid, causes the quinone reducer to act very much like that of Farmer. (P. 988.)

At the Croydon Camera Club Mr. A. Catherine recently pleaded for a wider adoption of stereoscopic work. (P. 992.)

A German worker, R. Beckers, draws attention to the usefulness of developers for P.O.P. and gives a number of formulæ. (P. 996.)

An American scientific worker has described the photographic methods employed in recording the sound-waves produced by a vibrating flame. (P. 989.)

A correspondent writing from the Western Canadian town of Winnipeg gives some interesting particulars as to the class of photographic labour most in demand in the Dominion with some idea of ruling prices for portraits. (P. 999.)

Mechanism for handling non-perforated cinematograph film and also similar film in endless bands, figures amongst "Patents of the Week." (P. 998.)

## EX CATHEDRA.

**What of the Year?** Photographically the twelve months, which come to an end on Monday next, have not been of pronounced interest, so far as technical advances are concerned. The days have unfortunately gone by when new productions in the way of developers, plates, papers, or lenses lent an added zest to the practice of photography, and the last few years have been notable chiefly for advances which take the form of finishing touches to products of known character. In the realm of dry-plate emulsions, the details which have been published in regard to the hydrazine plates, which are promised upon the market by the Paget Dry Plate Company, offer a subject of great interest, and would seem to hold forth very considerable advantages, particularly in their use for subjects of abnormal difficulty. Apart from this technical item of progress, the interest of professional photographers, at any rate, will centre in the coming year around the new Copyright Act, which in many respects completely revises the old Act of 1862, although the decisions of the Courts given under the 1862 Act are applicable in some cases to the new legislation. The final draft of the new Act, in the form in which it has received the Royal Assent, is to be published during the next few days, and, as we have previously announced, we shall deal with its provisions as they specially apply to photographs at an early date.

* * *

**The "B.J." Index.** With this issue of the "British Journal" we present the Index to the 1911 volume, a work of compilation which, it may perhaps interest our commercial readers to learn, is a good instance of the efficiency of the card or slip system of entries. It is our habit to prepare each separate entry which appears in the Index week by week as the "Journal" is published, and to assemble, and in some cases arrange, these entries at the close of the year. The final printing of the Index, since the latter includes this week's contents, has to be done at considerable pressure, and, therefore, it is necessary that the copy sent to the printers should be as clean and distinct as possible. Typewritten entries being thus called for, we may perhaps mention a little time-saving device which saves a good deal of the labour of putting each separate card or paper slip into the typewriting machine. We use a stiff sheet of cartridge paper divided by thin rules into four sections. This allows of four entries being typed with one insertion of the paper into the machine. Each sheet is then quickly cut into four with an ordinary print trimmer, and the separate slips, which then measure about 8 x 2½ inches, filed in a cabinet of the ordinary form provided with alphabetical guide-cards. The method may perhaps be of service to photographers who make use of the card or slip system in filing addresses of customers, in regard to which it is of course of particular importance to have a perfectly clear inscription.

* * *

**Artificial Light in the Studio.** The past winter season has witnessed a further and, so far as our correspondence indicates, a much greater movement in the direction of artificial light in the studio than ever before. With the question of the selection of the form of artificial illumination we have dealt from time to time both in editorial articles and in replies to correspondents. But we may say here, in answer to a query which very frequently reaches us, that the counsel sometimes made to use artificial light to the total exclusion of daylight is one which we must characterise as ill-advised. For one thing, the ordinary daylight can be used almost throughout the summer and to a considerable extent in the winter, and, therefore, is advisable on the score of economy. But there is also another and an even more cogent reason for retaining daylight when the surroundings of the studio render such a course possible. It is this: Though portraiture made by the best artificial light can be technically equal to that done in daylight, yet it is a very common experience to find that the daylight portrait has some indefinable quality which the photographer perhaps cannot appreciate, but which is recognised by the friends of the sitter as resulting in a better likeness. We have constantly learnt from professional photographers, who had spared no expense in equipping an artificial light installation, that when they submitted to a sitter proofs, some done by daylight and some by artificial light, it was usual for the sitter to return bringing the daylight portraits as the selection by his friends on the ground of better likeness. On this account, therefore, quite apart from the commercial considerations—which latter render artificial light often of the highest importance—a good deal of thought should be given to the selection of any room for a studio before casting away the opportunity of using ordinary daylight.

* * *

**Warm and Damp Air.** The trying succession of wet weeks which we have experienced of late has brought to us quite a number of inquiries from photographers on the trouble experienced in drying prints or negatives. A spell of wet weather causes the air to become more saturated with moisture, but it must be borne in mind that simply to warm such air does not have as great a drying effect as might at first be supposed, since warming allows the air to take up still more moisture. Particularly under such conditions as this it is of more importance to provide a constant change of air over negatives or prints than it is to resort to any great degree of warmth. The best system is to arrange matters so that the source of heat for the drying of the gelatine film, which exists both on negatives and papers, is one which can be kept steadily going, and thus both warm the air of the room and at the same time create a slow but continuous current. A room which is warmed by one of the economical anthracite stoves serves excellently for this purpose, since not only are negatives warmed by ordinary conduction, but if placed a few feet away from the stove and preferably about on a level with the top of it, they will receive heat by radiation in addition. Even with the best pattern of anthracite stove the dust produced on emptying the ash-pan is a somewhat serious drawback, and it becomes necessary to give the strictest orders as to not tampering with the stove when materials are placed in the room to dry.

## STOCKTAKING AND STOCKKEEPING.

In almost all businesses the annual stocktaking is regarded as one of the most important of the transactions of the year, with the end of which many make it synchronous. Government departments, with what some malicious folks would regard as remarkable appropriateness, date their stocktaking from the 1st of April, but the majority of private firms ascertain the value, nominal or real, of their goods and chattels as on the 31st of December. We think, however, we are not wrong in saying that a comparatively small number of photographers, except those who have to issue a balance-sheet, ever take the trouble to ascertain what their stock and plant is worth from time to time. Stocktaking is not a lengthy operation, and it can hardly fail to be a remunerative one. Discoveries are made of forgotten goods, and sometimes even of forgotten orders. Another very important benefit derived from the practice of a periodical stocktaking is the ability to furnish a correct inventory in case of fire or burglary.

The method of procedure is simple, and for the benefit of those who have had no experience of this sort of thing we may say that it is nothing more than making a careful list of every item of stock and apparatus which is upon the premises on a certain date, including such as may be in other places for repair or treatment. A quire of foolscap ruled with money columns, and a pencil form the necessary outfit, and with these a start may be made in the reception room. Here all framed pictures, miniatures, empty frames, rims, and everything which cannot be classed as furniture, should be carefully listed and the actual value placed opposite each item. Every cupboard, drawer, and shelf should be explored, the stack of stationery not being overlooked. If an advertising account is kept, price-lists and booklets should not be included as assets, but if not, they should, if up to date, be reckoned at cost.

In the studio, all apparatus should be listed, note being taken of the serial number upon the lenses, so that they can readily be identified in case of theft. Outdoor sets should be overhauled and seen to be complete with their proper quota of slides, carriers, shutters, etc. It is difficult to say what value should be placed upon apparatus, but as a general rule, for good articles more than a year or two old, half list-price will be a safe valuation. Obsolete lenses, such as the old doublets and triplets, are of little cash value, and should not be entered at more than a pound or two a-piece, even if of large size. Plates should, of course, be taken at net cost, unless they are not fresh, when it is best to pass them over or to place a nominal value upon them.

In the work-room, the quantity and condition of all mounts should be noted, full price being placed upon current sorts, and due allowance being made for old styles. Mountants, tissues, post-wrappers, etc., are taken at cost price, and rolling and dry-mounting tackle valued according to age and condition. Besides the actual business value, a periodical stocktaking has a good moral effect on both the photographer and his staff. To the former it recalls unwise purchases, and reminds him of items which have been overlooked and which should be disposed of by use, sale, or destruction. Lenses which have been superseded by more modern ones should be realised for what they will fetch, rather than gather dust in a cupboard. Mounts which were in fashion the season before last can be brought forward for cheaper work, and apparatus that has been laid aside through temporary disablement should be repaired and put into commission again. The effect upon the staff is even greater and more profitable to the principal. The certainty that every parcel of mounts and every piece of apparatus will be examined will ensure more careful handling during the entire year. Probably 5 per cent. of the larger and more expensive class of mounts are wasted through defective wrapping after the packages are first opened, a loss which could be easily avoided by closer supervision. The keeping of a proper stock-book involves a considerable amount of work, but in a business of any magnitude it pays to devote a special assistant to such work. Every item should be entered, and it should be possible to tell at any time what stock of any particular article should be in hand. Waste from carelessness or peculation can be at once detected, and the possibility of a dishonest assistant being able to open a special shop to dispose of his plunder could not exist, although such a case did actually occur in a non-stock-book concern not many years ago.

## BROWN STAINS ON PRINTS AND NEGATIVES.

One of the most frequent queries we receive concerns the origin of certain stains on either prints or negatives, and while the querist seldom gives us enough information to enable us to determine the exact source of his particular examples, it is nearly always obvious that they are due to one of two or three causes. One cause is oxidised developer. The effect of this must be distinguished from that of a staining developer, such as pyro-soda. In both cases the staining agent is oxidised developer, but while in the one the effect is uniform and characteristic of the formula used, in the other it is accidental and dependent, not on the formula, but on the undue exposure to air of the image when full of developer. It is usually caused between development and fixing, and is, therefore, not often met with on plates which are totally immersed in a fixing-bath immediately after development. It is, however, often produced on films and prints, because from their curling nature the immersion of these is frequently incomplete. The corners and edges curl up out of the fixing-bath, and so are exposed to the air before the fixing-bath has washed out or destroyed the developer. Local stains are then almost inevitably produced. The preventive is simply a little care in immersing the films and prints. Plenty of fixing-bath should be used, and if in the first instance the prints are immersed face down, there is little danger. Most people, however, prefer to put bromide prints in face upwards, because after a minute's immersion the tone generally changes, and the quality of the print can be better estimated. A glass rod should then be kept handy for pressing down the print when first immersed, and until it sinks to the bottom of the dish. An acid fixer will not prevent stains of the kind we are considering, for parts containing developer and exposed to the air outside of the fixing-bath will discolour, whatever the nature of the fixing-bath. It has, however, the advantage of more rapidly destroying the developer, and therefore a very brief complete immersion in an acid fixer will obviate all danger, a longer time being necessary in the case of a plain hypo bath.

The next important cause of stain is imperfect fixing, but stains due to this will not appear so rapidly as developer stains. In fact, a certain amount of light is apparently necessary to make them visible, hence they are not usually seen until the plate or print is dry. Curling may again cause these, for it is evident that a part of a print that has curled up out of the bath and remained so during the greater part of the period of fixing cannot be perfectly fixed. The hypo may have destroyed the developer and so prevented developer stain, but, still, it has not had a chance to fix the print. Another very common cause is the sticking together of prints or films under the fixing-bath. The parts in contact do not get the full effect of the bath, and so remain only partly fixed. Other causes are the use of exhausted baths or of baths that are too weak, and, very often, fixing for too short a time. The object of the fixing-bath is to remove the undeveloped salts of silver, but it does not do this for some considerable time. When the milky-white parts have just disappeared, the silver salts are not removed by any means, they are merely converted from the visible white bromide or chloride to an invisible solution which is still in the film. This is a solution in hypo of a silver thiosulphate salt which is insoluble in water, and therefore not removable by washing. If the print or negative is taken out and washed at this stage, the silver salt will be precipitated in the film, and will speedily discolour in the light. This thiosulphate is, however, soluble in hypo solution, which converts it into another form of thiosulphate soluble in water, and therefore hypo is the only medium that will wash it out of the film, and also the only one that will render possible the removal of the last traces in the ordinary washing operation. Obviously, it is very important to secure perfect fixing, and, while we must guard against local hindrances to fixation, such as those already referred to, we must also make sure that sufficient time is given. One method of ensuring sufficient time is to fix for twice the time necessary to cause the bromide to disappear. Another is to transfer to a quite fresh fixing-bath as soon as the bromide has gone. The latter is the best method, because, first, it ensures the use of a bath that is not overloaded with dissolved silver, and, second, because it involves the disturbance and stirring up of the bath, which materially aids the second or washing-out stage of the fixing operation.

The third cause of stain is decomposition of the hypo, due to the use of alum, the effect of which may virtually amount to a local sulphide toning effect in the image. Hypo is very readily decomposed by alum, and many stains may be attributed to the use of alum, either immediately before or too soon after fixing. By proper mixing, alum may be used in the fixing-bath itself, and if formulæ such as those given in the Almanac are selected there is no objection to its use, but the employment of a separate bath before fixing is always risky, and should be avoided, while it should not be used after fixing until washing is known to be complete. In no case can we advise the use of potash alum, which is so often used on account of its cheapness. It is seldom pure, and its most common impurity is iron, which readily attacks the image. We have, in fact, met with samples of alum that were quite powerful reducers. Also, alum solution often contains fungi, which grow readily in it, and may quite easily be planted in the gelatine film. As a hardener of the film, it is very ineffective compared with chrome alum or formaline, and if a hardening bath is required at all Lumière's chrome alum and hypo fixing-bath will do all that is required very safely, effectively, and rapidly. Some workers are apparently in the habit of always using an alum bath between development and fixing. We do not know why, and doubt if they can give any evidence to justify such use. Our advice is to avoid it most carefully.

A fourth cause of stain that is popularly supposed to be the prime source of most troubles is imperfect washing, and when we say that in the case of negatives we do not believe this to be a factor of any material moment, we shall probably be accused of heresy. If, however, a plate is perfectly fixed in a generous allowance of clean hypo bath it stands to reason that the amount of silver salt present in the film must be quite infinitesimal, while experiment shows that the hypo left in is very rapidly washed out. The case is somewhat different with prints, because the paper holds a much larger quantity of hypo. Longer washing is necessary with them, but even if this is imperfect, the effects are not apparent for a considerable time. When they do appear they generally take the form of a yellowing of the whites, and a fading or bleaching of the image. When a brown stain appears in a fresh print it cannot be due to imperfect washing out of the hypo, because neither the colour nor the time will permit this assumption. If not a developer stain, it is almost certainly due to imperfect fixing. It may be noted that the effect of decomposed hypo varies with the cause of decomposition. If this is rapid, as in the case when alum reacts with the hypo, a brown tone, similar to that of sulphide toning, will be given to the image, the whites probably remaining quite clear. Bleaching and redeveloping the image will probably cure this effect completely if the bleaching is thorough. The slow effect of time will, however, produce a quite different result, the chief characteristic of which is a yellowing of the whites, as before stated. This, also, is generally the chief result of applying an acid bath too soon after fixing.

It is not always easy to distinguish the various causes of stains, but the following hints may serve as a rough guide.

Developer stain will generally cover both whites and image, while the result of imperfect fixing is mainly apparent in the whites. The action of alum on the hypo will, on the other hand, generally be confined to the image. The action of acid on hypo generally produces a yellowness of the whites, the general effect being similar to that produced in the course of a longer time when washing is imperfect.

## THE LUMIÈRE QUINONE REDUCER.

(In the following note in a recent issue of "Photographische Rundschau," Drs. E. Stenger and H. Heller record the result of their tests of the Lumière quinone reducer as regards its effect under different conditions on the gradation of the negative.—EDS. "B.J.")

IN their description of the new quinone reducer, the inventors, MM. Lumière and Seyewetz,[1] describe it as possessing properties similar to those of ammonium persulphate. As we have shown in previous papers,[2] the characteristic mode of action of persulphate is obtained only under certain definite conditions, and it has, therefore, appeared to us of interest to examine the conditions under which the quinone preparation should be used.[3]

To begin with, it should be repeated that ammonium persulphate exhibits the characteristic persulphate effect[4] when the solution in water contains haloid salts (chlorides, etc.) in extremely small proportions. When the persulphate is dissolved in distilled water it gives a progressive or proportional action. It is only when extremely weak solutions are allowed to act for a long time that a plain solution in distilled water gives, to a lesser degree, the characteristic persulphate or super-proportional effect, but in these conditions the use of the reducer is scarcely practicable. In making the tests we used graduated test plates made in the Scheiner sensitometer, and measured, before and after reduction, in the Martens polarising photometer. We used as the reducer the formula of the inventors, namely, a ½ per cent. solution of quinone in distilled water with addition of 1½, 2, 2½, or 10 ccs. of strong sulphuric acid in 100 ccs. of water. To these solutions, in certain cases, addition was made of sodium chloride in quantities corresponding with the average content of chlorine in ordinary town-supply water, namely, from 30 to 120 milligrammes of chlorine per litre. The time of action was likewise caused to vary from 3 to 10 minutes, and the temperature was also varied from 62 to 75 deg. F.

It should be mentioned that in our experience the presence of haloid salts in solutions used in many photographic processes plays an important part. It is so in the case of the ammonium persulphate reducer, and, as will be seen below, the quinone reducer is likewise appreciably influenced by the presence of chlorides.

The quinone reducer, when made up with distilled water, has an action which places it midway between reducers of the surface type and those of the progressive type, being nearer in its effect to the latter, and still more so the longer the time of action. Even when used for a compartively short time on the negative, all densities over 1.5 are reduced in approximately correct proportion. When increasing the addition of sulphuric acid the intensity of the reduction (no reduction takes place until sulphuric acid is used) increases. A considerable addition of sulphuric acid makes itself noticeable in exerting an effect similar to that of the surface or Farmer type of reducer. There is actually a general correspondence between the effect of the persulphate and of the quinone when made up with distilled water: both reducers exert a proportional or progressive action, and in the case of both the reduction of the higher densities is more nearly proportional than is that of the lower densities. The quinone reducer works very considerably more slowly: a ½ per cent. quinone solution (containing 2 per cent. by volume of sulphuric acid) requires about twice as long for the same degree of reduction as a 2 per cent. solution of persulphate in distilled water. With a longer time of action the persulphate reducer works quite proportionately, and, further, as already mentioned, exhibits the characteristic persulphate or super-proportional effect, an action which cannot be obtained with quinone; even after ten minutes this effect is not secured, although the plate is strongly acted upon throughout all densities.

Coming now to the quinone reducer made up with water containing chlorides, this latter is quite different in its behaviour from the persulphate reducer made up in a similar way. The visible course of the reduction is quite different. After a few seconds the plate assumes a white deposit, beginning in the shadow portions, through formation of silver chloride. The quinone solution remains perfectly clear, the silver chloride being formed only in the film. In the sodium sulphite bath, which is used as a stop of the reduction, the silver chloride quickly disappears, the lighter areas of the test-plate being completely dissolved, whilst the greater densities are reduced to a greater or less degree. The number of density areas which are thus entirely cleared away (complete conversion into silver chloride) depends on the time of action and on the proportion of chloride in the solution. In similar circumstances, when using persulphate, a certain protective action comes into play on the lower densities. With a chloride quinone reducer, the reduced plates, when placed in a hypo or sulphite bath, undergo alteration of the gradation, the shadow portions being completely cleared off; in the case of similar plates reduced with a chlorided persulphate solution the action of the fixing-bath does not give rise to such change to any appreciable extent, by the addition of sulphuric acid in the way already described.

Addition of sodium chloride to the amount of .005 per cent., or 30 milligrammes per litre, does not appreciably affect the reduction; increasing the quantity to .01 per cent., or 60 milligrammes per litre, causes an appreciable increase of the reduction, particularly in the lower densities, so that when used in this way the reducer acts more like one of the surface or Farmer type. With a further addition of chloride this change in the action of the reducer becomes still more pronounced, so that in the case of a solution containing .02 per cent., or 120 milligrammes per litre, of chloride the effect is very similar to one of the Farmer's reducer.

Raising the temperature of the quinone reducer appreciably hastens the reducing process in all cases.

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[1] "B. J.," Aug. 19, 1910, p. 625.

[2] "Phot. Rund.," 1910, p. 199. "Zeit. für Wiss. Phot.," 1910, p. 73. "Zeit. für Repro.," 1910, pp. 162, 178; 1911, pp. 5, 20, 34, 50, 70.

[3] A complete account of the measurements was published in "Zeit. für Repro." during 1911.

[4] As regards the nomenclature of reducers, see Schuller, "Phot. Rund." 1910, p. 161, and Luther, "Phot. Rund.," 1910, p. 165.

The quinone reducer removes fog from the plate to a very appreciable extent, especially when made up with chloride, and thus gives exceedingly clear negatives. As a rule, the black colour of the silver image remains unaltered; only with an addition of sulphuric acid which exceeds what should be usefully employed does the reddish-brown coloration of the image occur. The strong clearing action and the production of a black silver image confer upon the quinone reducer, made up with distilled water, an advantage over the persulphate reducer made in the same way, the practical effect in each case being very similar. Made up in distilled water, the quinone reducer has thus a progressive or proportional action, whilst that made up with chlorides is more similar in character to a surface or Farmer reducer. Under no circumstances, so far as we have been able to find, does the quinone preparation give the super-proportional or characteristic persulphate effect on the highest densities. It may, however, be mentioned, in reference to other experiments which we have made, that we are unable to confirm the view of the inventors in attributing the effect of quinone reduction to a species of physical development. We shall deal in a later paper with the considerations outlined by Dr. Lüppo Cramer[5] on the effect of chlorides on ammonium persulphate, quinone, and other oxidising agents used as reducers.

For the present our conclusions may be summarised as follows :—

(1) The Lumière quinone reducer, when made up with distilled water, gives proportional reduction throughout a scale of densities as does the persulphate reducer when likewise made up with distilled water.

(2) In addition to this proportional effect a surface or Farmer kind of reduction is favoured by

(a) short time of action;
(b) increase in the sulphuric acid;
(c) (a very pronounced effect) by addition of chlorides which, when present to the amount of .02 per cent., cause the reducer to be almost exactly similar to that of Farmer.

E. Stenger.
H. Heller.

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[5] "Phot. Korr.," 1910, p. 489; "Phot. Woch.," 1910, p. 441.

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# PHOTOGRAPHIC RECORDS OF SOUND-WAVES FROM A VIBRATING FLAME.

[The following paper, by Mr. J. G. Brown, of Stanford University, published in the current issue of the "Journal of Physical Science," describes the method used by the author in employing photography to record the forms of sound-waves from vibrating flames.]

Vibrating flames are commonly classified as singing flames, sensitive flames, and manometric flames. The singing flame was first observed by Higgins[1] in 1777, soon after the discovery of hydrogen. The term singing flame is now usually limited to flames which vibrate in a pipe or other resonator. The sensitive flame was first observed by Le Conte[2] in 1858, and any naked flame which vibrates under the action of sound waves is termed sensitive. In 1862 Koenig[3] devised his manometric capsule, and he called the flame which was made to vibrate by means of the capsule a manometric flame.

In the study of vibrating flames two distinct optical methods have been employed. The method of the revolving mirror was first applied by Wheatstone[4] in 1834 to the singing flame. Tyndall,[5] Barrett,[6] and others made observations by this method upon both the singing and sensitive flames.

The stroboscopic method of observation was devised by Toepler[7] in 1866. As a means of examining the action of the vibrating flame this method is unsurpassed; because the different phases of the vibration may be observed and studied at will, and made to succeed each other at any desired rate.

### Flame Pictures.

When Koenig devised his manometric flame he used the revolving mirror method of observation, and called the view which he thus obtained a flame picture. In his attempt to analyse the vowel sounds, Koenig[8] sketched a number of these flame pictures. Later, the flame pictures were photographed by Doumer,[9] Merritt[10], Hallock,[11] Nichols and Merritt,[12] and Austin.[13]

It is very evident that the flame pictures are in no sense time-displacement diagrams of the sound waves producing them. They are overlapping images of successive phases of the vibrating flame, and the wave form can only be inferred approximately from such a result. The luminous tip of the vibrating flame is not a definite thing which vibrates vertically. The stroboscopic observations of Toepler[14] and the photographs of Marbe and Seddig[15] show that the flame consists of alternating expansions and contractions which continually move upward and burn out as they rise. The expansions are much brighter than the contractions, and often are the only luminous parts of the flame. If the variations in pressure are quite small as compared with the mean pressure of the gas, the shape of the flame changes very little, and the tip executes a vertical vibration. In this case, the flame picture approaches a time-displacement diagram, but the distortion due to the upward moving enlargements and contractions is always noticeable. If the variations in pressure are large, the change in shape of the flame is very marked, the tip becoming mushroom shaped. Or if the change in pressure is large and sudden, a vortex ring is formed which separates entirely from the main body of the flame.

On account of this complicated action of the vibrating flame, the flame pictures have never been very successful as a means of analysing sound waves. Some time ago it occurred to me that certain modifications in the flame and in the method of making observations might result in obtaining a time-displacement diagram which would give the wave form with considerable accuracy. The chief object of this paper is to describe some attempts which I have made with this object in view, and to present some of the records obtained.

My plan has been to vibrate a flame with sound waves of known form, and then to modify the conditions until the wave form was obtained. The sound wave from a telephone receiver vibrated by the alternating current of the lighting circuit was used as a standard source for all preliminary trials. The arrangement was very similar to that used by Austin,[16] and later by Marbe.[17] The oscillograph record of this circuit was extremely close to a sine curve, and the vibration of the telephone disc, when tested by the method of D. C. Miller,[18] was found to be almost simple harmonic.

### Smoke Records.

The first modification which I tried suggested itself to me while I was repeating the smoke ring experiment of Marbe.[19] This consisted in projecting the jet tube at a considerable angle away from the vertical, keeping it perpendicular to the direction of motion of the paper, and allowing the tip of the smoky acetylene flame to come in contact with the paper. My idea in doing this was that the variations in pressure which tend to lengthen and shorten the flame might give the tip a transverse vibration which would be indicated by the deposit of soot. I soon found that with proper adjustment of the jet the soot was deposited upon the paper in lines and bands. (See Fig. 1.) A very fine line (a) was formed by a thread of soot which appeared to come from the centre of the flame. A coarser line (b) was formed by a thread of soot which came from the forward side of the flame, i.e., from the side in the direction in which the paper was moving. A similar thread came from the backward side of the flame, but it was not deposited upon the paper. A heavy, narrow band of soot (c) was deposited from the near side of the flame, i.e., from the side nearest the jet, and a light, broad band (d) came from the far side of the flame. This result was obtained with a jet tube having an opening about 1 mm. in diameter, projected about 65 degrees away from the vertical, with the opening about 2 cm. from the paper, and with a gas pressure of about 2 mm. of water. The paper was in the form of a belt upon two brass drums. One drum was rotated by an electric motor, and the flame was placed under the other drum. The paper moved past the flame with a velocity of about 75 cm. per second. When the flame was vibrated by the telephone receiver the lines and bands of soot were deposited, as shown in the right half of Fig. 1. It will be noticed that the fine line (a) indicates only the longitudinal vibration of the flame, and comes the nearest to being a sine curve, hence represents most nearly the form of the sound wave. The coarse line (b) indicates the longitudinal vibration of the flame fairly well, but it is not a sine curve, the distortion being due to the expansions and contractions of the flame. This distortion might be expected from the fact that this line is deposited from the edge of the flame, while the fine line is deposited from the centre of the flame. The narrow band (c) shows the longitudinal vibrations to some extent, but on account of the transverse vibration the soot from the band is deposited heavier on certain areas when the relative velocity between the edge of the flame and the paper is small, and lighter on other areas when the relative velocity is large. This produces an interesting pattern which characterises the vibration, but is difficult of interpretation. The broad band of soot (d) shows this effect of the transverse vibration to a marked extent. I am inclined to think that the formation of the rings observed by Marbe is explained in the same way.

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[1] "Nicholson's Jour.," 1, 129, 1802.
[2] "Am. Jour. of Sci.," 75, 62, 1858.
[3] "Pogg. Ann.," 122. 242, 1864.
[4] "Phil. Trans.," 1834, p. 586.
[5] "Phil. Mag." (4), 13, 473, 1857.
[6] "Phil. Mag." (4), 33, 26, 1867.
[7] "Pogg. Ann.," 128, 126, 1866.
[8] "Phil. Mag." (4), 45, 1 and 105, 1873.
[9] "Phil. Mag." (5), 22, 309, 1886.
[10] "Phys. Rev.," 1, 166, 1893.
[11] "Phys. Rev.," 2, 305, 1895.
[12] "Phys. Rev.," 7, 93, 1898.
[13] "Phys. Rev.," 12. 121, 1901.
[14] Loc. cit.
[15] "Wied. Ann." (4), 30, 579 1909.
[16] Loc. cit.
[17] "Phys. Zeit.," 7. 543, 1906.
[18] "Phys. Rev.," 28, 151, 1909.
[19] Loc. cit.

Fig. 1

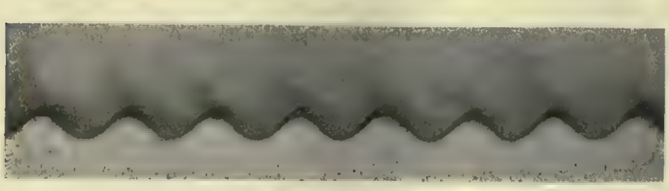

Fig. 2.

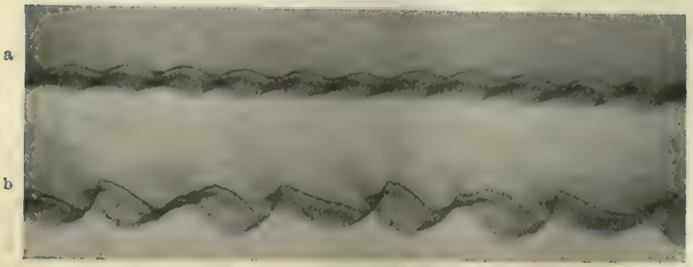

Fig. 3.

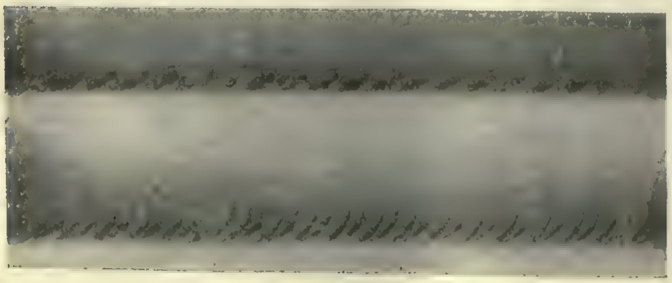

Fig. 4.

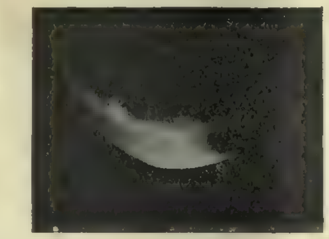

Fig. 5.

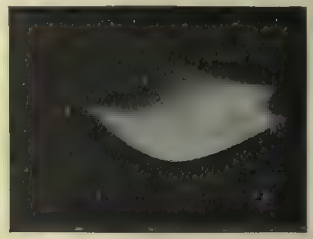

Fig. 6.

Unfortunately, the fine line does not stand out by itself, but is partly covered by soot from the other sources. This can be avoided by using a greater gas pressure, and consequently a larger flame, but the sensitiveness is greatly reduced. Fig. 2 shows the result of this adjustment.

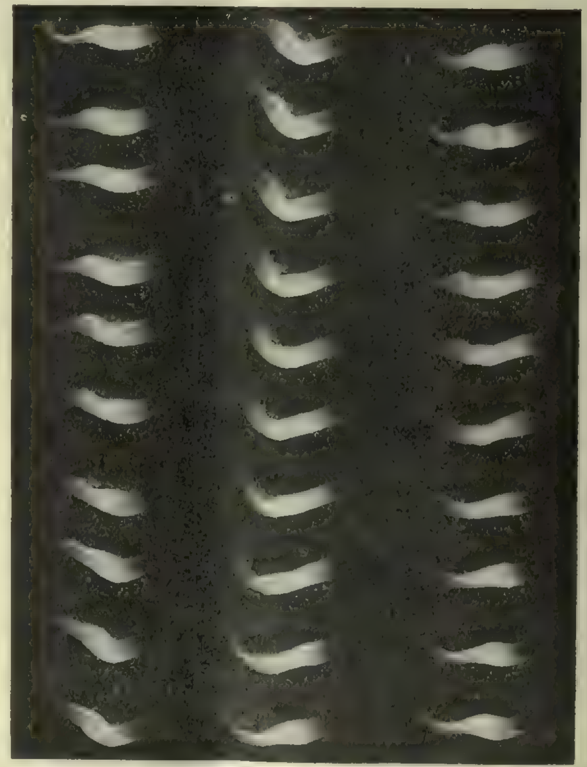

Fig. 7.

A few records from other sources will serve to show the extent to which this method will reproduce complicated wave forms. The smoke record of an electrically vibrated tuning fork ($n$ = 100) placed in front of a Koenig capsule, is shown in Fig. 3(a). The result of the composition of this fork with the alternating current ($n$ = 61) is shown in Fig. 3 (b). A record of sung vowels is shown in Fig. 4; (a) is "e" as in "he," and (b) is "a" as in "hay."

### Photographic Records.

The second modification was suggested by the fact that the lower luminous edge of the projected flame seemed to be exceedingly sharp and to vibrate with considerable amplitude. This was especially noticeable when the jet tube was projected about 45 degrees below the horizontal and a small quantity of illuminating gas was mixed with the acetylene to keep the flame from smoking. Fig. 5 is a photograph of such a flame when steady, and Fig. 6 is the same flame while being vibrated by the alternating current. When this vibrating flame was examined with a stroboscope, it was very evident that the longitudinal vibration at the base of the flame was very largely carried over into a transverse vibration of the luminous part of the flame. This is strikingly shown by a series of photographs of the flame secured by means of a coupled stroboscope and piston, a device designed by Prof. G. S. Moler, and kindly placed at my disposal for this purpose. Fig. 7 shows thirty successive phases covering one complete vibration of the flame.

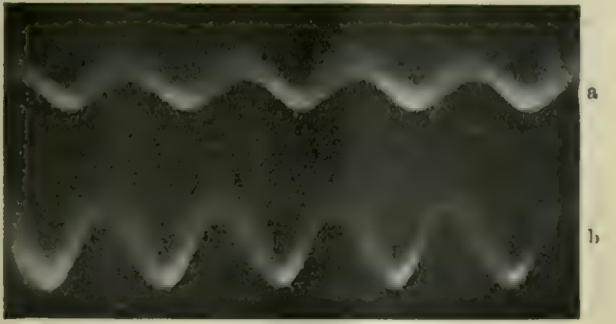

Fig. 8.

When a narrow slit was placed before the flame so that the slit was perpendicular to the lower luminous edge, and the motion was examined by means of a revolving mirror having its axis parallel with the slit, it seemed probable that with proper adjustment of the slit a very good photographic record could be obtained. Accordingly, a revolving film was arranged in a box so that an exposure could be made through a very narrow slit placed just in front of the film. The box was arranged so that it could be adjusted for focus and for position of the slit across the image of the flame.

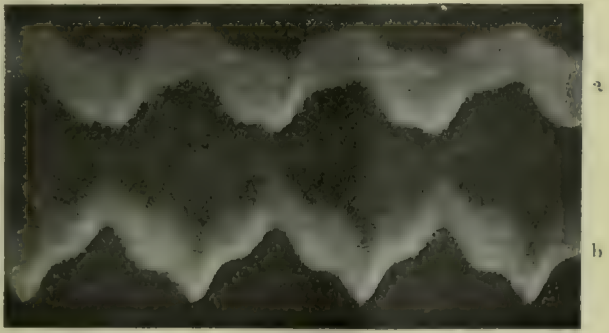

Fig. 9.

A shutter was connected with the wheel, which carried the film in such a way that the exposure could be made at any time upon any quarter of the film.

Fig. 8 shows the result obtained from the telephone receiver with two different values of the alternating current. The boundary line which indicates the motion of the lower edge of the flame is very close to a sine curve. Curve (a) happened to be of such amplitude that it could be compared with Fig. 2 by superposition. The agreement was remarkably good, thus showing that both methods give the same wave form, and presumably the correct wave form of the source used.

Fig. 9 shows two curves from the telephone made to vibrate with another alternating current. The frequency of this current was 20, and it contained a very marked third harmonic. In (b) the phase of the harmonic was advanced 180 degrees from what it was in (a).

Fig. 10 shows curves from the piston referred to above. In (b) the frequency was much greater than it was in (a). The peculiar form of these curves is due to the fact that the piston was vibrating in a cylinder closed at one end, and that the gas could leak around the piston. Record (b) is the curve which represents the vibration, the phases of which are shown in Fig. 7.

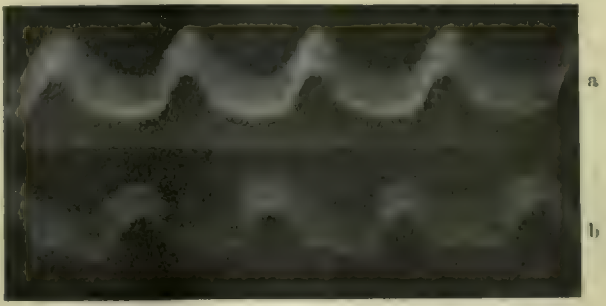

Fig. 10.

For the sake of comparison I have included photographs of two flame pictures. Fig. 11 (a) is the flame picture obtained when the telephone receiver is vibrated by the lighting current, and corresponds to the records shown in Fig. 2 and in Fig. 8. Fig. 11 (b) is the result when the piston vibrator is used, and corresponds to the record shown in Fig. 10 (b).

### Conclusion.

It is doubtful whether the curves obtained from the vibrating flame by either of the above methods will serve as well as other means for analysing sound waves. The curves shown by Professor D. C. Miller at the April, 1911, meeting of the Physical Society show far more promise for this purpose. As records from a vibrating flame, however, it is believed that they are of far more value than are any records heretofore obtained.

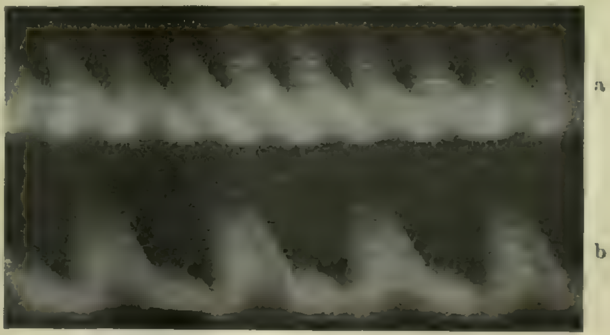

Fig. 11.

In all devices so far used in the analysis of sound waves, a correction must be made for the resonance effects, due to the free periods of the recording system, before the analysis is complete. In the case of the flame made to vibrate with the manometric capsule these effects are very small, but certainly are not negligible. The preceding experiments show that a flame, made to vibrate by the variations in pressure of a sound wave within the gas jet, can be made to reproduce the curve which represents the form of the sound wave. If the flame could be made to vibrate with sufficient intensity by the variations in pressure of a sound wave in the free air outside of the gas jet, the resonance effects would be almost, if not wholly, eliminated. The observations of Marbe,[20] and the results of some experiments which I have recently made, seem to show that there is a possibility of accomplishing this result.

J. G. Brown.

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[20] "Phys. Zeit.," 8, 92, 1907.

# A PLEA FOR STEREOSCOPIC PHOTOGRAPHY.

(A lecturette delivered before the Croydon Camera Club.)

The subject of stereoscopy, which I have to talk about to-night, is one which, it seems to me, is regarded by the majority of photographic workers with complete indifference, and by the remainder with a mild derision. Thus it is rather a difficult thing to create interest in a discourse on the following subject:—

"The advisability of people who at present make indifferent single photographs, to the annoyance of their friends, turning to stereoscopy as an alternative photographic amusement."

Now, I wish to emphasise at the outset what Mr. Tilney said at a lecture here last season, namely, that in considering all general questions such as this a tremendous lot depends on the point of view. Moreover, I go further than Mr. Tilney, and say that the point of view of the same person varies considerably at different times. To give a personal instance. I had to pay a visit during last October to a famous brewery which is located just on the other side of Southwark Bridge. Being a purely business visit, they produced some special stout, which they keep in vats for a few centuries before they let it out. In another department they have bottles of the same stout kept for a further century or so. This has a slightly different flavour. It is an interesting brewery, but I must not digress. Coming out and over Southwark Bridge again, I saw the most beautiful view of St. Paul's I have ever seen. The dome was gleaming in the cold October sunlight, and the whole distance was slightly quivering behind the cool grey haze. My enjoyment of the sheer beauty of the scene was only marred by two or three unmannerly people coming the opposite way, who collided with me, and then seemed to betray an immediate curiosity about the direction I was travelling. But the view was superb. I have not seen all the pictorial photographs that have been made of St. Paul's, but I have seen two or three hundred of them; and I still regret I had no camera with me and was unable to make the picture which would have left all the others nowhere. So, you see, your point of view is continuously changing, and continuously different from your neighbours'; and under these circumstances it will not be surprising if you violently disagree with some of the opinions expressed in this short paper with the long title. And it will be even less surprising if you signify the same in the usual courteous Croydon Camera Club manner, when dealing with a fellow-member, whether he be infant or adult. It is now about time we started to consider the subject of this paper.

When an enthusiastic stereo worker talks about photography he usually divides it into two classes—stereo-photography and what he calls *ordinary* photography. This is a biased point of view. The making of camera pictures is not ordinary photography by any means. Some of it is very extraordinary. There can be no doubt in the mind of a sane, or even partially sane, photographer (I want to include everybody) that a first-rate pictorial photograph is a far greater achievement than the finest stereograph ever made. But at the same time, there is very little doubt that a great number of amateur photographers who are wasting countless plates vainly endeavouring to make pictorial photographs, would get more satisfaction out of their hobby and would have much more to show in the way of results if they took to making stereographs.

A vast horde of amateur photographers are in the same position as the man who, arriving at the Gate of Heaven, when Peter offered him a harp, asked plaintively if he couldn't have something with a handle, only with this important difference: instead of *asking* for something with a handle, they take the harp and make a hideous row. Now and again one will strike a chord by accident, which encourages him to go on strumming.

Consider the body of photographers, and others interested in photography, forming this club. It contains a good proportion of pictorial workers, people we have heard about and people we may hear about; consider the sum total of all the negatives produced by all the members in one season. How many of these pieces of partially blackened glass will enable its owner to produce a camera picture you can look at without shuddering? Not more than 7 or 8 per cent., at a generous estimate. The rest, waste glass which cumbers the earth.

The enormous number of correspondents to the photographic press who ask what they can do with their waste negatives and whether there is any chance of selling them back to the plate manufacturers, is absolutely pathetic. If all these negatives had been made in stereoscopic pairs, at least 50 per cent. of them would have made interesting stereographs, and—this is the point—the percentage of camera pictures would not be appreciably diminished.

I don't wish to convey the impression that I think all camera-workers should make stereoscopic photographs. If you can make a pictorial photograph which isn't a fluke you are in some measure an artist. You make a picture out of certain materials, with the aid of the grey matter inside your skull. If you can do this consistently, stereoscopic photography is not for you. But the people who can do this consistently, even in this club, are in the minority. There must be many members who, like myself, when out with a camera, do not know which subjects will make pictures and which will not. We make records only, and when the rare occasion comes along when we make a picture, it is a sheer fluke. We do not make pictures of malice aforethought, and we probably never shall. This is no reason why we should not get plenty of amusement out of our hobby. Let us make stereographs. Stereoscopy is something with a handle. It is not picture-making, and has nothing to do with art. It could be described as the making of realistic records by photography, and the work of making stereographs, although it involves a thorough knowledge of the technique of negative and print making, is to a large extent mechanical.

Now, if you have a strong artistic sense which you can transfer in large chunks to pictorial photographs, you will quite rightly consider stereoscopy as an inferior thing. If, on the other hand, although you possess an artistic sense of the highest order, it persistently refuses to incorporate itself with silver, platinum, or pigment, then you should try stereoscopy—something with a handle—until such time as your artistic temperament ripens, so to speak.

Stereoscopic work will in all probability not always satisfy your photographic ambition. You will perhaps some day make pictures, and then stereoscopy is only a stage in your progress towards the final and ideal state of the photographer, when he does no photography whatever, but only goes to his particular camera club and talks about it.

And making stereographs is not a bad training for the future pictorialist, for, as before stated, you must acquire a thorough technique; you learn to be clean, neat, and patient, if by any chance you do not possess these virtues already. Stereoscopy is not all mechanism; you should not infringe the main principles regarding composition without good reason, but at the same time they need not be slavishly followed. Even if you can tap four points on the picture with a pencil and utter mystic incantations like "Tick, tack, tock, toe," it does not follow that the stereograph is damned. It is, however, very necessary that the attention is not drawn to the edge of the picture, as this at once destroys the illusion of reality, and the question of foregrounds is of the greatest importance in a stereograph.

Twice during a recent club excursion I overheard a remark something to this effect: "Well, there's no earthly chance of making a picture out of this, but I'll make an exposure for a record." This is where the stereoscopic photographer has the advantage on the man with a single-lens camera. He can make records which record considerably more than any single photograph can, and this is, I think, the real advantage of stereoscopy. For making records, whether landscape, still life, and especially natural history subjects, animals, birds, and so forth, there is no method which comes anywhere near stereoscopic photography. Many subjects will make interesting stereoscopic records which the single-lens camera should pass by, but as a rule doesn't.

A set of good stereographs is undoubtedly the finest possible record of a pleasant holiday, and when you have produced them you will probably find that, quite accidentally, two or three contain pictorial qualities. There is no reason why you should not enlarge these up, or make transparencies and enlarged negatives, all as per recent demonstrations in this club. Again, the standard size negative is just suitable for lantern slides by contact, and, having two halves of the negative to choose from, the slide is less likely to be marred by pinholes and other slight defects than the slide printed from a quarter-plate negative. In fact, you can do practically as much with a stereoscopic negative as with a quarter-plate.

To conclude, I hope nobody here has based an opinion concerning the merits or otherwise of stereoscopic work on any commercial stereographs he may have seen. The majority of commercial stereographs are much too harsh; they are trimmed with dome tops—heaven knows why!—and they are as a rule incorrectly mounted. Forming an opinion on stereoscopic photography from these would be like judging the latest aspect of pictorial photography from the windows of a picture-postcard shop.

A. CATHERINE.

# ALPHONSE LOUIS POITEVIN AND HIS WORK.

[The following useful summary of the work in photography and photo-mechanical processes of Poitevin appears from the pen of Major-General Waterhouse in the "Process Year-Book" of Messrs. Penrose, reviewed on another page.—EDS. "B.J."]

THERE are few branches of photo-mechanical process work that are not more or less intimately connected with, or due to, the labours of Alphonse Poitevin in the early fifties of the last century, and therefore a short summary of his life and work may well find a record in the pages of the "Process Annual."

The details of his life are somewhat scanty, and we are indebted for much of the following to Poitevin's work, "Traité de l'impression photographique sans sels d'argent," 1862, and the second more complete edition of it, with appendices by Léon Vidal, 1883; also M. A. Davanne's "Notice sur la vie et les travaux de A. Poitevin," 1882, and to Dr. Eder's "Geschichte der Photographie," 1905.

He was born at Conflans (Sarthe) in 1819, and educated at St. Calais. In 1839 he went to Paris and entered the "Ecole Centrale des Arts et Métiers," leaving it in 1843, third in the list of promotion as chemical engineer. In 1842, while still a student, he commenced his photographic researches and tried various methods of engraving Daguerreotypes by galvano-plastic means, having found that if a Daguerreotype plate, after exposure and development with mercury, but unfixed, were placed in a coppering bath, the copper was only deposited on the lights covered with mercury, and not on the shadows formed of unaltered silver iodide.

Being appointed engineer to the Eastern Salt Works, he gave himself up entirely to his professional work, and made many improvements at various stations. In 1847, however, he returned to his favourite studies, in his few moments of leisure, and repeated his earlier observations, applying them first to engraving by acids transfers on metal of the iodised drawings proposed by M. Niepce de St. Victor, then to Daguerreotypes on silvered copper, and shortly afterwards to the transformation of Daguerreotype images into negatives which could be printed from in the ordinary way on papers prepared with silver salts. The details of these methods were published in two papers in the "Comptes rendus de l'Académie des Sciences," Vols. 26 and 27, 1848, and are given in Poitevin's "Traité" of 1862 with a specimen of the engraving process, which, though imperfect in parts, appears promising. Two interesting properties of these coppered Daguerreotypes may, however, be mentioned, one being that such a plate being washed and lightly gummed after removal from the coppering bath could be inked with a roller charged with printing ink, the ink adhering only to the bare uniodised portions uncovered by the copper, and not to the parts coated with it. In the other more complicated method in which after coppering the copper was oxidised and the silver amalgamated, the ink took on the former and not on the latter. For these discoveries the Société d'Encouragement awarded him a medal of 500 francs.

We then find him transforming Daguerreotype images into negative clichés, from which prints could be made on silvered papers. In this case copper is deposited on the lights, somewhat as before, the plate fixed with hyposulphite of soda, and then covered with a solution of gelatine, which is allowed to set and dry slowly and then stripped, carrying the copper deposit with it; or a thin sheet of gelatine may be moistened and applied to the plate, dried, and stripped. This method led him, in 1849, to turn his attention to a method of making negatives on glass coated with gelatine sensitised in a bath of acetate of silver and iodised before use, like a Daguerreotype plate. After exposure, the plates were developed in a solution of gallic acid and fixed in a 1 per cent. solution of hyposulphite of soda, and this appears to have been the first use of the hyposulphite for fixing negatives on glass. The negatives so obtained were very clear, and gave good prints. He also used sulphate of iron for developing, and thus obtained images which appeared positive by reflection and negative by transmission, like the early collodion positives. In a further paper ("Comptes rendus," 33, 1851) he described improvements in this process with further details, and also a method of enlarging from his gelatine negatives. He notes as one great advantage of the sensitive gelatine plates that they could be used dry without losing sensitiveness—a point which has proved of the utmost importance to the successful use of gelatine emulsions for dry plates.

In 1852, Fox Talbot published his method of photographic engraving founded on the property of a bichromated gelatine film to become more or less impermeable to watery solutions after exposure to light under a negative. Poitevin had, on the other hand, observed, as early as 1848, that some of his gelatine Daguerreotype negatives when moistened swelled very evenly in the parts not covered with copper, and were sufficiently firm for casts to be taken in sulphur, from which he made prints. In 1849, while working out his negative process on gelatine, he again noticed that his finished negatives showed the design in intaglio in the dense parts, and tried to obtain casts of them from which electrotype printing plates could be made. But, owing to pressure of professional duties, he was unable to realise his intention till 1854. He then coated metal plates with bichromated gelatine, not with a view to etching them, as in Talbot's method, but to try the effect of electrotyping them. On immersing one of these plates, after exposure under a negative, in the depositing bath of sulphate of copper, he observed that the copper was deposited very distinctly on the unexposed parts, and further, that the gelatine in these parts was very evenly swollen, forming reliefs, while in the exposed parts hollows were formed varying in depth according to the degree of exposure, and he at once saw the possibility of carrying out the method of heliographic engraving he had so long had in view. The next step was to find a suitable moulding material, but after trying wax and sulphur, he fixed upon fine plaster of Paris. In his "Traité" he has fully described the two methods he used for obtaining (1) intaglio plates for copper-plate printing, and (2) plates in relief for typographic printing, and specimens of these methods are given. He also mentions the direct inking of his reliefs with printing ink for making transfers to stone or metal; or contrariwise rolling in the unexposed parts with gum. Also methods of engraving by writing or drawing with bichromate of potash solution on dry gelatine sheet, exposing to light, the lines remaining depressed after moistening. Further, by drawing with a saline or metallic solution on sheets of bichromated gelatine, so as to form a metallic chromate which will not act on the gelatine during the sunning, then the lines will swell under the action of moisture. He took out an English patent in August, 1855, for these processes. It may be noted that Paul Pretsch took out a patent in June, 1855, for a process of photo-engraving which was just the reverse of Poitevin's, *i.e.*, the unexposed and soluble parts of the bichromated gelatine film were washed away. A later addition to the patent in December included methods which Poitevin claims were the same as those in his own patent.

In the same year he investigated the action of mixtures of albumen, gum arabic, sugar, starch, fecula, etc., with alkaline bichromates, and found that by the action of light on the chromic acid contained in these latter all these substances became insoluble in water, even when heated, and he at once thought of turning this to account by applying them on paper, adding to them insoluble colouring matters, such as charcoal, pigments in powder or ground up with water, enamel colours in powder, etc., in order to obtain permanent positive photographic images under negatives, just as with silver salts, but he found, as did others, that his prints wanted gradation in the half-tones, and he recognised later that if he had worked from the first as much at carbon printing as he did at photo-lithography he would have recognised the necessity of exposing from the back of the sensitive film, as was afterwards done by the Abbé Laborde and by Fargier.

About the same time he discovered the other property possessed by these chromated colloid compounds of retaining greasy ink in the parts exposed to light, which forms the basis of the transfer methods of photo-lithography. Thus, if a roller charged with printing ink be passed over the whole surface of a sheet of paper coated with a mixture of one of the above-mentioned colloids with an alkaline bichromate, and when dry exposed to light under a negative, he found that after washing in water the ink was retained only by the exposed parts. This fact once recognised, he devoted himself to photo-lithography in order to be able to obtain in the ordinary way cheap, uniform, and permanent prints; in fact, a method of photographic printing impossible to realise with silver prints. Albumen was the colloid he preferred to use.

He attached so high an importance to these new processes, and had so much confidence in their future, that in November, 1855, he resigned his appointment in the Salt Works, which he had held for eleven years, and went to Paris to work his patents and perfect his processes. Setting up as a lithographic printer, he devoted himself entirely to perfecting his direct photo-lithographic process, but not being very successful in business, he made over his patent rights to M. Lemercier, the well-known French lithographer, who made extensive use of them.

It may be noted that although Poitevin in this process of photo-lithography does not seem to have realised the special value of the colloid coating of the stone as the printing surface, there is little doubt that his pioneer work in this direction led to Tessié du Mothay's process of "Phototypie," in 1865, and the later "Lichtdruck" and "Photocollotype" processes of Albert, Husnik, Ohm, and Grossman and others.

After giving up his photo-lithographic business Poitevin appears to have gone to Lyons as manager of M. Pereire's chemical factory, in which he carried out important operations and set up the vast apparatus required for the manufacture of sulphuric acid, but there also he found opportunity for carrying on his favourite studies, and in the volumes of the "Bulletin de la Société Française de Photographie," from 1859 onwards, we find accounts of his photo-chemical researches, still worthy of study, although the processes described may not have came into practical use. Some of them relate to photo-printing methods based on mixtures of alloxantine with bichromate of potash or bi-chloride of mercury, salts of silver, ferro- and ferricyanide of potassium, etc.; others on salts of uranium with ferric chloride, bichromate of potash, and other reagents. One of the most important was the method described in 1860, of producing blue or black prints on paper prepared with a mixture of ferric chloride and tartaric acid, the images being developed by gallic acid, tannin, or ferricyanide of potassium, according as black or blue prints were required. The prints on paper thus prepared had the remarkable property of being more or less deliquescent by exposure to light, contrariwise to the ordinary blue prints with ammonio-citrate of iron. This property was made use of in various ways for producing carbon prints with pigments in powder, or direct carbon prints by washing away the exposed parts for enamels and other ceramic applications; prints and transfers in fatty inks for photo-lithography, heliogravure, etc., the ink adhering only to the unexposed parts, and other applications.

In 1866 he published two very interesting papers, descriptive of methods of heliochromy or reproductions of coloured transparencies on paper prepared with darkened silver chloride rendered specially sensitive to coloured rays by treatment with various metallic salts. Specimens of the process were exhibited at the Paris Exhibition of 1867, but, like others of the same kind, it never came into practical use. In 1879 he brought out another iron printing process, and this seems to have been his last publication.

Although the great merit and utility of his inventions and researches were fully recognised and to some extent recompensed by the award of the Duc de Luyne's prize of 20,000 francs, and later the Marquis of Argentil's prizes of 12,000 francs, and other medals and honours, among them the order of Chevalier of the Légion d'Honneur, he reaped but little pecuniary advantage from his inventions, although in many cases they were taken up and worked to advantage by others. It was necessary, therefore, for him to remain in employment in various chemical works almost to the end. From the Lyons factory he went to the glassworks at Ahun-les-Mines, then to those of Falembray, later he was for some months in Africa directing the working of the silver-lead mines at Kefun Thebul. On the death of his father, in 1869, he returned to Conflans, but afterwards had to take service in the alum factory at St. Germain Lambron, and again in a glass factory, but only for a short time, owing to growing infirmity, and after two years of suffering he died at Conflans on March 4, 1882, aged sixty-two.

There can be no doubt regarding the high value of the services Poitevin rendered to processes of photographic reproduction by his researches carried on with indomitable perseverance, in spite of many difficulties, and published with a liberality for which he was but scantily rewarded. His name, however, occupies a high place in the annals of photography and his memory must ever be cherished by process workers.

J. Waterhouse.

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# ON THE GENERAL PROBLEM OF PHOTOGRAPHIC REPRODUCTION, WITH SUGGESTIONS FOR ENHANCING GRADATION ORIGINALLY INVISIBLE.

(From the "Philosophical Magazine" for November, 1911.)

In copying a subject by photography the procedure usually involves two distinct steps. The first yields a so-called *negative*, from which, by the same or another process, a second operation gives the desired *positive*. Since ordinary photography affords pictures in monochrome, the reproduction can be complete only when the original is of the same colour. We may suppose, for simplicity of statement, that the original is itself a transparency, *e.g.*, a lantern-slide.

The character of the original is regarded as given by specifying the transparency ($t$) at every point, *i.e.*, the ratio of light transmitted to light incident. But here an ambiguity should be noticed. It may be a question of the place at which the transmitted light is observed. When light penetrates a stained glass, or a layer of coloured liquid contained in a tank, the direction of propagation is unaltered. If the incident rays are normal, so also are the rays transmitted. The action of the photographic image, constituted by an imperfectly aggregated deposit, differs somewhat. Rays incident normally are more or less diffused after transmission. The effective transparency in the half-tones of a negative used for contact printing may thus be sensibly greater than when a camera and lens is employed. In the first case all the transmitted light is effective; in the second, most of that diffused through a finite angle fails to reach the lens.[1] In defining $t$—the transparency at any place—account must in strictness be taken of the manner in which the picture is to be viewed. There is also another point to be considered. The transparency may not be the same for different kinds of light. We must suppose either that one kind of light only is employed, or else that $t$ is the same for all the kinds that need to be regarded. The actual values of $t$ may be supposed to range from 0, representing complete opacity, to 1, representing complete transparency.

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[1] In the extreme case a negative seen against a dark background and lighted obliquely from behind may even appear as a positive.

As the first step is the production of a negative, the question naturally suggests itself whether we can define the ideal character of such a negative. Attempts have not been wanting; but when we reflect that the negative is only a means to an end, we recognise that no answer can be given without reference to the process in which the negative is to be employed to produce the positive. In practice this process (of printing) is usually different from that by which the negative was itself made; but for simplicity we shall suppose that the same process is employed in both operations. This requirement of identity of procedure in the two cases is to be construed strictly, extending, for example, to duration of development and degree of intensification, if any. Also we shall suppose for the present that the *exposure* is the same. In strictness this should be understood to require that both the intensity of the incident light and the time of its operation be maintained; but since between wide limits the effect is known to depend only upon the product of these quantities, we may be content to regard exposure as defined by a single quantity, viz., *intensity of light × time.*

Under these restrictions the transparency $t'$ at any point of the negative is a definite function of the transparency $t$ at the corresponding point of the original, so that we may write

$$t'=f(t), \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

$f$ depending upon the photographic procedure and being usually such that as $t$ increases from 0 to 1, $t'$ decreases continually. When the operation is repeated upon the negative, the transparency $t''$ at the corresponding part of the positive is given by

$$t''=f(t'). \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

Complete reproduction may be considered to demand that at every point $t''=t$. Equation (2) then expresses that $t$ must be the same function of $t'$ that $t'$ is of $t$. Or, if the relation between $t$ and $t'$ be written in the form

$$\mathrm{F}(t,\ t')=0, \quad . \quad . \quad . \quad . \quad . \quad . \quad (3)$$

F must be a *symmetrical* function of the two variables. If we regard $t$, $t'$ as the rectangular coordinates of a point, (3) expresses the relationship by a *curve*, which is to be symmetrical with respect to the bisecting line $t'=t$.

So far no particular form of $f$, or F, is demanded; no particular kind of negative is indicated as ideal. But certain simple cases call for notice. Among these is

$$t+t'=1, \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (4)$$

which obviously satisfies the condition of symmetry. The representative curve is a straight line, equally inclined to the axes. According to (4), when $t=0$, $t'=1$. This requirement is usually satisfied in photography, being known as freedom from fog—no photographic action where no light has fallen. But the complementary relation $t'=0$ when $t=1$ is only satisfied approximately. The relation between negative and positive expressed in (4) admits of simple illustration. If both be projected upon a screen from independent lanterns of equal luminous intensity, so that the images fit, the pictures obliterate one another, and there results a field of uniform intensity.

Another simple form, giving the same limiting values as (4), is

$$t^2+t'^2=1; \quad . \quad . \quad . \quad . \quad . \quad . \quad (5)$$

and, of course, any number of others may be suggested.

According to Fechner's law, which represents the facts fairly well, the visibility of the difference between $t$ and $t+dt$ is proportional to $dt/t$. The gradation in the negative, constituted in agreement with (4), is thus quite different from that of the positive. When $t$ is small, large differences in the positive may be invisible in the negative, and vice versâ when $t$ approaches unity. And the want of correspondence in gradation is aggravated if we substitute (5) for (4). All this is, of course, consistent with complete final reproduction, the differences which are magnified in the first operation being correspondingly attenuated in the second.

If we impose the condition that the gradation in the negative shall agree with that in the positive, we have

$$dt/t=-dt'/t', \quad . \quad . \quad . \quad . \quad . \quad . \quad (6)$$

whence

$$t.t'=\mathrm{C}, \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (7)$$

where C is a constant. This relation does not fully meet the other requirements of the case. Since $t'$ cannot exceed unity, $t$ cannot be less than C. However, by taking C small enough, a sufficient approximation may be attained. It will be remarked that according to (7) the negative and positive obliterate one another when superposed in such a manner that light passes through them in succession—a combination, of course, entirely different from that considered in connection with (4). This equality of gradation (within certain limits) may perhaps be considered a claim for (7) to represent the ideal negative; on the other hand, the *word* accords better with definition (4).

It will be remembered that hitherto we have assumed the exposure to be the same in the two operations, viz., in producing the negative and in copying from it. The restriction is somewhat arbitrary, and it is natural to inquire whether it can be removed. One might suppose that the removal would allow a greater latitude in the relationship between $t$ and $t'$; but a closer scrutiny seems to show that this is not the case.

The effect of varying the exposure ($e$) is the same as of an inverse alteration in the transparency; it is the product $et$ with which we have really to do. This refers to the first operation; in the second, $t''$ is dependent in like manner upon $e't'$. For simplicity and without loss of generality we may suppose that $e=1$; also that $e'/e=m$, where $m$ is a numerical quantity greater or less than unity. The equations which replace (1) and (2) are now

$$t'=f(t), \qquad t=t''=f(mt'); \quad . \quad . \quad . \quad . \quad (8)$$

and we assume that $f$ is such that it decreases continually as its argument increases. This excludes what is called in photography *solarisation.*

We observe that if $t$, lying between 0 and 1, anywhere makes $t'=t$, then $m$ must be taken to be unity. For in the case supposed

$$t=f(t)=f(mt);$$

and this, in accordance with the assumed character of $f$, cannot be true, unless $m=1$. Indeed, without analytical formulation it is evident that since the transparency is not altered in the negative, it will require the same exposure to obtain it in the second operation as that by which it was produced in the first. Hence, if anywhere $t'=t$, the exposures must be the same.

It remains to show that there is no escape from a local equality of $t$ and $t'$. When $t=0$, $t'=1$, or (if there be fog) some smaller positive quantity. As $t$ increases from 0 to 1, $t'$ continually decreases, and must therefore pass $t$ at some point of the range. We conclude that complete reproduction requires $m=1$, *i.e.*, that the two exposures be equal; but we must not forget that we have assumed the photographic procedure to be exactly the same, except as regards exposure.

Another reservation requires a moment's consideration. We have interpreted complete reproduction to demand equality of $t''$ and $t$. This seems to be in accord with usage; but it might be argued that *proportionality* of $t''$ and $t'$ is all that is really required. For although the pictures considered in themselves differ, the effect upon the eye, or upon a photographic plate, may be made identical, all that is needed being a suitable variation in the intensity of the luminous background. But at this rate we should have to regard a white and a grey paper as equivalent.

If we abandon the restriction that the photographic process is to be the same in the two operations, simple conclusions of generality can hardly be looked for. But the problem is easily formulated. We may write

$$t'=f_1\ (et), \qquad t\ =\ t''\ =\ f_2\ (e't'), \quad . \quad . \quad . \quad (9)$$

where $e$, $e'$ are the exposures, not generally equal, and $f_1$, $f_2$ represent two functions, whose forms may vary further with details of development and intensification. But for some printing processes $f_2$ might be treated as a fixed function. It would seem that this is the end at which discussion should begin. When the printing process is laid down and the character of the results yielded thereby is determined, it becomes possible to say what is required in the negative, but it is not possible before.

In many photographs it would appear that gradation tends to be lost at the ends of the scale, that is, in the high-lights and deep shadows, and (as a necessary consequence, if the full range is preserved) to be exaggerated in the half-tones. For some purposes, where precise reproduction is not desired, this feature may be of advantage. Consider, for example, the experimental problem, discussed by Huggins, of photographing the solar corona without an eclipse. The corona is always present, but is overpowered by atmospheric glare. The problem is to render evident a very small relative difference of luminous intensity. If the difference is exaggerated in a suitably exposed and developed photograph, so much the better. A repetition of successive copyings might render conspicuous a difference originally invisible. At each operation we may suppose a factor $a$ to be introduced, $a$ being greater than unity. After $n$ copyings $dt/t$ becomes $a^n dt/t$. Unless the gain each time were very decided, this would be a slow process, and it would be liable to fail in practice owing to multiplication of slight irregular photographic markings. But a method proposed by Mach[2] and the present writer[3] should be of service here. By the aid of reflection light at each stage is transmitted *twice* through the picture. By this means alone $a$ is raised to equality with 2, and upon it any purely photographic exaggeration of gradation is superposed. Three successive copyings on this plan should ensure at least a tenfold exaltation of contrast.

Another method, simpler in execution, consists in superposing a considerable number ($n$) of similar pictures. In this way the contrast is multiplied $n$ times. Rays from a small, but powerful, source of light fall first upon a collimating lens, so as to traverse the pile of pictures as a parallel beam. Another condensing lens brings the rays to a focus, at which point the eye is placed. Some trials on this plan made a year ago gave promising results. Ten lantern-slides were prepared from a portrait negative. The exposure (to gaslight) was for about 3 seconds through the negative and for 30 seconds bare, *i.e.*, with negative removed, and the development was rather light. On single plates the picture was but just visible. Some rough photometry indicated that each plate transmitted about one-third of the incident light. In carrying out the exposures suitable stops, cemented to the negative, must be provided, to guide the lantern-plates into position, and thus to ensure their subsequent exact superposition by simple mechanical means.

When only a few plates are combined, the light of a Welsbach mantle suffices; but, as was to be expected, the utilisation of the whole number (ten) requires a more powerful source. Good results were obtained with a limelight; the portrait, barely visible at all on the single plates, came out fairly well under this illumination. If it were proposed to push the experiment much further by the combination of a larger number of plates, it would probably be advantageous to immerse them in benzole contained in a tank, so as to obviate the numerous reflections at the surfaces.

It has been mentioned that in the above experiment the development of the plates was rather light. The question may be raised whether further development, or intensification, might not make one plate as good as two or three superposed. I think that to a certain extent this is so. When in a recent experiment one of the plates above described was intensified with mercuric chloride followed by ferrous oxalate, the picture was certainly more apparent than before, when backed by a sufficiently strong light. And the process of intensification may be repeated. But there is another point to be considered. In the illustrative experiment it was convenient to copy all the plates from the same negative. But this procedure would not be the proper one in an attempt to render visible the solar corona. For this purpose a good many independent pictures should be combined, so as to eliminate slight photographic defects. As in many physical measurements, when it is desired to enhance the delicacy, the aim must be to separate feeble constant effects from chance disturbances.

It may be that, besides that of the corona, there are other astronomical problems to which one or other of the methods above described, or a combination of both, might be applied with a prospect of attaining a further advance. RAYLEIGH.

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[2] Eder's "Jahrbuch."

[3] "Phil. Mag.," xliv., p. 282 (1897); "Scientific Papers," vol. iv., p. 333.

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# THE PHYSICAL DEVELOPMENT OF LIGHTLY PRINTED P.O.P.

(A Paper in "Photographische Rundschau.")

THE development of P.O.P. prints, which have been exposed for only a fraction of the time required for full depth, is a mode of treating printing-out paper which at one time or another has engaged a good deal of attention from experimenters. The rise in popularity of papers of the gaslight class has doubtless caused this method of rapid printing to be neglected; but, nevertheless, there are still photographers needing the characteristic effect which is only obtained in a print-out paper, and, at the same time, anxious to reduce the lengthy operation of printing which is required for P.O.P. For the successful use of a development method for P.O.P. certain precautions, apart from the employment of a properly compounded developer, are necessary. These are chiefly as follows:—The paper used should be as fresh as possible; best, not more than three weeks old. An old paper will give excellent prints when printed fully out in the ordinary way, but will prove unsatisfactory for development. Further, special care should be taken in loading the frames and examining the prints. This should not be done in the strong daylight which is often used for printing fully out, but only in the weak light of a lamp, or by ordinary artificial light. Unless this is done the print will show fog. Also the paper should not be touched on its surface with the fingers, as this again will lead to stains and markings, and a further precaution, equally applicable in ordinary P.O.P. manipulation, is the absolute cleanliness of the dishes.

Printing should be done until detail is seen in the highest lights of the picture. The greater the degree of printing the softer the result obtained; whilst, on the other hand, the less visible the printed image which is developed, the greater its degree of contrast. A useful means is thus provided of modifying the character of the print and of obtaining a useful improvement in prints from negatives which are flat and veiled. In cases where the print is not to be toned after development, the time of printing is also an important factor as regards the final colour of the picture. The longer the time of printing the lesser the degree of development, and therefore the warmer the colour of the print, the result of the silver being in a finer state of diffusion. If, however, printing is done for a shorter time, and development more largely used for securing the requisite depth, the final colour is colder as a result of a coarsening of the grain of the print by development. The final colour of the pictures varies considerably with different papers, and it will be found that each paper has its own degree of printing giving the best final results.

Printing can be done by a very bright artificial light, such as a considerable length of magnesium ribbon burnt a few inches from the frames, but the practical method is to use a diffused, or even quite weak, daylight, in which the time of printing is a minute or two. In the case of thin negatives it is frequently useful to cover the printing-frame with a thickness of tissue paper. After removal from the frame the prints are developed most conveniently by gas or lamp-light. They must not be washed in water as for ordinary toning, since they depend for their development upon the free silver contained in the paper.

The developer is a preparation made up without alkali, but in place of the latter a proportion of acid. In some cases it may contain a preservative, such as soda sulphite, or potass metabisulphite. A few standard formulæ are as follows:—

VALENTA.

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|---|---|
| A.—Hydroquinone | 10 gms. |
| Alcohol | 100 ccs. |
| B.—Soda sulphite | 100 gms. |
| Water, boiled | 200 ccs. |
| Citric acid | 5 gms. |

To make the developer 1 part of A and 1 part of B are mixed with 2 parts of water.

VALENTA.

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|---|---|
| Soda sulphite | 100 gms. |
| Pyro | 10 gms. |
| Citric acid | 10 gms. |
| Water, boiled | 1,000 ccs. |

DEMENTIEFF.

| | |
|---|---|
| Potass metabisulphite | 7 gms. |
| Metol | 1 gm. |
| Gallic acid | ½ gm. |
| Citric acid | 1.5 gm. |
| Water, distilled | 100 ccs. |

A developer of this class becomes brown and turbid in use owing to silver being deposited in it. If used while it is too turbid the silver will deposit on the print, especially in the case of paper which is not quite fresh. It is, therefore, necessary to renew the developer frequently, which can be readily done, as the bath is an inexpensive one. According to experiments made by R. Liesegang the silver remains suspended in the developer much better; that is to say, does not deposit on the print, if the latter contains a little gelatine or fish glue. A developer made with this addition thus works much more cleanly. A further plan of securing cleanliness of the backs of the prints, of importance particularly in postcard work, is to lay them on a glass plate and apply the solution with a tuft of cotton wool, although, as a rule, this method is too tedious when large numbers of prints have to be dealt with, since development will average from two to four minutes. As soon as the prints have reached the desired strength, or rather slightly before they attain this point, they are removed from the developer, quickly rinsed, and put to wash. If thought well, the action of the developer can be arrested more quickly by transferring them to a weak citric acid bath, in which case it will not be necessary to do the same amount of washing.

The prints are fixed in a 15 per cent. hypo bath, or in an acid bath made as follows:—

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|---|---|
| Soda sulphite | 25 gms. |
| Tartaric acid | 25 gms. |
| Hypo | 125 gms. |
| Water | 500 ccs. |

The chemicals are dissolved in the order given, and prints fixed in the solution for about eight minutes. The tone given with most papers is of reddish-brown colour, depending on the degree of printing and the time of development. If required, the prints can be toned after development and before fixing in the ordinary gold or platinum baths, or can be toned and fixed at the same time in the ordinary combined bath.

A further method of development, which allows of considerable range of tones being obtained, is the following, also due to Valenta. Three stock solutions are made as follows:—

| | |
|---|---|
| A.—Potass bichromate saturated solution | |
| B.—Citric acid | 20 gms. |
| Water | 100 ccs. |
| C.—Pyro, 10 per cent. solution in alcohol ... | 5 ccs. |
| Water | 1,000 ccs. |

The prints are first placed in a bath composed either of A and B diluted with water, or of A and water alone, and they are then transferred for development to the bath C. The following are the proportions used in making the preliminary bath, with a rough indication of the tone obtained:—

| | | | |
|---|---|---|---|
| Water, 25 ccs. | A, 3 drops | | Tone greenish |
| ,, 25 ,, | A, 8 ,, | | ,, brighter green |
| ,, 25 ,, | A, 1–2 ,, | | ,, bluish-black |
| ,, 25 ,, | A, 1 ,, | | ,, brownish-red |
| ,, 25 ,, | A, 1 ,, | B, 3 ccs | ,, bright red |

Thus, the more of bath B is used the warmer and more reddish is the tone, and, at the same time, the greater degree of printing necessary. The final tone does not show itself until after fixing. In the case of albumen paper, Karpinsky recommends for securing purity of the whites a preliminary bath, consisting of 5 to 10 per cent. solution of common salt. The prints are then developed in the following:—

| | |
|---|---|
| Metol | 2 gms. |
| Soda sulphite | 19 gms. |
| Citric acid | 1 gm. |
| Water, boiled | 100 ccs. |

After making up the above there is then added

| | |
|---|---|
| Alcohol | 20 ccs. |

R. BECKERS.

### THE "BRITISH JOURNAL ALMANAC," 1912.

IN the extent and attractiveness of its contents the "B.J. Almanac" for 1912 (writes the "Amateur Photographer") shows no diminution. Its 1,436 pages offer an alluring repast for everyone interested in photography. Even the indexes, which are now conveniently placed for reference, have also an attraction, and it is not difficult to imagine that the keen worker will read every page with interest and possibly profit.

The advertisements, as usual, bulk very largely in the book, and form in themselves a practically complete guide to the photographic trade.

The editorial article deals with methods of lantern slide making, and extremely interesting for both professional and amateur readers is the illustrated article, "Indoor and Outdoor At-Home Portraiture," by C. H. Hewitt, F.R.P.S. We are glad to see that Mr. Brown is bringing the book back to something like its old form when it included the interesting contributed articles which were always one of the most attractive features of the "Almanac." In addition to Mr. Hewitt's article, contributions dealing with professional matters also appear; and the "Epitome of Progress," including extracts from the photographic press of the world, occupies a smaller number of pages than in previous years.

Among other revisions the useful series of makers' formulæ which have generally appealed to the all-round worker as embodying all makers' instructions in one handy form, have now been condensed into brief tabular form on a few pages. This condensation has given room for the inclusion of a series of practical hints for workers in various processes, the procedure in each case being illustrated by little line drawings—a very useful feature. Generally speaking, the annual appeals more to the amateur worker than the professional—a sign of the times.

The book is, as usual, published at 1s., or in cloth 1s. 6d., and is obtainable from all photographic dealers, or from the publishers, Messrs. Henry Greenwood and Co., publishers of the "British Journal of Photography," 24, Wellington Street, London, W.C.

# Photo-Mechanical Notes.

### The New Process Year Book.

THE seventeenth volume of "Penrose's Annual" is again "better than before." There are more than sixty articles and over five hundred illustrations, including two rotary photogravures, two litho off-set half-tones, one collotype, and, of course, hundreds of half-tones in one, two, three, four, and five colours. These examples come from all over the world. Although it always seems that half-tone has reached its limit of perfection, yet a collection like this could never have been got together at any earlier time. Not only is the general average much superior to that of any previous year, but some of the work is quite exceptional, especially, in our opinion, the two colour half-tones. We have in former years been mildly critical of the get-up of the year book, and we are, therefore, glad to see a serious effort to make its format a little more in consonance with the recognised canons of good taste in book production. Thus the margins of the pages are this year in much better proportion, and the paper used is free from objectionable gloss. If all the illustrations are not at the end of the text, still a great many of them are, and it is to be hoped that the reception of this innovation will encourage Mr. Gamble to overcome the difficulties involved in placing all the plates there except those having an actual bearing on the text.

The cover is simple, but the design seems rather Teutonic, and the lettering is not pleasant. If the "P," the "C," or the "S" are examined separately, it will be seen that they each look more like a geometrical diagram than a recognisable letter, so far is their departure from the traditional form. We think the articles could do without the illustrations cut into the type that have nothing to do with the text, and we should some day like to see the contributions demanded in time to classify them to some extent in respect of subject. With regard to these articles, there are fewer than usual barefaced advertisements, and not many that are mere padding; the majority contain good, sound, practical information. The editor's summary is, as usual, a careful and comprehensive survey of the present-day state of the process-engraving craft. Altogether the volume is a wonderful five shillingsworth.

### The Christmas Numbers.

"Pears'" is the only Christmas number now left that does not rely entirely upon "process" work for the illustrated plates accompanying it, for all three plates and the cover of the Annual are chromo-lithographs. It is, however, probable that photo-lithography is employed to some extent even in the production of these. But the text is lavishly illustrated with monochrome half-tones, printed in tinted ink, as well as many in two and three colours. The cover of "Holly Leaves" is also chromo-lithographic, and for the rest covers and plates are all process, being either three-colour, as in the case of the "Graphic," or rotary photogravure, as in the case of the "Illustrated London News," "Sketch," and "The Sporting and Dramatic." More three-colour is used in the inside pages than before, and some brilliant effects are shown. The border designs are also notable. The registration of some of the colour work is not always all that could be desired, but on the whole these Christmas numbers are a remarkable evidence of the commercial progress of photo-mechanical illustration, and particularly of three-colour work.

## Patent News.

*Process patents—applications and specifications—are treated in "Photo-Mechanical Notes."*

The following applications for patents have been received between December 11 and 16:—

Focussing Device.—No. 27,777. Means for mechanically focussing photographic lenses. Lodewyk Jan Rutger Holst.

Daylight Development.—No. 27,959. Apparatus for developing and fixing photographic plates and packet films without a dark chamber. Anton Büchler and Hugo Fleischman.

Copying.—No. 28,229. Arrangements for copying in space or in a plane an object of three dimensions from a stereoscopic pair of photograms. Carl Zeiss.

Colour Photography.—No. 28,239. Colour photography. Ernest Milner.

Cinematography.—No. 27,911. Synchronising music to cinematography. Louis Janssens.

Cinematography.—No. 28,366. Apparatus for developing, washing, drying, and otherwise treating cinematograph films and the like. Robert Javault.

Cinematography.—No. 28,386. Projecting apparatus for moving-picture machines. Giles Emmet Ripley, William Nathan Gladson, and Ross Emile Thompson.

Colour Cinematography.—No. 28,081. Producing cinematographic effects in colour. Thomas Albert Mills.

### COMPLETE SPECIFICATIONS ACCEPTED.

*These specifications are obtainable, price 8d. each, post free, from the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.*

*The date in brackets is that of application in this country; or abroad, in the case of patents granted under the International Convention.*

Cinematograph Mechanism.—No. 13,400, 1911 (June 3, 1911). The claim is for cinematograph apparatus of a type using ordinary photographic non-perforated films, in which the intermittent alternating movement of the carriage supporting the film, which is mounted in full light, is obtained by means of a double helicoidal cam closed on itself, and in which a pin, integral with the carriage, engages, this cam being actuated in an intermittent manner by an open helicoidal cam, provided with a disc which operates an intermittent locking device for locking the carriage in its positions of rest, while the intermittent advance of the film in the direction of its length, is effected by means of intermittent gear acting on a driving drum, which, in conjunction with a pressing drum, the pressure of which can be regulated, ensures the movement of the film. Alfonso de Giglio, 9, Havnegade, Copenhagen, Denmark.

Cinematograph Lanterns.—No. 14,916, 1911 (June 23, 1910). This invention relates to an apparatus for exhibiting series of pictures in cinematographs by means of endless picture bands.

Hitherto it has been usual in exhibiting picture bands to wind them off one spool on to a second spool. The length of the bands has been limited, owing to the fact that, in view of the sensitiveness of the film, it was necessary to avoid the weight of the outer windings bearing too heavily on the inner windings. Another defect has resided in the fact that it was necessary to wind the bands back before they could again be exhibited so as to re-present the beginning of the band to the apparatus. This winding occupies much time and necessitates the exercise of much skill and care. The band of film was also liable to injury on each occasion, so that for this reason alone the re-winding largely reduced the life of the band.

In accordance with the present invention endless bands of film are used, which, after passing through the projection apparatus, are deposited on the links of a slowly (and eventually intermittently) moving endless chain, and again delivered by it at a suitable place in order to again be prepared for passage through the projection apparatus. It is true that the employment of endless bands of film, guided zig-zag fashion, has already been suggested, but these bands have been carried over a large number of rollers, whereby, owing to the numerous frictional surfaces, both the picture film and the band itself speedily become worn. Furthermore, with such a device the band of the film was necessarily subjected to relatively strong tractional strain, and this also acted prejudicially. In the device, in accordance with the present invention, both the friction and the tractional strains to which the picture band is subjected, are very small; accordingly, its length can be much greater than when spools are used, as the several parts of the band do not contact with each other. Oswald Buechner, Kuschlikon-Zurich, Switzerland; and Hans Buol, 18, Glockengiesserwall, Hamburg, Germany.

The following complete specifications, etc., are open to public inspection, before acceptance, under the Patents Act, 1901:—

Enlarging Apparatus.—No. 27,490. Photographic enlarging apparatus. Kreuzer.

Apparatus.—No. 27,599. Photographic apparatus. Wolff.

## Analecta.

*Extracts from our weekly and monthly contemporaries.*

### TOBOGGAN AND CAMERA.

In the course of an article under the above title in the "Amateur Photographer and Photographic News" for December 25, Mr. Ward Muir says:—"But tramping along the snowy byways with a whole-plate camera and tripod would be a fatiguing job (snow is a particularly tiring surface to walk on) were it not for the blessing of the toboggan. Suffice it to say that by strapping the big camera on to the toboggan all one's burden—or almost all—is removed. Along the level the toboggan, with the slightest pull, glides delightfully, despite its pounds and pounds of freight. Uphill, naturally, it is a little stiffer; but the toil of dragging it is nothing to that of carrying the camera on one's back. And downhill, one sits on the toboggan with the camera, and away one goes, braking slightly lest an accident should occur, but often covering a mile or upwards of a mile at a far faster pace than walking, and without putting forth the smallest muscular effort.

"Were it not for the existence of the toboggan, I confess I do not think I should take my whole-plate camera with me to Switzerland. The toboggan makes all the difference. The straps are arranged so that they can be undone in a moment and the camera erected. And the toboggan also acts as a table on which one can lay down a dark-slide, or what not, without getting it wet in the snow. Those who have fumbled with their paraphernalia in a snowdrift will realise that this is a real consideration."

# Meetings of Societies.

## MEETINGS OF SOCIETIES FOR NEXT WEEK.

FRIDAY, DECEMBER 29.

Cowlairs Co-operative Camera Club. General Meeting.

MONDAY, JANUARY 1.

Catford and Forest Hill Photographic Society. Social Evening. Affiliation Lantern Slides.
Marylebone Camera Club. "One Man Exhibition." Furley Lewis.
Mid-Essex Photographic Society. Smoking Concert.
Bowes Park and District Photographic Society. "Nooks and Corners of Old London." C. Forbes.
Leeds Camera Club. Annual Meeting and Election of Officers.
Leek Photographic Society. Nomination of Officers and Committee.
Southampton Camera Club. Annual General Meeting.

TUESDAY, JANUARY 2.

Royal Photographic Society of Great Britain. No Meeting.
Worthing Camera Club. "Combination Positives and Enlarged Negatives." W. Chater Lea.

WEDNESDAY, JANUARY 3.

Croydon Camera Club. Exhibition of Members' Lantern Slides.
Scottish Photo Pictorial Circle. Open Meeting.
Coventry Photographic Club. "Ways and Means in Photography." Burroughs Wellcome and Co.
Borough Polytechnic Photographic Society. "Home-Prepared Papers: Salted and Platinum." C. Wille.
Edinburgh Photographic Society. "Rothenburg on the Tauber and some other Bavarian Towns." J. M'Kissack.
Ilford Photographic Society. "Architectural Photography, what to take and how to take it." H. Creighton-Beckett.
Ealing Photographic Society. Fourth Print Competition.
Cavendish Camera Club. "Photography and Focus" Prize Slides.

THURSDAY, JANUARY 4.

Folkestone and District Camera Club. "Flower Photography." E. Seymour.
Rodley, Farsley, Calverley, and Bramley Photographic Society. "Bromoil." W. Naylor.
Liverpool Amateur Photographic Association. Affiliated Slides of R.P.S.
Tunbridge Wells Amateur Photographic Association. "Photography" Prize Slides.
Sutton Photographic Club. "Three Cameras in Norway." L. G. Castle, E. M. Cope, and P. G. Cope.
Brighouse Photographic Society. "Retouching." W. Bell, for Gevaert, Limited.

# Commercial & Legal Intelligence.

LEGAL NOTICES.—A receiving order has been made in the case of Catherine Ada Mortimer (trading as Ada Mortimer), photographer, etc., Osborne Villa, Llanwrtyd Wells, Brecon.

# News and Notes.

A LIMELIGHT ACCIDENT.—At the children's treat of the Brimscombe Mission Chapel, near Stroud, on Tuesday last, the minister, the Rev. Stephen de Courcy, was fixing up a limelight apparatus, when the cylinder which he was adjusting exploded and killed him.

PROFESSIONAL REQUISITES IN MANCHESTER.—The annual show of photographic apparatus, etc., arranged by Messrs. Gold, Smith and Co., 44, Chapel Street, Salford, Manchester, will be opened on Monday, January 2, and remain open until January 12. All professional photographers are invited to pay a visit, the exhibition being open from 9 to 6, with the exception of Saturdays, when it closes at 1.

RAJAR COMPETITION.—The prizes offered by Messrs. Rajar, Ltd., Mobberley, Cheshire, for the best prints on paper or postcards of their manufacture submitted for the competition for the month of November have been awarded as follows:—Class I., open competition, to Mr. H. A. Hill, 36, Broom Grove, Rotherham, for print on P.O.P. paper, purchased from Messrs. Leadbeater and Peters, Imperial Buildings, Rotherham. Class II., for those who have never previously won a prize in any class of competition, to Mr. H. Young, 125, Abbeydale Road, Sheffield, for print on P.O.P. paper.

FLASHLIGHT ACCIDENT.—An explosion, attended with regrettable results, occurred at the Alexandra Hall, Blyth. The scholars of the Blyth Secondary School were rehearsing "Midsummer Night's Dream" for their annual concert, which was to be held on Tuesday in last week, December 19. In all about fifty scholars were present, one of the teachers being in charge.

The first act had been completed successfully, and during the second act a flashlight photograph was being taken when the explosion occurred.

Two young men were arranging the magnesium powder in the holder when, from some unexplained cause, the material suddenly exploded with a terrific report. Almost immediately the cry was heard, "Help! Help! I am blind! Where am I?" A second and a similar cry followed, and a scene of great confusion ensued, most of the scholars being greatly terrified.

When the smoke had cleared, it was found that five young people had been injured. Richard Rennison, of Seaton Delaval, an amateur photographer, who was engaged taking photographs, was found to have received practically the full force of the explosion, his face and hands being severely burnt. Both his eyes were involved, and Dr. Fairlie, who attended to the injured, afterwards expressed doubts as to whether Rennison would recover the sight of his left eye.

Reginald Dobdson, of Blyth, who was assisting, was also badly cut about the face; whilst another young man sustained such severe burns and cuts about his hands and face that he had to be detained at the Knight Memorial Hospital.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## PHOTOGRAPHIC PROSPECTS IN CANADA.

To the Editors.

Gentlemen,—In reference to the numerous queries which reach you as to photographers starting in Canada, perhaps, as a photographer in business in Winnipeg, I can make some notes of general interest. Canada is seven-eighths as large as Europe. Its older settlers started on the east coast, and people are coming West who want room to get on, as a lower form of civilisation exists in the West. By "lower" I mean not so highly educated and finished a class. Pay gets higher as you leave Toronto west, and living is higher too. As regards getting situations, we are not servants in the European sense; whatever a man does he does to get on at *himself*, and as they say, "make good." I cannot recommend any man to come out here to take a situation. I can recommend a man to start for himself, if he is capable and has plenty of confidence. The people here have money, and they will spend it without demur, criticism, or stint, for what they want, but they are a very hard-working race, and any man starting for himself must work, and harder than ever he did before; but his reward is here. I have never been an employee or an employer. I put my work out to finish in Europe, and in this country, when busy.

I have tried all sorts of ways to get a name and big prices, and am getting $2.50 for 10 x 8's each, and expect soon to get twice that sum. Cabinets, I get $5.00 silver prints, $7.50 bromides, $10.00 platinotypes. I really cannot *recommend* any man to come out here unless full of grit, because, for the first year, most men are homesick, and unless a man really is a *good man*, and cannot get on in the Old Country for no fault of his own except that he cannot get work—if that be a fault—and a man coming out should be prepared to *work*, and not expect the same comforts as at home. A man coming out as an adventurer, to make the best of things, will not be disappointed.

I like Toronto, and St. John's, N.B., and Nova Scotia, but out West we can get as much work as we want for certain, and, of course, many come out West because they know there is more demand for all sorts (and in all conditions) of men.

The kind of labour most in demand here is a worker in colour, air-brush or water-colour or oils. Studios pay all prices, as it is very cosmopolitan, and we have no fixed laws about it, or customs. If a man came out here he would find himself in a new world, and would find all nationalities at work, and men from his own district. He would have to find his feet in his own way. He could get $12.00 or $14.00 a week in an insurance office while he looked round, or the same sum in a studio. This is a hard country, and all milksops had better stay at home. This is the country for an adventurer. As regards styles and processes: The usual matt postcard trade—the cheap cabinet men—abound, as in England; also the coupon trade; but Canadians are behind England and the East in art-lore. Many Kodak, but don't finish their own work, and don't do good work.

Cabinets fetch $10.00 to $12.00 in the best studios, and whole-plates $20.00.—Yours faithfully, H. N. B.

◆

# Answers to Correspondents.

*** *All matters intended for the text portion of this* Journal, *including queries, must be addressed to* "The Editors, The British Journal of Photography, 24, *Wellington Street, Strand, London, W.C.*" *Inattention to this ensures delay.*

*** *Correspondents are informed that we cannot undertake to answer communications through the post. Questions are not answered unless the names and addresses of the writers are given.*

*** *Communications relating to advertisements and general business affairs should be addressed to* Messrs. Henry Greenwood & Co., 24, *Wellington Street, Strand, London, W.C.*

*** *For the convenience of Readers, our Publishers,* Messrs. Henry Greenwood & Company, *of* 24, *Wellington Street, Strand, W.C., undertake the registration of copyright photographs at a charge of* 1*s.* 7*d. each photograph, to cover cost of registration fee, form, etc. Two unmounted copies of each photograph must be sent with the fee.*

Photographs Registered :—

Lambert Weston & Son, Ltd., 15, Bench Street, Dover. *Twelve photographs of various members of the Dover Amateur Operatic and Dramatic Society in costumes worn by them when performing in "The Mikado" during December at Dover, entitled :—"Let us dry the ready tear"; "At last, my little bride that is to be"; "Were you not to Ko Ko plighted"; "Three little maids from school are we"; "Buried alive"; "Now kiss her"; "Everything seems to point to you"; "He shivered and shook as he made the sign"; "Pooh-Bah, I appoint you Lord High Substitute"; "Sit with downcast eye"; "The Brass will crash"; "Ko-Ko."*

H. N., Collotype, and Others.—In our next.

Electric.—Either lamp is as good as you can have for gas, though no gas lamp is so efficient as an electric arc, and we should advise you to install this form of light if you have electric supply available.

T. J. A.—1. We should say it refers to a knowledge of engineer's requirements in photographs of machinery and of the construction of arc lamps, etc. 2. A grey distemper can be painted over many parts and cleaned off afterwards with a wet sponge.

Paper.—Can you inform me roughly the price of, and where to get, some very wide, good stout paper, such as is used for paper backgrounds and scenery? I want this to cover a long wall, about 30ft. long and 8ft. high, with as few joins as possible, and to be able to tack it to the wall with tin-tacks.—S. E.

R. T. Tanner and Co., Dorset Street, Salisbury Square, E.C., or Berry and Roberts, Great Queen Street, W.C.

Cleaning Windows.—Some time ago you had a par in the "B.J." on the best method of cleaning windows. I know it said use no soap, but the rest I have forgotten, and have been unable to find the number containing it.—Chestnut.

First wash the woodwork, and then, when this is dry, brush the windows with a dry painter's brush to remove dust. Then go over the glass with warm water containing a fair proportion of ammonia, wipe dry with soft cotton, and polish with a piece of tissue paper.

Blue Dye.—Could you kindly give me the names of any blue dyes, suitable for staining gelatine reliefs, which will not fade in the light of a powerful electric arc? I have tried the ordinary chemist's dyes, but find that they are of no use in that respect. My object is to obtain a lantern-slide of the same colour as an iron-toned print. I have tried the iron-toning process, as given in the "B.J.A.," but found that the colour bleached quickly in the light of the arc. Hoping that you can assist me.—W. T.

We think you will not get a blue dye as permanent in its results as the blue obtained by iron-toning, which is of a very permanent character. Though it is liable to become paler on exposure to strong light, it regains its depth again. We think you have not washed thoroughly from the iron salts used.

Alkali in Development.—1. What is the meaning of E/200 solution of hydroquinone? The molecular weight is 110, is it not? 2. In considering the researches of Bourgeois (p. 743, "B.J.P."), I cannot make head or tail of the Table I. (pyro). May I ask if it is not likely the promiscuous results obtained were due to variation in the plates themselves (emulsion)? 3. Table I., plate 25 (p. 743). This plate seems the pick of the pack, and I should like to try this formula. Have I got the idea right? as follows :—

| | |
|---|---|
| Pyro | .6 |
| Sulphite | 2.0 |
| Carb. | 2.0 |
| Citric | .1 |
| Aq. add | 60 c.c. |

I know it is unfair to pester you with such questions at this time of the year, but, bearing in mind your former courtesies, have ventured once more to ask your assistance. With best wishes for your prosperity during 1912.—Pot-Meta.

1. The strength is 1-200th of the equivalent weight in gms., dissolved in 1,000 ccs., i.e., .56 gms. 2. We agree with you that the tests are not conclusive. Evidently the soda carbonate may be varied considerably without appreciably affecting the results of the development. 3. Yes, the developer is as you give it.

Sulphide Toning.—Will you kindly let me know the correct procedure to follow when toning bromide prints by the sulphide method, i.e., bleaching the print in potass. ferricyanide and potass. bromide, and then toning with sulphide? I quote from two books of instructions :—(a) Both solutions can be used several times in succession until exhausted. The action naturally becomes slower, but the quality of the results is not impaired thereby. (b) The bleaching solution may be used for several prints in succession. The toning-bath (sulphide) must only be used once and then thrown away, allowing 1oz. for each quarter-plate print, or other sizes proportionately. The question I should like to have answered is :—Can the sulphide bath be used for a number of prints, or must a fresh lot be used for each print?—E. F. Guiton.

Follow the instructions in the "Almanac," 1912 (page 825). The sulphide bath is used for each *batch* of prints, then thrown away. It is best to keep sulphide in strong stock solution, and mix this with water to form the working-bath. This latter should not be kept for use a second time. Instruction (b) really means to say this—it does not mean a fresh lot for each print—but as we do not know the strength of the bath we cannot say if the proportion of 1oz. per print is correct. In practice it is not necessary to be as exact as this.

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# COLOUR PHOTOGRAPHY.

## VOL. V.

## 1911.

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*Throughout the Index the following abbreviations are used to indicate the nature of the reference:—*

**(Pat.) Patent.** **(Rev.) Review or Trade Notice.**

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HENRY GREENWOOD & CO., PUBLISHERS,
24, WELLINGTON STREET, STRAND, IN THE COUNTY OF LONDON.—DECEMBER 29, 1911.
Printed by LOVE & MALCOMSON, LTD., Dane Street, High Holborn, in the same County.

No. 49. VOL. V. JANUARY 6, 1911.

# THE BRITISH JOURNAL OF PHOTOGRAPHY

MONTHLY SUPPLEMENT

ON

# Colour Photography.

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## THE PERCEPTION OF COLOUR.

A WRITER in a contemporary calls attention to the necessity of isolating a density or tone from its adjoining tones if it is to be visually estimated or compared with another tone, and for this purpose he uses perforated cards arranged so that the tones to be compared are each seen through a perforation. A great many people fail altogether to realise that the apparent depth of a tone varies very greatly with its contrasting surroundings, and the realisation of this fact is one of the difficulties that give most trouble to the young artist, especially when he advances from monochrome to colour. In monochrome the apparent depth of a tone varies greatly if it is examined through surrounding borders of various depths; but in colour, not only the depth, but the colour itself often varies to a most surprising extent. One of the most essential points of difference between the painter and the photographer is that the former, by dint of long observation of nature and continual practice in painting, acquires the power of seeing tones and colours as they actually are. He is not deceived by contrast effects, whereas the photographer, who has usually had no training whatever in the art of seeing nature as it is, falls into continual blunders when he endeavours to judge whether a particular effect is "true" or not. He will pass a photograph as true in tone values, though glaring faults may be apparent at a glance to the trained eye, and he seldom pays very much respect to the matter of orthochromatic photography simply because its advantages are invisible to him. He is almost blind to tone, and even more blind to colour, owing to the fact that he has never learnt to see either. The advent of the screen colour plates has proved his blindness in the matter of colour in a manner that was before impossible, for until the Autochrome plate appeared the man who could not paint could not very well demonstrate his blindness to colour. When he commenced to produce what he considered to be true renderings of nature's colourings his blindness became manifest, but it was not easy, and still is difficult, to convince him that his judgment of colour is as deficient as it really is.

Some time ago we devised an experiment to demonstrate the startling effects of colour contrast, and as it is one that any photographer can easily try for himself, if he possesses an optical lantern, we give details. An incandescent gas illuminant should be used in the lantern, as too powerful a light is not required. Take two slips of glass, one ruby red and one bright green. We used ruby glass of the kind supplied with dark-room lamps of the cheaper and most unsafe variety, and green glass of the tint that used to be supplied for use when printing on albumen paper. The two glasses placed in contact and held up before the eye appear nearly black, but if the two are put together in the lantern in the place of a lantern-slide the colour on the screen is of a rather washy claret tone. Slip the two glasses in opposite directions so that they only overlap for an inch or so. The centre patch of colour projected by the two glasses together will now be bordered by a red and a green strip on opposite sides, but the centre will no longer be a claret, but a deep bluish-violet. If the glasses are arranged so that they can be readily slipped over each other the change from the monochrome patch to the three different colour patches can be effected very rapidly, and the central colour can then actually be seen to change from the one colour to the other. Other colours can be used in a similar fashion, and a variety of effects, some of a very surprising nature, can be produced. A little experimenting on these lines should soon convince the untrained one that his judgment of colour is, to say the least, unreliable, and that he had better be cautious in assuming that his attempts at colour photography are perfectly true to nature. Of course, if the plate is perfect, and exposure and general treatment are rigidly correct, the result should be automatically true; but this perfection of technical details is not yet achieved, and every screen-plate yet produced offers grand opportunities for entirely false colour-rendering.

Referring again for a moment to the colour-patch experiment, let us assume that the largest and most prominent of the three patches is the violet one. The photographer attempting to reproduce the three will probably devote most of his attention to the dominant violet patch, and attempt to reproduce its apparent colour exactly. Its real colour is, however, the claret seen when the green and red borders are absent. It only appears violet by reason of the juxtaposition of the red and green patches, and in a true reproduction it should still be a claret tint. If all three colours are each truly represented, then, of course, in the perfect result the same effect of colour contrast will be produced, and the claret will again appear violet.

When violently contrasting colours are present, each individual colour must be actually correct if all are to appear so, for they affect each other. Only by long practice can we acquire the knack of judging the individual colours correctly, and the inexperienced one is well advised if he adopts a dodge much practised by young painters—that is, the separate examination of the individual colours through a small hole cut in a piece of white opaque paper. This simple piece of apparatus will reveal many surprising effects, for with it it will sometimes be found that what appeared to be white is really an exceptionally brilliant patch of colour, what appeared to be dark green is really purple, something else that was thought to be brown is really grey, while an apparently light green is a brilliant yellow. Green is, in fact, one of the most deceptive colours to the uneducated eye, for while it may be affected by contrast, its perception is affected to an even greater extent by prejudice, owing to the great prevalence of the colour in nature. Many find it difficult to see the great changes in colour that take place in foliage, grass, etc., as lighting and time of day change. In the course of a single day the colour of a patch of turf may vary from the brightest yellow to the deepest purple, and yet to the casual, untrained observer it is green, "grass green," all the time. Very often the Autochrome plate is wrongly blamed for its rendering of greens. It does not always give them correctly, especially when it is required to represent green and red together, but in the absence of red it may give a very fairly true representation, and frequently gives a truer one than its critics are capable of perceiving. It is sometimes condemned for its colour rendering in a dull light, but more often than not the plate is right, and its critics wrong. They are making the blunder of expecting bright colours in a dull light, an effect which is a simple impossibility. They cannot see the changes that have taken place since the last bright interval, but the plate can, and records them all more or less accurately.

The cultivation of colour perception is most essential to the colour photographer, but we fear he is handicapped rather severely in the task of self-education. Close and careful study of nature will help him, but the only really effectual method of so studying nature is to paint it—that is, to try to imitate its colour effects in pigments, which is an effort that requires much time and much patience. We fear that very few colour workers try this method of training, but if they would only do so, even for a short time, they would certainly learn something, either of nature or of their own deficiencies; and if in one case they produced better work, and in the other dropped colour work altogether, the world generally would gain.

# SCREEN-PLATE COLOUR PROCESSES.

[The following three papers in colour work appear in the recently published 1910-11 issue of the "Process Year Book," the annual of the photo-mechanical crafts in which Messrs. Penrose and Co., through the editor of the "Year Book," Mr. W. Gamble, earn the gratitude of all interested in colour and monochrome reproduction by the examples they offer of the latest processes. The articles contributed by authorities in photographic and photo-mechanical work are, as in previous years, a feature of the "Annual."—Eds. "B.J."]

## PLATES FOR COLOUR PHOTOGRAPHY.

Since I gave in a former article the results of trials made with these plates, some improvements have been made in their preparation. I shall not give the historic details of the progress that has been made, but only make some remarks as to their qualities in general, for when the manufacturers are modifying their products it is well to guard oneself against stating precisely their respective qualities. As with ordinary plates it becomes possible to arrive at a medium quality and every operator will have his own preferences, more or less justified.

In France, where I live, we have actually three kinds of colour screen plates—Autochrome, Omnicolore, and Dioptichromes. They enable direct colour photographs of a coloured subject to be obtained by one exposure only, with a fidelity of colour rendering which is often nearly perfect. The manipulations are simpler and, on the whole, quicker than for the ordinary plate (reserve being made for the use of the new automatic methods now applied to ordinary plates). The time of exposure depends upon the quality of the light, which is very variable if daylight is used, and the human eye cannot differentiate exactly such light, the same as with artificial sources of light, which are equally variable.

There is not for these plates a latitude in the exposure just as with ordinary plates, with which one can give, as we demonstrate daily, up to 100 times the normal exposure. One cannot depend upon a plate which has been exposed one-third of the proper time if a good result is to be obtained, whereas with an exposure double that recommended a result will be obtained which, though weak, can be made useful and pleasing by intensification.

As a matter of fact, all these colour screen plates are based on the same principle. On a glass plate a series of trials of small, transparent screens are formed by different means, some of the screen particles being blue, others red, and again others green, and which have been juxtaposed more or less regularly. A layer of varnish protects these coloured particles, and on this layer of varnish the sensitive emulsion is put. The makers are always trying to improve this emulsion, especially with regard to its higher sensitiveness and its keeping qualities, two factors which cannot usually be obtained together.

Originally the Autochrome plates could be guaranteed to keep for two months, and it has since been extended by Messrs. Lumière to three months, but I have been informed that they can be kept much longer. My own opinion is, however, that when they are used only a few weeks after preparation the results will be better, and this is the opinion of practical workers.

Count Dalmas, who has shown results obtained with Autochrome plates of from four to five months old, has proved that when exposing twice or three times the ordinary time satisfactory results were obtained, but the image was a trifle weaker. He is of the opinion that when the first development is not delayed more than two or three days, the results will be better than after a week. This we have said from the beginning, and, therefore, we have designed our portable developing box in order to be able to develop near to the subject photographed, or on the evening of photographing.

For developing Messrs. Lumière have adopted a systematic way of procedure consisting in pouring into the dish only one-quarter of the necessary concentrated solution for a normally exposed plate, the quantity of water remaining invariable. After twelve seconds from the immersion of the plate in the dish it is necessary to inspect the plate, and one can tell by looking through it when held near a light covered with paper called "Virida," which gives a weak and bluish light, whether the outlines of the image appear, and at this moment the remaining three-quarters of the concentrated developer are added. The time of appearance fixes the time for the stoppage of development, which instead of 2½ minutes may be 4 minutes, if the time of exposure has been too short.

Unless one can remember the exact colours of the subject which have been photographed this method is problematical. The manufacturers of Omnicolore and Dioptichrome plates ignore this method altogether, and warn their customers against the danger of looking at the picture during development. At any rate, we would advise for portraiture or reproductions, of which the colouring has been noted, using at once the whole quantity of the normal bath, examining quickly after a minute, using the Virida paper for illumination to see how the image progresses, and keeping the plate in the bath a longer or shorter time as may be necessary. One must not forget that, just the same as with the image on an ordinary plate, the image is negative and greyish in the dish, no colour being visible. If a portrait, and the sitter has been dressed in black or in dark colours, the dress is hardly visible, and to get it into one's head that the same must appear at all costs would mean to lose the vividness of the clear colours.

As I am speaking of the vividness of the colours I would like to refer here to their "relative solidity" with regard to the agents used for developing. *Throughout the colouring of a subject, the series of colours is unchangeable so far as their number and their intensity are concerned.* This is what our colleagues and many operators should bear well in mind to make their very different opinions agree. The three manufacturers use as a developer metol and hydroquinone mixed, with the idea of making it serve again for a second development. Messrs. Lumière also mention pyrogallol, although advising the first-named, and I think they are quite right in doing so, although the uncertainty of preserving the ammonia solution at uniform strength troubles me; I therefore prefer the Pyro-Reeb in which the alkaline solution is fixed and does not give off its ammonia until the moment that the pyrogallic solution is added.

In the first development the image has been brought out by blackening only the particles of the emulsion which have received an impression from the light having traversed the small coloured parts of the screen, which on account of this have been obstructed, and it is necessary to dissolve these particles. For this purpose Messrs. Lumière suggest a solution of permanganate consisting of two grammes per 1,000 cc., which has been acidified with one cubic centimetre of sulphuric acid (pure) per litre of solution. The manufacturers of Omnicolore and Dioptichrome plates prefer a solution of bichromate of potash of 5 per cent. in water, mixed with 10 cc. sulphuric acid per litre of solution. After trials made I prefer the solution of Namias, proposed by Stephan, which is composed of potash alum mixed cold (about 125 grammes per litre of water), to which is added 2 grammes permanganate of potash per litre. This solution hardens the layer of the emulsion. It is necessary every time the permanganate of potash is used to add to the water for the first washing 5 cc. per cent. solution of commercial bisulphite of soda, which makes the picture clearer, at the same time dissolving the peroxide of manganese which has been formed.

In this state the image is coloured by the light which traverses the series of colour screens. If the subject has only clear colours it is preferable to preserve the image thus; but with black or dark colours the coloured screens are obstructed, whilst they let through a greatly diminished illumination, which makes these tones milky. A second development will improve the general aspect of the image, but will make the very clear shades darker. Space fails us to fully explain this fact, to which we have been the first and, we believe, the only one to draw attention.

At any rate, it is only after the second development that the troubles begin, and if only one plate is available, which is rather valued, it will be wise to avoid this treatment.

Originally Messrs. Lumière insisted upon the necessity of an intensification and fixing.

Considering the results we have obtained since our first plate and the ill-successes met with after the second development, we warn our readers to act with great care in regard to the different operations to be gone through. Although the layer is more resistant, Messrs. Lumière do not now insist upon the second development, neither do the other manufacturers. The intensification is only recommended as a means of improving a plate which is weak through having been over-exposed or over-developed, and it is to be noted that the fixing bath is of no use if the image has not been intensified.

For intensification Messrs. Lumière indicate silver: the other manufacturers, bichloride. The latter are wrong, as it is well known that silver gives much more intense images.

Thus it will be seen that apart from the use of permanganate and alum for dissolving the developed image after the exposure, the manipulations remain the same. We would just remind our readers that by performing the first two operations and drying with a fan one obtains on an Autochrome plate a dry proof quickly, and it is therefore much simpler and quicker than with an ordinary plate.

The gum dammar varnish with 10 or 20 per cent. benzine is too thick. It should be 6 per cent. or, better still, 4 per cent.

Charles Gravier.

## AUTOCHROMES AND THEIR REPRODUCTION ON PAPER.

A fundamental difference which exists between Autochromes and other coloured originals when employed as copies for colour work was referred to by me, under the above title, in last year's "Annual."

The present article refers to further essential differences with a view to remove some misconceptions which exist, and describes in their most simple form the actual manipulations for reproducing Autochromes as far as these manipulations differ from ordinary practice or require special attention.

Colour vision is generally explained, on the assumption of three sets of nerves, each set giving the sensation of one primary colour. If these or their practical equivalents actually exist in our retinas, it is difficult to conceive them performing their functions satisfactorily and without interfering with one another, unless they are side by side, so we must imagine them as forming a sort of mosaic. If this be so, the Autochrome is a most beautiful replica of the retina in its essential elements, for in it we have a mosaic formed by three colours side by side, each representing one of the primaries. Again, in the Autochrome this mosaic of primaries is in front of the sensitive film during exposure in the camera and carries its selective transmission to the photographic film behind, just as we may suppose the mosaic on the retina passes its selective impulses through to the brain.

As might be expected from this complete accord, we find the Autochrome gives us the colour delicacies and gradations of nature, as seen with our eyes, together with her depths and contrasts. These qualities are very different from those possessed by the majority of works of art and other single reflecting surfaces which form nine-tenths of the coloured subjects the colour engraver attempts to reproduce; beyond flowers and fruit and such like subjects how rarely do we see nature recorded in natural colours, how rarely a portrait from life or a landscape. Some years ago, the Editor, Mr. Gamble, was very much fascinated with the idea of taking screen negatives direct from nature. It is quite easy to make a specimen block in this way by selecting the light or the subject, but we all in practice take an ordinary negative and transparency or print and send one or the other to the engraver. When dealing with Autochromes it is exactly the same as when dealing with nature direct, and in the majority of cases it is necessary to take negatives from them before they can be satisfactorily reproduced. On the other hand, there is no necessity to employ the Autochrome with works of art and similar subjects in which the colour effects are largely obtained by artifices which entirely suit the ordinary manipulations.

These remarks may explain why some photo-engravers have the feeling that Autochromes are not of much help to them in their business or that they are not suitable for reproduction; the homes and splendour of the Autochrome are not the copy board and easel, but nature in her ever-changing colour moods or human expressions in their tenderest and most exquisite touches, these are fields of work practically untrodden by the colour engraver, fields which will be found by the men who first explore them "strewn with gold."

The main difficulties in the reproduction of Autochromes can now be summed up as follows:—

1. *Structural texture.
2. Strong contrasts with high total differences. As in nature.
3. Extremely delicate local gradations. As in nature.

The following are the manipulative details so far as they differ from ordinary work.

The colour filters will not be suitable unless each of the three primary filters will act upon the sensitive plate, only and exclusively through its analogue in the Autochrome film. The special filters of Messrs. Wratten and Wainwright are absolutely reliable in this respect.

Negatives are first obtained in the transparency apparatus with each of the colour filters, using a diaphragm not smaller than is necessary for definition, and upon quick dry plates, i.e., either dipped and backed "Speed" plates or ready prepared and backed high-speed colour-sensitive dry plates (collodion emulsion is quite unsuitable for this work, although the best for some other classes of work). When held up to the light, with surrounding light excluded, the negatives must show the *whole* of the detail and gradations of the Autochrome and be practically free from grain or grittiness; the former is secured only by strict attention to correct exposure and development—the latter by the focussing and irradiation in the plates. From these negatives *screen transparencies* (on wet plates, if possible) are made of the size of the blocks required and also containing the whole of the detail and gradations of the negatives. This is ascertained by examining the plates over a dark ground as they come out of the copper bromide bath, and when they should appear as perfect positives. To attain success at this stage it is essential that the operator be thoroughly conversant with the resources at his disposal in the screen and diaphragm adjustments. Finally dry plate screen negatives are made from the screen transparencies by placing the latter in contact with backed dry plates in the camera dark slide and exposing to an illuminated white surface (out of focus) through the lens. Care should be taken that the shadow dots of the transparencies are the right size to produce the proper high-light net work in the negatives.

In cases where it is necessary to retouch, add, or alter local colour, etc., the procedure is modified. The first negatives are taken either the same size or enlarged from the Autochrome. From these negatives contact prints are made as follows: pieces of smooth bromide paper are dry mounted upon thin sheets of grained zinc or aluminium (in the dark-room, of course), and these mounted papers used in exactly the usual manner of bromide printing. It will be found they go through all the operations without loss of register, and when dry are worked up and screen negatives obtained in the usual manner.

Howard Farmer.

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* "Penrose's Annual," 1909-10, p. 161.

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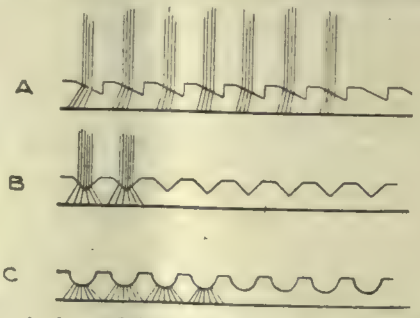
## SUGGESTION FOR A NEW PHOTOGRAPHIC COLOUR SCREEN PLATE.

The following are methods I would suggest for forming the screen for screen plate colour photography:—Sheets of celluloid could by means of moulding by pressure or other means have imparted to them on one side a multitude of prismatic surfaces, and on the other side a coating of panchromatic emulsion may be applied. Then on exposing such a plate through the prismatically moulded side the colour is recorded by diffraction and dispersion at the same time, without any special arrangements. After development and reversal of the image a plate should be obtained, reproducing the subject with the most beautiful colours in their exact tints, such as no artificial screen could possibly accomplish.

The method of manufacture being extremely simple, this method would be utilised for the production of films for hand-cameras and for cinematographs.

The cold moulding of films which have already been coated with emulsion would be equally possible.

The subjoined diagram will illustrate my method. The cutting of the matrices in the forms A and B could be done by a very fine tool on a dividing machine, whilst the form C could be obtained from a half-tone plate. In A the prisms may be blackened at their apex or not, as may be found desirable. In B the surface is formed into bi-prisms. In C the formation is lenticular and non-achromatic. The emulsion is in each case spread on the smooth side.



F. Dogilbert.

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**Autochromes in Lockets.**—One of the obstacles to the more general employment of Autochrome and other screen plates is found in the difficulty of viewing them without some special appliance. A locket, adapted apparently from the case of a lady's hunting watch, which was recently shown to us, provides a very neat mount for an Autochrome miniature. The picture, with a thin cover glass, fits into the space formerly occupied by the watch movement, while a polished silver lining to one of the cases, opened to a suitable angle, serves as a reflector, enabling the picture to be seen without raising the locket higher than the position at which one usually consults a watch. The example we saw was of amateur workmanship, as far as the fitting was concerned, but the idea, if carried out by a jeweller, should prove remunerative to the growing number of professional portraitists who are taking up colour photography and endeavouring to make it a profitable side line.

# TRI-COLOUR FILTERS AND THEIR "CUT OUTS."

(A paper in the "American Annual of Photography.")

In practically all of the tri-colour volumes, and also the articles in the photographic and technical journals dealing with the subject of tri-colour work, the illustrations presented of the "cut-out" action of the respective filters is shown diagrammatically as in Fig. 1. Because of its frequent usage every colour operator will instantly recognise this diagram, and will also at the same time recognise its utter falsity in so far as his actual working results are concerned. In this modern age, and at the present stage of the knowledge of tri-colour, there is really no legitimate excuse for the publication of this diagram, which conveys an entirely misleading conception.

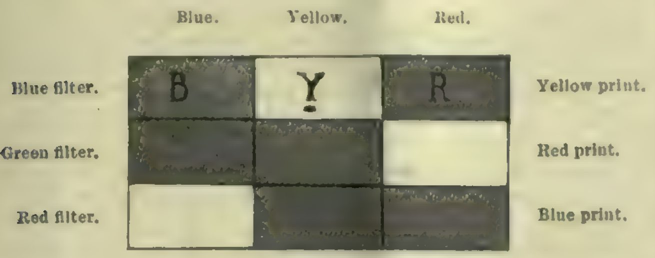

Fig. 1.

To take up this point in detail, we find that if an operator tacks up with the "copy," three solid patches of his tri-colour inks, that generally—the result through the red filter is practically a solid yellow and three-quarter tone red. Through the green filter the yellow is rendered practically as a solid, but the blue is nearly as transparent on the negative as is the red; while the result through the blue-violet filter is that the blue is about half (or quarter) tone; red the same, and practically transparent yellow. This is shown in Fig. 2.

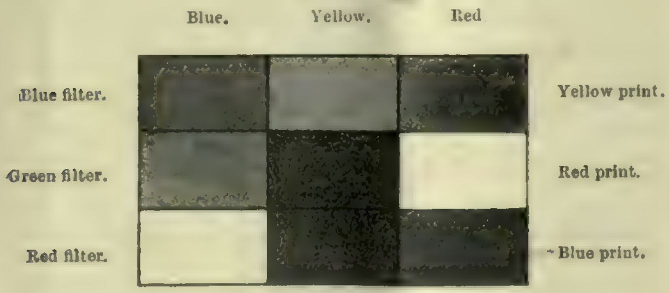

Fig. 2.

Of course, the operator getting this result in almost every case blames the filters, and casts about for some change in their dye constitution which will achieve the happy effect shown in the diagram of theoretical action, but with the result that while such change will perhaps show improvement on some one colour, yet it is at the expense of some other. Then, of course, he blames the plates. If we, however, give consideration to the matter, this discrepancy in results is easily explainable.

To begin with the filters, it has been determined definitely by independent authoritative workers that the best results are to be obtained if the red-sensation negative be acted upon by light extending from the extreme red end of the spectrum to wave-length 5,900, the green from wave-length 6,000 to 4,900, and the blue-violet from 5,000 to 4,000, and that the filters should present sharp and abrupt absorptions. It does not make any difference whether the filters be "liquid" or "dry," so long as their absorptions are correct; also, there is no *secret* in the use of any particular dye-stuff, for there are dozens of such that can be made use of for each filter. It simply depends upon the *amount* of dye used to give the correct absorption. This is absolutely a matter of spectrographic practice, which can merely be approximated by visual methods.

It is also well known that for correct reproduction of a coloured object photographed through the filters the inks in which the plates are printed should be complementary in hue to the colour of the filter employed. The red filter transmits red and yellow—therefore, an ink complementary to this should transmit blue and green; in other words, it should not possess an ultramarine shade at all, but be distinctly green-blue in colour. The usual "tri-colour blues" supplied by the ink-maker are in this shade very far from requirements.

The green filter transmits yellow-green and blue-green; therefore the ink to be complementary should transmit red and blue, or, in other words, should be magenta in hue; most of the inks now available are too crimson in hue—i.e., do not reflect sufficient blue.

The blue filter transmits the blue and blue-green, hence the ink to be complementary should reflect red and green—i.e., yellow. In trade a large number of the yellows transmit also the blue-green fully and, occasionally, some blue. It is in this falsity of ink hue that we find *one* reason for lack of "clean cut-outs," and the second is in the matter of luminosity or relative brightness.

In the three colour patches, red, yellow, and blue, set up on the copy-board, it will be evident at a glance that the yellow is the brightest of the triad, i.e., has the highest luminosity—yet, no matter how high, it is yet inferior in luminosity to the white paper on which it is printed. Next in order of brightness comes the red, while the blue is of still lesser luminosity, and reflects very little indeed compared to the white paper; for the sake of clearness, let us give numerical values to the colours, which will be represented about as follows:—

| | |
|---|---|
| White paper | 100 |
| Yellow patch | 50 |
| Red patch | 40 |
| Blue patch | 10 |

Considering now the "cut-out" on the negative through the red filter, we obtain the highest opacity on the portion corresponding to the white; next in order comes the yellow, which also acts strongly upon the plate, because the yellow (which is composed of green and red light) is first transmitted wholly in the red and partially in the green by the filter, and, second, because the plate used is sensitive to these hues; in other words, the plate is being acted upon by the combined effect of *two* hues, and to both of which it is strongly sensitive, so that the only reason why this colour does not impress itself as strongly as does the white (which is also acting with but the same number of hues) is because of the loss of light in the reflection from the layer of ink. The red patch is fully transmitted by the filter, and acts upon the plate with light of one hue, the blue which the ink reflects being absorbed by the filter, hence it is not represented by so strong a deposit.

Suppose that a certain patch of magenta-red reflected 50 units, together with a portion of the green, plus the stronger graphed through the red filter, the 50 units of blue would be definitely absorbed, leaving only the 50 red units to affect the plate, obviously one could not expect equal action compared to, say, the white paper, which has 100 per cent. active red units, together with a portion of the green, plus the stronger reflection of the hues from the unprinted paper.

The "cut-out" action of the green filter is (generally speaking) subjected to more adverse criticism than either of the other two, chiefly because the operator is not sufficient of a colour student to appreciate how much red enters into the general colour composition of a view or object, but also due to the imperfections in the hues of the blue and red inks, which preclude the obtaining of correct colour shades by their admixture.

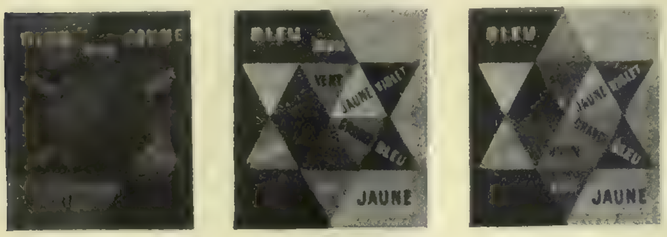
Yellow. Red. Blue.

Fig. 3.

The negative of the blue colour patch through the green filter (according to the theoretical diagram) should be shown as a solid—*but it isn't.* Instead it is generally represented by but a very light (one-quarter) deposit. This result is due first to the amount of red in the ink (which hue is stopped by the filter), and second to the excessively low luminosity of the ink. If the blue printing ink patch were of the proper hue—blue-green, then the large amount of magenta-red, printing over the blue, would not only be allowable, but necessary; for a pure blue could only be produced by the red and blue-green, both printing heavily. This point shall again be referred to presently.

The red patch photographs with practically clear glass, because these hues are absorbed by the green filter before they reach the plate in cases where a slight deposit is evident; it is due to the blue reflected by the magenta and partially transmitted by the filter.

The yellow patch is represented on the plate by the densest deposit (exclusive of the white paper), which is, of course, as it should be, first because of its high luminosity, and second because of the entire transmission of its green rays and partial transmission of its red rays, the plate being strongly sensitive to green.

The negative through the blue-violet filter shows its strongest deposit upon the blue patch, but such deposit is very far from solid in comparison with the white paper. If this deposit was opaque, then it would be impossible to reproduce the blue save in abnormally high luminosity. The yellow is necessary in order to avoid "rawness." Magenta-red is generally shown as a patch of half-tone shade (because of the blue reflected from it and transmitted by the filter) while the yellow patch is shown as more or less transparent, according to the shade of yellow employed, and because the blue filter absorbs the red and green component rays before they reach the plate. The effect of any particular yellow reflecting also the blue-green or blue would be, of course, a deposit on the plate, because these rays are transmitted by the filter. Occasionally one meets with operators who make use of a blue patch selected because of its being particularly *light* in shade—true, it represents the identical same blue, but nevertheless, while solid, it has been run light. With this patch they get "a better cut-out" on the green and blue-violet negatives, but in reality it is not so; the negative deposits are heavier simply because of the higher luminosity of the patch, i.e., the white paper reflects through to a greater extent, and the operator is simply deceiving himself.

Recognising that statements without proof are occasionally hard of belief, it has been considered advisable to reproduce here a set of tri-colour negatives properly timed and equally developed as showing (in black) the actual distribution of the three primary colours (Fig. 3). The original is printed in solid colours from litho stone, and was copied by daylight. All three exposures were developed together for the same length of time. The prints from the negatives were made simultaneously on one piece of paper—developed equally, and fixed. Another set of prints on bichromated gelatine was made from the negatives, and developed alike in warm water, fixed, washed, and cut apart. These were then dyed in their respective colours, with dye mixtures made up to be complementary in hue to the filters, then washed, dried, and assembled. These dyed and superimposed films, together with the "copy," will go forward with this MSS., and I shall ask the Editor to insert here whether in his opinion they reproduce the copy, particularly in the blue, where the red is printing practically solid.* Of course, there has been absolutely no attempt at retouching or "faking" in any way. The prints correspond to a flat etch.

It may be emphasised that the greatest present hindrance to successful tri-colour work lies in the incorrect hues of the inks supplied to the trade. The problem of the inkmaker is not an easy one, because he has not only to get the hue, but an ink that will be reasonably permanent and also transparent. Assuming, however, that such were readily attainable, they would supply neither skill nor brains to either the operator, etcher, proofer, or printer. Three wrongly exposed negatives, or different plates of unequal gradation value, will never give more than a rough approximation of the copy—unequal development time is equally bad, and exposures made without some form of neutral grey scale included on the plates—are a few of the most common faults of the average operator. Conversely, unequal printing on the copper plate, or unequal etching, would amount practically to making one of the prints too light, or underdeveloping one of the negatives. Again, it must always be remembered that the dyed plates herewith reproducing the copy will *only* do so when the dyestuff is of the proper depth of tint—an increase or decrease from this point in the amount of colour on any one of the films means an alteration of the respective hues of the copy. Now if this slight change in the colour of any one (or all) of the three films result in falsity of hues, it should be sufficiently obvious that it but serves to point the necessity for special care in the proofing of the copper plate. Proofs of varying depths of each colour should be made, and under all circumstances when good results are worked for, these proofs should be pulled from the plates after their first flat etch.

It must also be remembered that although the "cut-outs" illustrated in Fig. 2 represent what may be termed a "mean" for the various hues of the so-called "standard" tri-colour inks, yet the relative values of these deposits will vary with the shade of ink photographed. This much, however, may be taken as axiomatic—viz., that with the filters and plates whose combined use results in the action of light of the wave-lengths specified above, the negatives will represent the true analysis of the colour patches—i.e., each negative will represent the correct amount of each colour necessary to reproduce again the original patches, *provided that the plates are printed in inks that truly reflect hues complementary to the "taking" colours.*

That correctly hued printing inks constitute a point of greatest importance in the success of the work may be appreciated by the following illustrations—viz.: Suppose that a perfectly etched set of plates made from properly exposed and developed negatives, made through standard filters, are now ready for the proofer. If we print our red plate in, say, green ink, we know without the exercise of any particular amount of thought, that the entire result will be wrong, because we are (nominally) 100 per cent. off in colour. But if we were to proof it in a transparent vermilion ink we should approximate more the "copy" because we are only, say, 50 per cent. off—another proof in crimson ink would be still nearer the original because we would be only 20 per cent. wrong in hue. It will therefore be evident that even *perfect* "separation" plates will give results far from the original because of wrongly hued inks, the amount of error depending solely upon the perfection of the printing colour. When we consider that this error in hue is multiplied by three for the various plates, it may readily be appreciated that the ultimate proof, without re-etching, is liable to present a somewhat discouraging result.

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* The copy submitted by Mr. Wallace was an exact reproduction of the colour chart showing identically the same shades of colour.—EDITOR.

It appears to be a fixed rule with the majority of colour operators to regard everything outside of their own experience as being subject to grave suspicion; just why I am unable to state. The attempt to help them on correct principles of their own business is generally received in anything but a grateful (or even courteous) way. Surely the man who brings a perfectly unbiassed and properly cultivated mind to the study of any subject, and who for years is under considerable financial outlay by the purchase of delicate apparatus for its investigation, is entitled to consideration, even from the individual who (because, in a rule of thumb way, he does the same thing, day in, day out) is termed a "practical" man. One might consider that the *most practical* man is he who understands by competent study the theory of the science he works with, and combines with that the merely mechanical experience in the handling of the necessary trade tools.

R. James Wallace.

# TWO HINTS ON THE AUTOCHROME PROCESS.

(A Note in the "Bulletin" of the French Photographic Society.)

It is usually recommended to place against the sensitive film of the Autochrome plate a piece of black protecting card. Although the emulsion film is not at all transparent, yet the whole of the light transmitted by the lens is not absorbed by it, the unabsorbed portion being taken up by the black surface. There should be some advantage in using this portion of the light in the sensitive film, and this may be done by using a piece of white glazed paper instead of the black card. The white paper is cut to the required size and laid between the card and the plate, or better, dry-mounted on to the card itself. The light thus secured on the plate is increased in the proportion of at least 20 to 30 per cent. The sharpness of the picture and the purity of the colours are in no way affected, provided that the white surface is in perfect contact with the sensitive film. Other materials may be tried in place of the white paper, such as a thin flexible metal sheet, silvered mica, aluminium-coated paper—such as the new projection screens introduced by the firm of Zeiss. Possibly also phosphorescent or fluorescent screens might render service in this respect, their action continuing the exposure. Further experiments would be of interest, but having only just commenced them I cannot give any precise data on this point.

A certain number of Autochrome plates, developed and washed under the normal conditions, but not intensified, gave a series of excellent negatives, but they showed, some minutes after these operations and after having been varnished, a large number of reddish-orange markings, uniformly distributed, or, on the other hand, localised in certain parts of the film, for example along certain inequalities in the varnished coating. The markings did not show themselves in plates in the same series which were not varnished, nor in the case of those which were intensified. These markings disappeared, leaving, however, a clear stain, if, after having removed the varnish from the plate with benzole, the plate was immersed for a few seconds in a plain solution of potassium permanganate of 1:1,000 strength and made up without acid. It may be asked if they are due to the varnish, the moisture of the air, or to traces of developer which remain in the film, even after the normal washing of five minutes. In this case the precaution to pass each plate, as it comes out of the second developer, into a bath of 1:1,000 neutral permanganate would appear to be the best course for avoiding completely the production of these markings.

L. Benoist.

## PAPER PRINTS FROM AUTOCHROMES.

(A Note in the "American Annual of Photography.")

The regret is frequently expressed that paper prints are not possible from Autochromes, and it is not generally known that this can be done. Having been an Autochrome enthusiast ever since the plate has been available, I have myself felt the desire to translate its beauties to paper, if not in colour, at least in monochrome.

After considerable experiment I found that this can easily be done, and now that the Cramer Dry Plate Company, in conjunction with Mr. R. J. Wallace, have placed the Spectrum plate and their colour filters on the market, there appears to be no good reason why this cannot also be done in colour. The method which has given me the best results is to place the Autochrome against a window and blocking out the extraneous light by a suitable frame, and then copying it in the camera, using a backed panchromatic plate and the Lumière compensating screen in front of the lens. This method permits enlarging to considerable extent without showing any objectionable grain.

Another method is by contact, placing the compensating screen in front of the Autochrome in the printing frame. I find, however, that this method does not diffuse the grain as well as the enlarging method, although this is not altogether objectionable.

J. V. Alteneder.

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## FRAME EFFECTS IN AUTOCHROME TRANSPARENCIES.

(A Note in the "Bulletin" of the French Photographic Society.)

As the works of painters gain by being properly framed, I am sometimes asked if the same thing would not apply to transparencies in colours, and I have, therefore, sought for a means of arriving at this result. In the case of portraits the manipulation is fairly easy. It is necessary only to build an imitation frame by covering card or board with fabric or paper, and suspending the empty frame thus made between the camera and the sitter. But in the case of other subjects, such as figure studies and landscapes, such a method is, of course, impracticable, not only from the difficulty of transporting the apparatus, but also on account of the difference in lighting between the frame and the subject proper. In this case it is necessary to secure the result by two exposures, preparing a cut-out mask and a solid mask, fitting the aperture in the cut-out. The cut-out mask is placed on the back of the plate in the dark-slide. The landscape or other view having been taken, the solid mask is fixed within the cut-out, the cut-out mask being transferred to the ground-glass focussing-screen in order to allow of the edges of the frame being properly adjusted for the second exposure. Naturally, the focussing-screen must be in the same position as the plate in the apparatus, in order that the registration may be perfect.

In theory, a single cut-out mask should suffice, covering the opening in the cut-out during the second exposure by means of the opaque mask; but in practice I have never been able to find a material capable of completely absorbing the whole of the light, so that the central portion becomes slightly fogged, leading to slight greying of the colours.

An alternative method is to take the subject and the frame on separate plates, to scrape the film from the glass in the parts not required, and then to bind the two plates together film to film; but registration is much more difficult in this case, since the least want of register is shown by brilliant or black markings, giving an extremely unpleasant effect. In addition to the double registration (of the cut-out mask and of the edges of the frame on the ground-glass), which requires a great deal of patience, and leads to not a few failures, another obstacle is in the two exposures necessary on the single plate. These require to be adjusted so that both develop correctly in the same solution. Still, the difficulties should not be exaggerated, and the method, as the examples (projected by the author on the screen) will show, is quite practicable. While the method should not be used to create the impression that the transparency is a painting, yet the use of a frame, by its limitation of the subject, gives a better value to the picture, and, in the case of portraits, avoids the suggestion of gigantic proportions when the portrait is projected on the screen.

Comte de Dalmas.

## New Books.

"La Photographie des Couleurs par les Plaques Autochromes." By Victor Crémier. (Paris: Gauthier-Villars.) Frs. 2.75.

The Autochrome process continues to attract the French photographers, not only on account of the beauty of the results, but equally—if we may judge from the contributions to our French contemporaries—by the interest in the technical side of the process. M. Crémier, in the volume running to 108 pages before us, gives a brief historical introduction of the screen-plate method of colour photography, and a short account of the manufacturing process employed in producing the Autochrome plate. But the chief portion of his text is devoted to the practical methods for the Autochromist, and he takes the several points concerned in the production of an Autochrome colour transparency in their natural order, commencing with the lighting of the dark-room and the use of the compensating filter on the lens. He advises the use of the metoquinone developer, or, in its absence, of a mixture of metol 2 gms., hydroquinone 1 gm., in place of 3 gms. metoquinone, the developer in either case being used according to the modified time method recommended by MM. Lumière. Intensification and other after processes occupy the next section, and are followed by a chapter on stereoscopic Autochromy. We then come to the method of preparing duplicates of Autochromes, worked out by MM. Lumière and Seyewetz, and finally to the last chapter which deals with a number of miscellaneous points on Autochrome work. The little volume very efficiently sums up the present practice of colour photography with the Autochrome plates.

The Bleach-Out Process.—The text of an address given at the Brunswick Technical School by Dr. Fr. Limmer, has been re-published in pamphlet form by C. Reisser, Vienna, under the title "Das Farbenanpassungsverfahren (Ausbleichverfahren) eine Möglichkeit der direkten Körperfarben-Photographie." Dr. Limmer discusses the bleach-out method from the historical point of view, and proceeds to give a number of notes and formulæ describing experiments by himself and others in this method of producing colour prints on paper.

## New Materials, &c.

"Tabloid" Chemicals for Screen-Plate Work.—Messrs. Burroughs Wellcome and Co. have just issued a set of "Tabloid" preparations designed specially, as the result of numerous experiments, for use with all four of the commercial colour screen-plates on the market, namely, the Autochrome, Thames, Omnicolore and Dufay. The set includes "Rytol" developer, a special reversing compound, and an intensifier of acid pyro and silver nitrate. We have ourselves found "Rytol" to be an excellent developer and re-developer in Autochrome work, whilst the two other preparations answer their purpose excellently and are to be particularly recommended to the amateur worker on the ground also that in such occasional work as colour photography it is of the highest importance to use a solution which is freshly made. This, thanks to the convenience of the "Tabloid" chemicals, can always be done with the minimum of trouble.

## News and Notes.

The current number of "Pearson's Magazine" contains an interesting popular account of the Lumière Autochrome process, illustrated by reproductions by the three-colour process of Autochromes by H. Walter Barnett, H. Essenhigh Corke, A. J. Leeson, Kelway and Son, in addition to several charming examples of the work of the brothers Lumière themselves. On the whole, the reproductions may be said to be most successful in portraying the brilliancy and range of colour of the originals. There is a commendable absence of the muddiness and grain which marked the first attempts at using Autochromes as originals in three-colour block-making, and the feature points to the greatly extended use which will doubtless be made as time goes on of direct colour transparencies in magazine illustration.

An Exhibition of Colour Photography.—In connection with the annual students' soirée of the City of London College, White Street, Moorfields, E.C., an exhibition of examples, chiefly of screen-plate colour processes, was held on Friday, December 30. The collection included examples of Autochrome, Thames, and other screen-plate transparencies, lent by well-known British workers, and brought together by Mr. Arthur E. Morton, an enthusiastic colour worker, who has made important use of his hobby in connection with the planning of town gardens, and is himself a large contributor to the exhibition. Among those whose names figured upon the transparencies were Dr. Dashwood Howard, Messrs. H. C. Knowles, J. C. Warburg, A. J. Leeson, E. A. Barton, G. E. Saxby Thomas, U. M. Jones, D. Prior, H. O. Klein, Colin N. Bennett and H. Essenhigh Corke, and Mrs. Ree Ross and Miss Denny. The Lumière Company showed a collection of their own work on the Autochrome plates, the Rotary Company were represented by specimens of three-colour prints on the Rotary Tri-chrome films, and the Thames Plate Company exhibited examples of the work done on the Thames plate by the separate method. Those who had opportunity of inspecting the collection will have been gratified by seeing the many admirable photographs in colour producible by the direct one-plate processes, and the organiser of the exhibition is to be congratulated on having brought together such a representative show.

No. 50. VOL. V. FEBRUARY 3, 1911.

THE BRITISH JOURNAL OF PHOTOGRAPHY
MONTHLY SUPPLEMENT
ON
Colour Photography.

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# SUNSET PICTURES ON AUTOCHROME PLATES.

[In the following article, which appears in a recent issue of the "Photo-Gazette," M. V. Crémier, one of the most enthusiastic French workers in the Autochrome process, records his experience as regards the exposure and development of sunset subjects—Eds. "Colour Photography" Supplement.]

Among all the subjects which offer themselves to the photographer, there is one which has always had a particular attraction for me. I mean views of sunsets. Immediately on the appearance of the Autochrome plate, in June, 1907, I attempted to use it for the reproduction of these attractive natural effects, and since that time I have constantly kept before me this application of the properties of the Autochrome plate. Many amateur Autochrome workers, having complained of the poor success which they have attained with this class of subject, we have of late turned again to the use of Autochromes in photographing sunset scenes, in order to ascertain the best conditions under which it is necessary to work in order to obtain excellent results, and to discover the causes of the defects and failures which have been encountered. The following recital of our experience in this work will doubtless be of interest to many who have attempted similar subjects.

### The Point of View.

Although the choice of the point of view is not of vital importance, it nevertheless is a factor to be considered in making sunset pictures on colour plates. One's first idea in taking a sunset picture is to select a position on the seashore, a quite natural proceeding, since under these conditions the interest of the subject is enhanced by the colour of the sea obtained at the same time as that of the sky. The position is doubtless the best that can be taken in theory, but it must not be forgotten that, however calm the sea is—and it usually is calm at the close of day—it nevertheless is not sufficiently still for the exposure required for the Autochrome plate, which exposure will not be instantaneous, nor even a very short one, in many cases. Thus it happens that, when working under these conditions, the foreground of the picture will be deficient in sharpness, and therefore, particularly when a stereoscopic plate is being made, the illusion of relief is to a certain extent lost.

As we shall see later, it is perfectly possible in some cases to have the sea in the immediate foreground, but, as a general rule, it is better to arrange matters so that it comes in the middle distance. The immediate foreground is best formed by a rock, boat, or shrub, leaving the sea itself in the middle distance, where any want of sharpness is less felt.

But it must not be supposed that seascapes at sunset are the only subjects of this kind which it is worth while attempting. On the contrary, in many twilight pictures, so excellently rendered on the Autochrome plate, it is better to choose surroundings which do not include the sea, since after sunset the exposure requires to be too long for the inclusion of moving objects in the immediate foreground or middle distance. In the case of twilight scenes it is well to select a fairly open view. The foreground of the picture may be formed by a cottage, or one or two trees far enough away not to occupy too great a portion of the subject in which they will figure as silhouettes, since, when making the exposure, everything must be sacrificed to the sky, the luminous intensity of which is invariably greater than that of objects on the earth.

### Exposure.

The question of the time to be given when exposing an Autochrome plate about sunset is one which greatly perplexes the beginner. He is tempted to give an instantaneous exposure on account of the sun still figuring in the sky, but, on the other hand, the colours at sunset are very low in actinic power, and, moreover, under such conditions the contrasts in the subject are always excessive. After attempts to calculate the time of exposure, the beginner usually gives one which is pure guesswork.

Of all methods of determining a time of exposure on Autochrome plates, none is more certain or simple than that of giving sixty times the exposure which would be required by an ordinary plate—that is to say, giving minutes instead of seconds, or hours instead of minutes. This method, which we have used for the most varied subjects from open landscape to dark interiors, and with exposures ranging from 1-50th of a second to an hour or more at *f*/6.8, has likewise secured for us excellent results in the case of sunset scenes. Nevertheless, we must admit that in this class of subjects it is not quite so certain, for the reason that the exposure varies considerably during the successive portions of the hour at which this work may be done.

Starting from the fact that about 1-60th of a second is sufficient in ordinary photography at *f*/6.8, using no light-filter, in order to obtain a good negative of the setting sun when working about an hour before the disappearance of the solar disc, we commenced by exposing an Autochrome for one second at $f/6.8$ three-quarters of an hour before sundown—that is to say, at a quarter past seven on June 26. We have since made a series of trials in order to determine what exposure to give according to the time at which one is working. The results of these trials are given below, though they are not absolute, the exposure varying not only with the time, but with the state of the atmosphere, etc.

| | Time of exposure, approximately. |
|---|---|
| 60 minutes before scheduled time of sunset | 1 second. |
| 45 ,, ,, ,, ,, ,, ,, | 2 seconds. |
| 30 ,, ,, ,, ,, ,, ,, | 4 seconds. |
| 15 ,, ,, ,, ,, ,, ,, | 8 seconds. |
| 5 ,, ,, ,, ,, ,, ,, | 15 seconds. |

These times should be increased by 50 per cent. in cases where there are intense clouds in the sky. Moreover, as we shall see, while the exposure is of importance in the success of the Autochrome transparency, development is of even greater importance. In order to use the above table with as much accuracy as possible, it is well to keep a small notebook in which are given the times of sunset. As these times vary by a few minutes only from day to day, it will be quite sufficient to take an average of every five days. A note should likewise be made of the times, hour, and date, given for the various exposures, the data from which will be found of much service in subsequent work.

### Development.

Whilst in the case of the Autochrome process, as originally introduced, it was absolutely necessary to give an exact exposure in order to secure good results, for the reason that the first development was done in complete darkness and for a fixed time, such is no longer the case now that MM. Lumière have worked out the new method of development with metoquinone, in which the time of development is greater or less, according to the degree of under- or over-exposure. In our experience, the first development (giving the negative image) is just as important in another way as the correct judgment of the exposure. For this reason we advise the worker to pay the greatest attention to the first development, particularly when he has to do with subjects containing violent contrasts, such as those of actual sunsets: many of the failures encountered are due simply to improper development in the first instance. It will be found that all transparencies of sunset scenes, where there is no contrast of colour in the sky, have been over-developed. In this class of subject the fact should not be lost sight of that it is absolutely necessary to disregard the portions representing the shadows, and to develop only for the highest lights, the sky. As soon as there is a trace of image, a glance should be taken at one's watch in order to see the time which the image has taken to appear, and then the table of development times, which is conveniently fixed to the "Virida" safelight of the dark-room lamp, should be consulted, and development continued in accordance with it.

The one thing which it is necessary to avoid in subjects of this great contrast is over-development, and this error is very easily made if one does not watch intently for the appearance of the first sign of the image, and if a few minutes are not spent in the dark-room before commencing operations, in order to give time for the eyes to accommodate themselves to the feeble illumination given by the safe-light. In no case should the portions representing the high-lights appear absolutely black by reflection as viewed in the dark-room. Great care should be given to the growth of the image in density, and it is a mistake to let this full density be reached, even if the time given by the Lumière table for development has not entirely elapsed.

When one has doubts with regard to the termination of the first development, it is always better to under-develop a little than to over-develop, for under-development may always be corrected by a slight reduction of the finished transparency with acid permanganate—C reversing solution diluted to 5 per cent.—whilst in the case of over-development it is not easy to apply a satisfactory remedy.

Although it is not possible to speak with certainty, for the reason that one never has the original for comparison with the Autochrome result, yet I think that in this class of subjects my first attempts showed a predominance of orange. The clouds in particular appeared of a more rosy hue in the subject than when rendered in the Autochrome. In later work this tendency towards orange has not shown itself: the difference, if it actually exists, probably arises from the fact that I have not throughout used the same compensating light-filter. In that first used, one of the earliest issued by MM. Lumière, the filter had a characteristic fluorescent appearance, whilst that employed recently does not show anything of this kind. Yet if there is this slight alteration of the colours in sunset scenes as the result of the light-filter, which is of too great intensity for conditions where the blue and violet rays are present in very small proportion, yet the difference is really too insignificant to be taken into consideration, the more so that all comparison is impossible: one cannot retain an exact mental impression of the varied colours of the sunset sky.

V. Crémier.

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# AN OPEN FIELD FOR COLOUR PHOTOGRAPHERS.

The screen-plate colour photograph has ceased to be a scientific curiosity, and has now firmly established itself in the service of both the scientist and the artist. The large numbers of Autochrome plates which are now being used by manufacturers of and dealers in rare furniture, choice fabrics, and other articles of vertu, show, on the one hand, the commercial value of the process, while the letter from Mr. F. H. Evans, which recently appeared in these columns, testifies to its usefulness to the artist in producing faithful, unsophisticated copies of works which would otherwise only be accessible through another man's eye and hand. Excellent although the present results may be, they will probably be surpassed in the near future, notably in the directions of increased rapidity in the emulsion and greater transparency in the finished result, and it is well to take timely thought as to the best way of utilising such colour photographs.

Obviously the fact that the pictures are upon glass imposes severe limitations upon their usefulness, excluding them from the craftsman's book of designs and the artist's portfolio. The necessity for a special viewing-stand and the liability to breakage also tend to discourage their employment. It seems, therefore, that the time has now come for our experimentalists to turn their attention to the copying of Autochrome and similar photographs upon paper. As a method of obtaining a colour record direct from nature, the screen-plate process is far in advance of any system which necessitates the use of special cameras with all the impedimenta necessary for the three-colour process in any of its various forms, and it is not too much to hope that we may soon have screen-plates of sufficiently high sensitiveness to enable us to take pictures of public functions, in the open air, at all events. For Press purposes it has been demonstrated that three-colour blocks may be made from Autochromes with a considerable degree of success, so that it is rather in the direction of three-colour carbon or pinatype reproduction that further development is necessary. There seems to be a general slackening among colour workers upon paper, as shown by the last exhibition of the Society of Colour Photographers, but it will be a reproach to them if they give up the struggle with three-colour work. Possibly a few suggestions may be of service. Firstly, we would advise for such copies the use of a lens possessing a fair amount of spherical aberration, so that the colours are massed and the dot effect lost. Such instruments are to be found in the Dallmeyer *Patent* Portrait lens and the new Cooke portrait lens, while many old single lenses, if used with large apertures, would be suitable for experimental work. Secondly, for the prints we would recommend the trichrome carbon process; difficult to work, it is true, but giving absolutely permanent records of great brilliancy. The troubles attending the sensitising are largely avoided by using the spirit sensitiser, which is particularly suitable for winter work. Thirdly, as to colour filters, we strongly recommend that these should be placed as near the plate as possible, as on the Sanger-Shepherd apparatus. Screens of moderate quality will in this position give excellent results, and with lenses which have little claim to be apochromatic appear to give more evenly defined sets of negatives.

The modified collotype processes, such as the Sinop and Photo Autocopyist, seem to deserve more attention from the colour photographer than they have hitherto received; but it is hardly necessary to say that the technique of these should be thoroughly mastered by the production of first-class results in monochrome before attacking the special difficulties of colour work. Let us hope that some of our readers who are seeking fresh worlds to conquer will tackle the problem, and let the results be shown at the next exhibition of the Society.

# REPAIRING AND DUPLICATING AUTOCHROMES OF PAINTINGS, ETC.

(A paper read before the French Photographic Society.)

IN the course of experiments made some time ago on the prevailing tints in Autochrome transparencies ("Colour Photography" Supplement, February 4, p. 10, and March 4, p. 22, 1910) we pointed out a defect which is frequently noticed in the case of making copies of paintings, etc., in galleries—namely, the production of a yellowish tint, which extends over the whole area of the transparency and depreciates the colours to a greater or less extent. In respect to this fact, we have suggested that this prevailing tint (resulting most probably from an alteration in the light illuminating the subject owing to its passage through the glazing and draperies of the gallery) might probably be avoided by using, in place of the standard compensating light-filter of MM. Lumière, a filter possessing a lesser degree of absorption for the violet rays. An amateur worker, M. Blanchet, having had experience of this same defect, has informed us of the result of experiments made with screens modified according to the suggestion just mentioned above. The first results were sufficient to show us that a screen of less saturated colour than that of MM. Lumière allows of a distinctly better reproduction of the colours of the original. They further led us to modify the colour itself of the screen, so as to allow the green rays coming through the green grains of the Autochrome plate to act with greater energy on the sensitive film than under the ordinary conditions of use. The colour of the filter, "Auto JM," with the aid of which it is possible, when working in galleries, to avoid this prevailing yellow tint and to obtain relatively correct reproductions, while not of pure yellow colour, is more in the direction of orange, and at the same time lighter than that of the normal filter.

Reproductions of the same picture made on the same day, either in the Louvre gallery or in that of the Luxembourg, one with the Lumière normal filter, and the other with the "Auto JM," have showed the notable superiority of the results obtained by using the latter. The yellow tint of old pictures, which is invariably exaggerated even when these latter are copied outside of a gallery with the normal filter, is reproduced in its correct tone, as are also the other colours of the original, when using the "Auto JM" process.

### Copies of Autochromes.

With the object of placing at the disposal of Autochrome workers the means of preparing duplicates of the transparencies, MM. Lumière have worked out a very simple method, in which the original and the Autochrome plate, placed in contact, are illuminated by the light from magnesium ribbon. With the single purpose of avoiding as far as possible the loss of sharpness which results from the lack of actual contact between the image and the sensitive film, MM. Lumière have recommended the use of a box, at one end of which the magnesium is burnt, whilst the plate and the original are placed at the other. An identical result may be obtained by employing, as the source of light, a fixed illuminant, such as the Nernst lamp, incandescent gas mantle, etc. This is placed at the principal focus of a condenser, and thus gives a bundle of parallel rays, on the path of which the image and the sensitive plate are placed after having been put in contact. It is on this principle that M. Landrieu has devised in the laboratory of Dr. Morax in the Lariboisière Hospital an apparatus with which copies of Autochromes are at present being made on Autochrome plates with perfect regularity.

The use of a fixed source of light has the great advantage of allowing the exposure to be accurately adjusted according to the nature of the original being produced, as it is invariably necessary to interpose in the path of the rays a compensating light-filter. Under these conditions the use of a condenser alone would involve the employment of a filter of large size. In order to obviate this, M. Landrieu uses the bundle of rays emerging from a projection lantern—that is to say, one provided with a condenser, and with an objective of sufficiently great focal length that the bundle of rays is not too greatly divergent. Under these conditions it is easy to place, either before or behind the lens, a compensating light-filter suitable to the light employed in the lantern. With a Nernst lamp of 700 candle-power, a condenser of 110 mm., and a lens fitted with an "Auto LN" light-filter, reproductions by contact are obtained by placing the original and the sensitive plate at 1 metre from the lens, and giving an exposure ranging from eight to twelve seconds, according to the density of the original transparency. The sharpness of the duplicate is practically equal to that of the original.

In concluding the experiments which we have made on the use of the Autochrome plate for reproduction purposes we mentioned that we intended to study for this purpose the use of sources of light which are more generally available to the average worker, such as incandescent or arc light, and, in particular, incandescent and acetylene gas. The trials of screens have been made by M. Scheffer, of the firm of Mackenstein, who has rendered us the most valuable aid. When using sources of light of relatively feeble intensity the use of a condenser which will concentrate the light upon the original is absolutely necessary. Our first experiments likewise showed us that the lenses of the condensers should be free from colour, and we should hasten to say that such condensers are commonly made, and at prices which are within the reach of the worker.

The arrangement of the apparatus is very simple. The source of light is placed at the principal focus of the condenser. A negative carrier allows of the original being placed close to the condenser: then comes the camera fitted with its lens, the latter carrying the compensating light-filter, adjusted either to incandescent gas (the "Auto I"), or to acetylene (the "Auto AC"). If it is wished to obtain reproductions which are perfect as regards sharpness, it is necessary that the light-filter, thus interposed, should be optically worked. A mantle light being now obtainable by means of coal gas, acetylene, or spirit, the reproduction of Autochromes can thus be undertaken by every professional or amateur worker. Experiment has shown that identical results are obtained with the same screen, whatever the material, coal gas or spirit, used for rendering the mantle incandescent.

As regards the average time of exposure, M. Scheffer, who uses a mantle raised to incandescence by means of the "Eclipse" lamp, has found that a time of fifteen seconds is sufficient for the reproduction of an Autochrome of average density, using a condenser of 150 mm. diameter and an objective of *f*/5 aperture. This, when copying same size. With an incandescent gas mantle, a condenser of 110 mm. diameter, and a lens at *f*/6, we found that an exposure of two minutes was sufficient in the case of Autochrome originals of somewhat greater density.

Lastly, we have employed, as a source of light, the acetylene flame used in a burner such as the "Bullier," or the "Aurore," provided with an air supply. The consumption of gas can be regulated so that the flame retains its maximum brilliancy. With a burner consuming 20 litres per hour, a condenser of 150 mm. diameter, and a lens at *f*/5, the exposure for a transparency of average density is about thirty seconds.

Development by means of metoquinone is recommended in this case. We have already pointed out the advantages of this developer, and have indicated the best means of using it in the special case of preparing duplicates of Autochromes.

Experiment has further shown us that there is an advantage in reducing the proportion of bromide to one-fourth, and even dispensing with it altogether, where the original is of a somewhat hard character. Similarly, the addition to the stock metoquinone solution of potassium ferrocyanide, in the proportion of 20 gms. per 1,000, is likewise to be recommended.

Altogether, it is our experience that, in order to obtain good reproductions of Autochromes with artificial sources of light, it is always necessary to give ample exposure and to develop the image in a somewhat weaker developer, with little or no bromide, to which, according as the image appears, there should be added cautiously a cc. or two of the concentrated developer. Care should likewise be given that the temperature of the developing solution does not fall below 60 F.

F. MONPILLARD.

# THREE-COLOUR PRINTS BY THE OIL PROCESS.

[In the following article, from the current issue of the "Wiener Mitteilungen," the author, Herr Josef Switkowski, describes the results of experiments made with the object of producing colour prints from sets of three-colour negatives by the Rawlins oil method. In the major portion of the communication, translated below, the working details are described.—EDS. "B.J."]

INSTEAD of using a pure gelatine film, various mixtures were experimented with, such as those produced by the addition of starch, arrowroot, sugar, etc., in order to secure a better "taking" of the colour. Admixture of sugar or glycerine may be of service in this respect, as the printed and washed print remains moist for a longer time. No effect on the scale of tones was observable when using mixtures containing starch. This latter body, however, has a great effect on the appearance of the finished print, the starch depriving the gelatine surface of its gloss and supplying prints of more or less matt surface.

There is no doubt that the thickness of the gelatine coating exerts an influence on the scales of tones, the length of the latter increasing, other things being equal, with the thickness of the gelatine, and the strength and detail of the print being likewise improved. In this fact probably lies the reason why many of the oil prints made on the commercial papers are deficient in strength despite suitable sensitising, development, and pigment inks. The blame is most probably to be laid at the door of too thin a gelatine coating.

As it is inconvenient to make up a fresh solution of gelatine for each batch of paper, I made use of the liquid gelatine solution prepared with chloral hydrate in accordance with the formula of Dr. Mallmann. This gave very good results, and made me independent of the commercial papers, so that any required raw paper, such as drawing-paper, could be used. The Mallmann formula is as follows:—

| | |
|---|---|
| Gelatine, pure | 40 gms. |
| Chloral hydrate | 25 gms. |
| Water | 100 ccs. |

The gelatine is allowed to swell in cold water for a few hours, and is then liquefied in a water-bath. The chloral hydrate is then added in small doses as a white crystalline powder, the whole well stirred and then poured into a flask whilst still luke-warm. This solution should have the property of remaining fluid at the ordinary temperature of the room without any of the gelatine setting. In my experience it would remain fluid for some weeks and then jellify without any obvious reason, whilst in other cases solidification would take place after a few hours, although there was no fall in the temperature of the room. In any case, the mixture has the very considerable advantages that it becomes highly fluid simply on being placed in warm, but not hot, water, and that the residual traces of it can be removed with the greatest readiness from brushes and dishes by means of warm water. The gelatine solution may be coated on the paper either by applying it with a brush or by immersion. For small sizes it is better to dip the sheets in a dish containing the gelatine solution. Larger pieces are best treated by the method used in sensitising albumen paper, a sheet being taken with the fingers by the two shorter sides, moved from the middle downwards, and the lowermost portion allowed to rest on the gelatine solution contained in a large dish. The two ends of the sheet of paper are then lowered on to the liquid, giving care that no air-bells are imprisoned; the finger should be used to remove any that are seen to be formed. In the case of heavy papers it is an advantage to moisten them previously by short immersion in luke-warm water.

In applying the gelatine solution by means of a brush, the method used is that customary in the gum-bichromate process; it is not difficult to acquire the necessary practice. A brush is fully charged with the solution and the latter distributed on the paper, pinned to a flat board. The coating is evened by taking the strokes of the brush first straight across and then diagonally. Similar methods are used when sensitising. So far as the final result is concerned, it is immaterial whether one uses potassium or ammonium bichromate. I prefer to use the ammonium salt, as it is more readily soluble in water. Printing, washing and inking are done in the usual way; but in the case of this three-colour process it must be borne in mind that any attempt at individual control is much more disastrous than in the ordinary process. As a rule, it is advisable to apply the ink over the whole print as long as it continues to be taken; only the portions which should appear white without any detail can be left untreated.

The inks found suitable are the blue, red, and yellow made for three-colour half-tone printing. The order in which they are used requires to be considered, since the yellow is an ink of strong covering power, and should therefore be used for the first print, namely, that from the blue-sensation negative. The order in which the two other colours are applied is more a matter of choice, since these latter are varnish inks. I put the blue on the red, or adopt the reverse order, according as a bluish or reddish tone should predominate in the print.

A print in colours by this process requires only three separate printings, whereas when using gum-bichromate from five to six printings is required for the best results. The process is certainly superior to gum for three-colour work, and allows of effects being obtained which are not within the power of the other. In working with greasy inks, one can obtain marvellously vivid water-colour effects, whilst the prints obtained by the gum process are always liable to be heavy. On the other hand, the rich mellow effects readily produced with gum can hardly be secured with oil.

There are other possibilities in multi-colour oil besides that of three-colour work. Just as with multi-colour gum, several printings may be resorted to for the production of the most varied effects, and equally so in monochrome work, as in producing contrasts or harmonies in colour. Two-colour prints of exquisite effect can be prepared, and allow of soft atmospheric effects being obtained of a kind which can scarcely be realised by any other process. Even prints which are practically monochrome are produced of greatly superior quality by two printings instead of one. In the foregoing I have merely indicated the possibilities of multiple printing in oil. My object was not to represent the multiple process as something of greater value than the single method—the latter has already taken such a place that it needs no improvement in this way; I have endeavoured to discover new directions in which the process may be applied. That it will be found applicable in other branches of photography is certain.

Josef Switkowski.

# HINTS ON WORKING THE AUTOCHROME PROCESS.

[Herr G. Winter, to the current number of "Wiener Mitteilungen," contributes some notes on the practical manipulation of the Autochrome plate.—Eds. "Colour Photography" Supplement.]

Development with metoquinone is a most distinct improvement in the Autochrome process, as it is a much simpler process than that with pyro; the results are, at any rate, quite as good as those with pyro, and failures can be caused only by incorrect manipulation, such as the use of too strong a solution or of too high a temperature. The prejudice against this developer which still exists to a certain extent is in no way justified.

As metoquinone gives a very dense silver deposit, subsequent intensification, which must almost always be carried out without using pyro, is necessary only in the case of very thin plates, or those which have been over-exposed. As regards the correction of errors of exposure in development, metoquinone is just as suitable for this purpose as pyro, the method being to vary the time of development, or—in the case of previous non-over-exposure—to dilute the developer with twice or thrice its bulk of water. Considerable errors in exposure may be compensated for as readily with metoquinone as with pyro.

Experience has shown that an exposure which has been three times that which should have been given can be corrected by suitable modification of the development process, though much depends upon the character of the subject. The more the latter partakes of a monotone character and the softer the gradation in it, the less room is there for correction of errors in exposure. Thus, pictures of snow subjects cannot be over-exposed to any extent, as the soft gradation is easily lost, and what should be pleasing varieties of tone is rendered as an even white surface.

Too short an exposure is still more difficult to deal with than over-exposure, a time which is a half of the correct one being about the greatest degree of under-exposure which can be satisfactorily remedied.

It need hardly be said that the best results are obtained when correct exposure has been given and development carried on in the normal way without any adventitious means. The aim should be to give a suitable exposure by the aid of a meter, such as the Wynne or Watkins.

Subjects presenting great degrees of contrast likewise present special difficulties. In such cases it is well to expose for the dark parts of the subjects and to use the developer twice or thrice diluted.

The exact point at which to arrest the development of the plate is not an easy matter to determine, but the following process, in which the plate is viewed both by reflected and transmitted light, is one which has proved reliable in practice: After the plate has been placed in the developer a look is taken at it as it lies in the dish after twenty or thirty seconds have elapsed. If after this time—assuming that no fogging is to be seen, in which case a perfect result cannot be obtained—only faint traces of the image are visible, exposure has been too short. If, however, the picture is clearly visible exposure has been correct. If the plate appears (as it lies in the dish) greyed all over, exposure has been too long. From this preliminary examination one can at once decide whether to develop for a longer or shorter time, as the normally exposed plate should require a time of development of about two minutes, whilst in a case of over-exposure this time should be from one to one and a half minutes, and three to four minutes in cases of under-exposure. The moment at which to arrest the developing process may be recognised in each of these cases from the appearance of the plate when holding it up to the light. The picture appears first as distinctly negative, the density in the high-lights gradually increasing. The next stage is marked by the commencement of the high-lights to become more transparent, the shadows become glassy, the picture now having a characteristic transparent appearance. Its density apparently falls off further, and this is the moment at which to arrest development. Since it is possible to judge of the probable total time of development by the appearance of the image during the first twenty or thirty seconds there is no need, in carrying out the above process, to continue bringing the plate too frequently in front of the dark-room light.

Every plate, whether correctly or over- or under-exposed, must be sufficiently developed, otherwise unreduced silver bromide remains in the film, and gives an opalescent appearance to the plate; this point is of particular importance in the case of plates which have been over-exposed, as here it is easy to arrest development at too early a stage. Such a plate, after development, should have a pale soft appearance, the necessary strength and brilliance of colour—if exposure has not been too great—being obtained by subsequent intensification.

In order to judge of the progress of development it is necessary to use as bright an illumination as possible in the dark-room within the limits of safety. A deep red screen, as employed for orthochromatic plates, is used combined with a sheet of ground glass. The Autochrome plate is immersed in the developer, whilst shielded from the direct light of the lamp; after about thirty seconds it will have lost the greater part of its colour-sensitiveness, and after a further twenty or thirty seconds the plate can be held up repeatedly fairly near to the dark-room light without fear of fog. In order to secure regular results care must be given to preserving the constancy of the dark-room light, otherwise the worker is easily misled.

Development in this way of a large number of plates, exposed under the most various conditions, has proved excellent in practice and greatly superior to development for a fixed time, the results on this latter system being perfectly satisfactory only in the case of correct exposures. It is possible to judge of the progress of development when viewing the plate only as it lies in the dish; but this method, on account of the great differences among subjects, requires very considerable practice and experience. The same remark applies to the Lumière method of time development, in which the total time of development is based on the appearance of the image in the first instance.

When it is found necessary to intensify the plate the best means for the purpose is the pyro-silver intensifier, whilst for reduction the most useful solution is the ordinary reversing mixture diluted to four or five times with water. An over-exposed or somewhat fogged plate is considerably improved in brilliance of colour by intensification. Reduction leads to satisfactory results only in the case of plates which have been correctly exposed but too shortly developed, whilst improvement of those too shortly exposed and of too great density is not to be expected by this method. Such plates on being reduced lose almost all their colour rendering.

The temperature of the developing solution has a great effect on the brilliance of the colours. Insufficient care is given to this point, with the result that the pictures produced are muddy and deficient in colour. Too much insistence cannot be laid, therefore, on having the temperature of all solutions —and also that of the washing waters—not more than 62 deg. F. Slow drying of the plates in a warm damp atmosphere will likewise lead to greying of the pictures; the plates should be put to dry in a well ventilated place.

A defect which often exists to a marked degree in Autochrome plates is the predominant blueness of the neutral tones in the shadows. This occurs if the shadows of the subject are illuminated by the blue sky, and is particularly noticeable in the case of snowscapes in sunshine, as also in pictures taken towards evening and often on dull days, in all cases more particularly when insufficient exposure is given. As already noted in a previous article, this undesirable effect can be avoided by a filter containing a larger proportion of yellow. Such filters unfortunately are not always commercially obtainable, and their correct adjustment when preparing them oneself is not an easy matter.

In preparing an Autochrome filter, according to the formulæ of von Hübl, it is better to employ—instead of the two dyes, tartrazine and pheno-safranine—a mixture of filter yellow and echt-rot. In this way one dispenses with the addition of æsculine, which is necessary when using tartrazine, whilst the filter prepared with echt-rot is of a greater degree of permanence. A formula for a normal filter is as follows:—

| | |
|---|---|
| Gelatine, 1:10 | 40 ccs. |
| Filter yellow, 1:200 | 12 ,, |
| Echt-rot, 1:2,000 | 14 ,, |

For a filter containing a higher proportion of yellow the formula is:

| | |
|---|---|
| Gelatine solution, 1:10 | 40 ccs. |
| Filter yellow, 1:200 | 14 ,, |
| Echt-rot, 1:2,000 | 14 ,, |

In each case 7 ccs. of the dye-gelatine solution is used per square decimetre of the glass to be coated. The removal of the dark spots frequently occurring in the plates may be easily done, when the spots are in the emulsion film, with a pointed scalpel, though this method is of no use when the spots arise from impurities in the colour film. Light spots or streaks may be removed by retouching with a pencil on the film side of the plate after the latter has been treated with a matt varnish.

A final hint may be given to avoid the many purposeless dodges and variations in the development, and to follow the simple, straightforward formulæ which give, with the greatest certainty and ease, the most satisfactory results of which the process is capable.

G. Winter.

# MR. E. T. BUTLER'S METHODS OF COLOUR PHOTOGRAPHY.

[Mr. E. T. Butler showed his one-exposure camera and demonstrated some of his methods of working before the Society of Colour Photographers at a meeting held on Thursday, January 26, 1911. The following paper was also read by him at the meeting.—Eds., "Colour-Photography" Supplement.]

Since Lumière's ingenious method of obtaining transparencies in natural colours was announced to an admiring world the several systems of screen-plate photography have loomed in the public eye, and somewhat obscured other more indirect methods of three-colour work. The limitations of screen-plate photography, however, encourage the practice and improvement of other methods. Members of this Society are practising different ways of producing results, and doubtless persistent effort will secure the best of which all the different methods are capable.

I feel no doubt that as the outcome of the labours of many minds tricolour photography will in time have its methods standardised, and take an honoured place in the industrial world. We are all looking out for shorter cuts and simpler methods, and welcome any little aids to those ends. In describing my own efforts in that direction, I propose to start with the camera.

## The Camera.

The camera takes three negatives with simultaneous and equal exposures through one lens—one by direct and two by reflected light.

A normal exposure is secured by giving actinometer time at $f/6$ if the subject is rather strong in shadow, and at $f/8$ if the shadows are weak. By actinometer time I mean the time required to change Wynne's quick deadmatch paper to the darker standard tint when exposed to the same light as that received by the subject.

Such exposures may be doubled for portrait subjects, taken very near the camera, so as to give rather large heads; or such exposures may be halved, or quartered, or even divided by 8 in some cases, according to the subject and the composition of the light.

### Plates.

Wratten and Wainwright's Panchromatic plates are suitable for all three negatives; or Wratten Panchromatic for the red-taking, and "Gem "Tri-col" for the green and blue. I like the plates for the green to be the most sensitive plates I can get to those rays.

Nearly any ordinary plate will do for the blue. The most rapid ordinary plates come out no quicker in the blue in these cameras than do some brands of the slower plates. There are slight fluctuations of the factors of colour-sensitiveness of different batches of plates shown on exposure card sent out with each box of W. and W. P. plates, but I do not find these of such serious importance as the varying differences in the colour composition of light.

### The Actinometer.

The actinometer is a pretty safe guide, when the light is quick, that is, when the paper changes at from 3 sec. to 4 sec., up to 45 sec., or even up to 60 sec., but when the light is weaker, the paper taking longer than one minute to change, say 2 or 3 minutes, the actinometer time exposures usually require multiplying by 2 or 3—over-exposure seldom does much harm in such cases.

On the other hand, I have noticed apparent departures from this rule in photographing pictures in badly lighted galleries, when the light has been fairly good outside. Inside the actinometer required 20 to 30 minutes, yet no more than actinometer time has been necessary to produce three good negatives, fairly uniform and of suitable printing quality. Sunsets require from 5 sec. to 15 sec. at *f*/3.5 or *f*/6.

The differences in the colour compositions of the light is due, I think, to the passage of the light through an atmosphere sometimes charged with minute particles, which act on the light as an interposing screen. The best results are not usually got by exceedingly short exposures, except under the most favourable conditions of light and subject

Each colour of the subject is represented on each negative in varying densities of the silver images, in the same way as if each one was taken separately and successively; and prints are obtained from each negative in colours complementary to the screens through which each negative is taken.

### Printing.

The printing may be done by most of the ordinary methods, but my attempts to secure the best results in printing by the shortest and most direct means have led me to try many different ways, and of course I have had very many failures.

Practice does not always work out in accordance with theory, and I think failures have an educational effect. The theory of three-colour combinations ought to work out perfectly, but certain discordant factors sometimes mar results, and necessitate compromise.

Owing to the difficulty of obtaining printing inks which will answer all requirements of the reproduction colours, it is recognised in three-colour block printing that a key block or black tone print added to the three-colour print makes a distinct improvement in securing more correct colour. The key-block print harmonises the whole and softens the harsh effects of sometimes ill-balanced colour.

Three-colour block printing is capable of excellent results, both with and without the use of the keyblock print, and is economical when the number of prints obtainable of one kind repays the time and trouble of getting the printings right, but the method is, of course, quite out of the question for workers who only want one or two results from each tricolour set.

Collotype is too variable, although the process is not without means of control.

The Pinatype process appealed to me after having had experience of some other methods, and I have practised it extensively.

The chief difficulties in this process I have found in the blue printing, which is very apt to degrade the lights of the subject and to flatten and smudge the whole effect.

With the yellow printing it is not easy to see to get register, and difficult to keep the lights free from yellowing where yellow ought not to be, and at the same time get a sufficient depth of yellow in the shadows. Some examples have been more successful in these respects than others, but the objections have induced me to make certain modifications. The chief of these modifications is the substitution of a Prussian blue image for the pinatype blue in the print. The Prussian blue print is made by the conversion of the silver image on a black tone lantern plate by chemical reaction. Prussian blue replaces the silver image on the plate, and is of the same character as the silver image as regards density and gradation. The character of the silver image is, of course, controlled by exposure and development. Not being produced by the pinatype process of imbibition, the gelatine film which contains the pinatype red and yellow images is not saturated by a third colour dye. There is consequently no spreading of the dye and degradation of the lights of the picture from such a cause. The colour absorbs dark red and lets through considerable green—advantages which many blues lack. In combination with pinatype red and pinatype yellow, it is a very suitable reproduction colour for negatives taken in my camera.

Many of the examples shown are printed with this combination. Other examples show a further modification, that is, the use of a P.O.P. print as a base to receive the pinatype red and yellow printings. The P.O.P. print is fixed without toning, and in colour is a greyish orange-yellow; if printed from the yellow printing negative, the transfer to it of the yellow pinatype print requires to be only slight; the print plate may be removed before the whites have time to yellow, and yet have sufficient yellow in the shadows. At the same time the depth of tone in the print provides a key-block print in the combination.

Of course, the P.O.P. print has to be taken of a size—smaller—to allow for the expansion of the paper whilst wet. This is easily arranged.

### Method of Procedure.

Three negatives as made in the camera: No. I., the red, making the blue printer; No. II., the green, making the red printer; No. III., the blue, making the yellow printer.

No. I. negative is taken direct, and a print from it, by contact, faces the right way. This negative faces, or is in opposition to, II. and III. negatives. No. I. negative—blue printer—is placed in the enlarger (glass side to lens), and exposure given for a positive.

In daylight an average negative requires one actinometer tint—it may be halved, or doubled. The developer may be metol-hydroquinone for the black tone lantern plate, which is to record the enlarged positive.

Develop till all the details are out, but stop immediately before the high lights are veiled. The positive will be thin, but strong enough, if the details all show when placed on a white ground. Fix in hypo, wash well in running water, place in an 8 per cent. solution of potassium ferricyanide (red prussiate) till bleached (one minute usually), wash well, then place in an 8 per cent. solution of iron perchloride (one minute), wash under running water for thirty seconds, immerse in hypo for one minute, wash in running water for five minutes, place in a weak solution of sulphuric acid (a few drops to 8oz.), till the yellow stain is removed—a few seconds is only necessary. Wash the plate about three minutes to free the acid.

This forms the blue element of the tricolour print on paper.

No. II. negative—red printer—is placed in enlarger (glass side to lens), and a print made on black tone lantern plate as in the case of No. I. negative. No. III. negative—yellow printer—is placed in enlarger (also glass side to lens), and a print on black tone lantern plate is obtained, as in the case of the other two.

Develop Nos. II. and III. positives five minutes, to give printing density. When fixed, washed, and dried, they are used as printing positives.

Print plates are made from these—pinatype method—by sensitising for three minutes in a solution of 1¼ per cent. of potassium bichromate.

I use old gelatine-coated plates, and in some cases old negatives —or positives—for this purpose, as the silver can be removed by Farmer's Reducer after the plates have been printed upon.

### Printing the Plates.

The sensitised plates, having been dried in the dark, are placed face to face with the No. II. positive and No. III. positive, and exposed to light till sufficiently printed. To find the time for an average density, place an ordinary piece of P.O.P. paper in an "Akuret" actinometer, one piece in No. 9 (for the red), and one piece in No. 12 (for the yellow). When No. 9 is nearly black, No. II. print plate will be about rightly printed; with No. 12, No. III. print plate will be right.

After washing out the sensitiser, dissolve out the silver (it may have been a previously developed plate) with Farmer's Reducer, wash well, and place No. II. printer in the pinatype red dye and No. III. printer in the pinatype yellow dye.

Wash the print plate well (till all the free dye is washed away), and then apply to the paper print—use the red preferably first.

The time necessary in the dye-bath will depend to a great extent on the depth of the printing.

For the red plate, 5-15 minutes. Examine and wash off the free dye (the plate may be re-dyed) until a robust image is shown.

The yellow should be examined after one or two minutes, so as not to overdo it. It may, however, require 10-15 minutes. (The yellow image will be only faintly discernible).

If the pinatype method is followed for the red and yellow, place the print plates in contact with pinatype transfer paper, first with the red print plate, and second with the yellow, making the latter register with the red image.

If a P.O.P. print is to form the base, the red print plate is brought into contact with the P.O.P. image—it can be seen through the back of the print plate. When in register, squeegee and allow to stand, usually about five minutes.

It may require more, so examine it by turning down a corner.

The yellow should be transferred in the same way, usually five minutes is sufficient.

The enlarged negative from which the P.O.P. print is printed by contact may be made as follows:—A positive is made by contact with No. III. negative and placed in the enlarger (glass side to lens), and a black tone lantern plate exposed in the usual way. This negative should be rather smaller than the positives to allow for the expansion of the paper when wet. By using always the same make of paper the same allowance can always be made. With Gem Dry Plate Co.'s P.O.P. paper the necessary alteration in size is secured by advancing the sensitised plate ⅛in. nearer the lens than the position in which all the positives are taken, and at the other end of the enlarger place the smaller positive 1-16 further away from the lens.

The red-yellow print, prepared as already described, is now to be brought into contact with the converted blue plate. It can easily be seen through the back when in register. If the balance of colour is correct, squeegee, and when dry the picture may be viewed through the back of the blue glass.

The plate may either be allowed to remain on the print, or, if preferred, the print can easily be stripped off, leaving the bare glass, provided that the converted blue plate has been taken on a stripping plate, the glass of which has been prepared before coating with emulsion. Such plates may be bought. EDWIN T. BUTLER.

◆

AUTOCHROMES OF FLOWER AND GARDEN SUBJECTS.—Before the Royal Horticultural Society, on Tuesday last, January 31, a series of 140 Autochrome transparencies, illustrating colour photography in the flower garden, was given by Mr. W. Marshall, of Henley-on-Thames, who has made a specialty of this branch of work. Mr. Marshall demonstrated the great value of Autochrome records of plants, flowers, and gardens to horticulturalists, his series of magnificent Autochromes including a great many of the famous Alpine garden of Sir Frank Crisp.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SUGGESTION FOR A NEW COLOUR SCREEN-PLATE.

To the Editors.

Gentlemen,—The note by Mr. F. Dogilbert in your issue of the 6th inst. on the above subject is no doubt original, but I would like to point out that a U.S. patent, No. 747961, dated December 29, 1903, was granted to Paul George Frauenfelder and Lena Rosa Emma Frauenfelder for a very similar process. I enclose herewith the illustrations to the said patent, which possibly you may think worth reproduction, and a very brief digest of the patent.

The purpose of the patent is to disperse the rays as in Fig. 1, or preferably to disperse and segregate the rays, which is done by the screen 2 in Fig. 2. which may consist of a black-and-white line-screen, so arranged that the light passing through the aperture falls upon the prisms 1, 1, arranged below the segregating plate, and these may be so arranged that there is only one transparent line for each prism, or two if very fine segregation of rays is desired; 6 represents the sensitive surface. The parallel rays of light, 5, proceeding from the object to be photographed pass through the transparent lines, 4, and fall upon one side only of the prisms, each of which disperses the separate ray falling upon it into its constituent spectral colour, and these fall upon the sensitive surface, 6. The purpose of the segregating screen is to isolate the individual colour rays from each object.

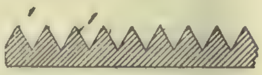

Fig. 1.

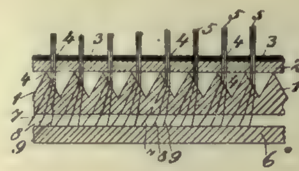

Fig. 2.

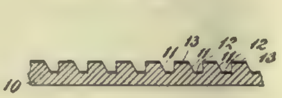

Fig. 3.

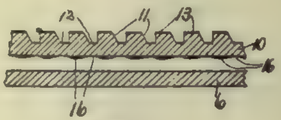

Fig. 4.

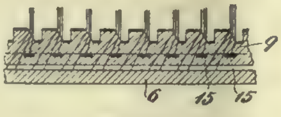

Fig. 5.

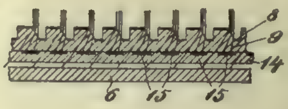

Fig. 6.

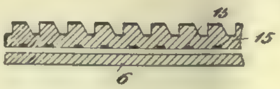

Fig. 7.

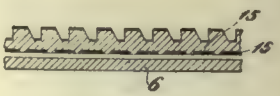

Fig. 8.

Possible variations of this idea are shown in the other figures, and their purpose is so obvious as to need no explanation. In Fig. 4 will be seen lenticular forms, 16, impressed on the dispersing and segregating plate.—Yours faithfully, E. J. WALL.

Rochester, U.S.A.

No 51. VOL. V. MARCH, , 1911.

# THE BRITISH JOURNAL OF PHOTOGRAPHY

MONTHLY SUPPLEMENT

ON

# Colour Photography.

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# POSSIBLE METHODS OF COLOUR PHOTOGRAPHY.

A Paper in "Photographische Rundschau."

THERE is no need to supply proof that the present day screen-plate process of colour photography is not the final solution of the problem of producing colour photographs. This type of process is restricted to the production of colour results by the additive method; colour prints on paper are beyond its scope. So far as these latter are concerned there is likewise no necessity to supply proof that only the so-called subtractive system of colour synthesis can be used. Although it is, of course, possible to prepare from a screen-plate positive, by means of three suitable filters, a set of three-colour negatives and to prepare colour paper prints from these by suitable processes, such as pinatype, yet such a method is, at any rate, as cumbrous as the production of the three negatives direct in the camera. Indeed, a system of this kind, on account of the many intermediate operations, does not give uniform results, and, on the contrary, provides the opportunity for considerable departures from the result of the original exposure.

The bleach-out process, when certain conditions are observed, permits of the production of paper positives from screen-plate pictures, yet unfortunately this method has not by any means been worked out to a final point, and at present remains as a suggested direct printing process which is relatively slow in operation. Certainly no efforts have been spared to perfect the bleach-out process or others allied with it, and the literature of the past few years contains many contributions on the subject. Among these are three papers by F. Sforza,[1] in which a series of possible new methods of colour photography are set forth. These papers are particularly interesting to me personally as illustrating the similar course of study which may be entered upon by two widely separated independent workers. This is the second time that Herr Sforza and myself have taken separately the same course of investigation. The "elastic negative" of Sforza and my own "universal negative" have already been referred to in these pages,[2] and now we come to a second example of the same thing. I can perhaps best explain to what extent these processes have occupied my attention for some time past by showing that in regard to some points I believe I have gone further than Herr Sforza. I can indicate a series of actual reactions, such as Herr Sforza in his later papers has described only as possible and requiring to be worked out.

I will, therefore, in the following notes give an account of Sforza's ideas, so far as I think them to be right, and of my own, confining myself to those which appear most practicable. It should be mentioned that we have to do here not with things which have been actually accomplished, but with those which are possible and capable of execution. Thus, from this point of view, we will deal not with the details so much as with the general principles.

The basic idea of all these processes consists in the fact that use may be made of the relatively high sensitiveness of the developable silver haloid, as well as of the capacity of the silver salt to be colour-sensitised. Every separate grain of silver haloid may act as a carrier of a given dye, or may be itself selectively sensitised. On the face of it there would appear to be no reason why this condition should not be realised in practice.

Two different ways lie open before us:—

A. We can imagine that it will be possible to sensitise three emulsions separately, one with a purple dye, such as erythrosine, so that it is sensitive only to the green part of the spectrum and insensitive to red and violet; the second, with a blue dye of the character of cyanine, sensitising for red, orange, and yellow, but leaving green, blue, and violet without effect: and finally a third emulsion, with a yellow dye, sensitising for the blue and violet, but conferring no sensitiveness for red, yellow, and green.

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[1] La Photographie des Couleurs, 1909, pp. 23 and 101; 1910, p. 209.

[2] Phot. Rund., 1910, pp. 155, 228. Brit. Journ., 1910, p. 568.

These three emulsions are separately treated in a centrifugal, the dyed masses of silver haloid mixed in suitable proportions, the mixture again emulsioned with plain gelatine solution, coated and the plate dried. Since the dyes used in the above process are absorbed by the silver haloid and retained by it with greater or less tenacity, on mixing the three dyed masses and subsequently emulsionising them, there is no exchange of colouring matters, the separate silver haloid grains (purple, blue, and yellow) being held imbedded in a finely-divided state in the colourless gelatine. Of these, in accordance with the assumption made above, the purple are affected only by the green part of the spectrum, the blue only by the red, and the yellow only by the blue and violet portion of the spectrum. The active colours are thus complementary to the respective colours of the grains, whilst the inactive rays are similar in colour to those of each set of grains respectively. It follows that the finished plate will be black.

B. A second possible method is as follows:—A panchromatic emulsion is divided into three parts, and the gelatine in each case dyed with a purple, blue, and yellow colouring matter respectively. The dyes should affect only the gelatine, and thus serve as selection filters for the silver haloid grains of the panchromatic emulsion. From this stage forward the process may be conducted in two ways:—We may adopt the suggestion of Sforza to coat a support with the three emulsions on each other, as in making the three-film Szczepanik bleach-out paper[2]; or an alternative consists in weakly tanning the three dyed emulsions in order to deprive the dye of its power of diffusion, and then, by means of a centrifugal, freeing it from the greater part of the gelatine; then mixing, then emulsionising the mixture with colourless gelatine solution, and finally coating and drying the plates. In this case each separate panchromatic grain of silver haloid is surrounded by a cell of coloured gelatine, which acts as a special selective filter for the particle of emulsion. We should thus have, in the colourless gelatine, purple grains sensitive only to red and violet, blue only to green, blue, and violet, and, lastly, yellow grains affected only by red, yellow, and green rays. The colour of the active rays would thus be similar to that of the particles in question, whilst the complementary colour in each case would be inactive. Thus, in this description of plate also, we will call it the B plate, the final colour would be black.

1. We should thus have two different plates, A and B, containing coloured grains, purple, blue, and yellow, embedded in colourless gelatine. In the case of the A plate the grains become developable by light of the complementary colour, whilst in the case of the B plate the developable condition is produced by light of the same colour.

2. We make exposures of coloured objects by means of these two plates. The result of development is shown diagrammatically in Tables I. and II.

TABLE I.

TYPE A OF PLATE.

| Colour of Grains. | Colour in Subject. | | | | | |
|---|---|---|---|---|---|---|
| | Red. | Yellow. | Green. | Blue. | Violet. | Purple. |
| Purple ... | Silver haloid. | Silver. | Silver. | Silver. | Silver haloid. | Silver haloid. |
| Blue ..... | Silver. | Silver. | Silver haloid. | Silver haloid. | Silver haloid. | Silver. |
| Yellow .. | Silver haloid. | Silver haloid. | Silver haloid. | Silver. | Silver. | Silver. |

TABLE II.

TYPE B OF PLATE.

| Colour of Grains. | Colour in Subject. | | | | | |
|---|---|---|---|---|---|---|
| | Red. | Yellow. | Green. | Blue. | Violet. | Purple. |
| Purple ... | Silver. | Silver haloid. | Silver haloid. | Silver haloid. | Silver. | Silver. |
| Blue ...... | Silver haloid. | Silver haloid. | Silver. | Silver. | Silver. | Silver haloid. |
| Yellow .. | Silver. | Silver. | Silver. | Silver haloid. | Silver haloid. | Silver haloid. |

3. In order to obtain coloured pictures from the plates thus developed we must subject them to a treatment which on technical grounds would appear to be perfectly possible. According to the final result required, such treatment may be one or other of two kinds.

*(a)* The treatment applied to the developed plate is designed either to leave the dye of the developed grains unaltered and to destroy or remove the dye of the undeveloped grains, or

*(b)* To leave unaltered the dye of the undeveloped grains and to remove or destroy that of the developed grains.

4. That such distinct forms of treatment are quite possible, and have, indeed, been achieved in practice to some extent, will be shown in a later paragraph. Here we must only describe the result of these two kinds of treatment *(a)* and *(b)* on the exposed and developed types of plate A and B. It will be seen we may here obtain the four combinations A*a*, A*b*, B*a*, B*b*.

Let us trace the result of one of these combinations, say A*a*, in order to obtain the result we require only in Table I., which applies to the A type of plate, to substitute throughout the word "silver" by the designation of the colour of the grain in question, and to leave blank the spaces corresponding with "silver haloid." Then the course of treatment described as *a* results in the dye of the developed silver grains being retained whilst that of the undeveloped silver grains is destroyed or removed. We can thus express the result by the following Table III., in regard to which we must note that the colours, on account of the thickness of the film, would be formed according to the subtractive method. After removal of all the silver and silver haloid, we should thus have a plate in the complementary colours. We must, however, still discover how matters have fared with the reproduction of light intensities in the subject—that is to say, the reproduction of a scale of white, grey, and black tones.

TABLE III.

TYPE A OF PLATE: TREATMENT *a*.

| Colour of Grains. | Colour in Subject. | | | | | |
|---|---|---|---|---|---|---|
| | Red. | Yellow. | Green. | Blue. | Violet. | Purple. |
| Purple .................. | — | Purple. | Purple. | Purple. | — | — |
| Blue ...................... | Blue. | Blue. | — | — | — | Blue. |
| Yellow .................... | — | — | — | Yellow. | Yellow. | Yellow. |
| Result...................... | Blue. | Violet. | Purple. | Red. | Yellow. | Green. |

White light will have caused the whole of the grains to become developable: in those portions affected by white light all the dyes will be left, and the portions will, therefore, appear black. In those parts where the sensitive film receives no light (black portions of the original subject) all the dyes will be destroyed or removed, and these parts of the plate will appear perfectly colourless and transparent. Thus, a scale of tones will be reproduced again as its complementary (a negative).

We can trace the course of things in a similar way in the case of B*b*. The treatment *b* causes the retention of the dye in those parts where there is no silver deposit produced by the developer —that is to say, where there is unaltered silver haloid. Thus, in Table II., which applies to a plate of the B type, we require to write throughout the name of the respective dye where the words "silver haloid" stand, and to leave a blank in place of the word "silver." We thus obtain the following table:—

---

[2] Theoretically the successive coatings of emulsions appears to me doubtful.

TABLE IV.

TYPE B OF PLATE: TREATMENT *b*.

| Colour of Grains. | Colour in Subject. | | | | | |
|---|---|---|---|---|---|---|
| | Red. | Yellow. | Green. | Blue. | Violet. | Purple. |
| Purple ................ | — | Purple. | Purple. | Purple. | — | — |
| Blue .................... | Blue. | Blue. | — | | — | Blue. |
| Yellow ................ | — | — | — | Yellow. | Yellow. | Yellow. |
| Result.......... ........ | Blue. | Violet. | Purple. | Red. | Yellow. | Green. |

The reproduction of colour would thus be again complementary, but, on the other hand, the reproduction of a scale of tones would this time be in facsimile, as may be seen by repeating the mental process already described above. Where white light acts all the grains will be developed—that is to say, the dyes will be destroyed and the plate will appear colourless in these parts.

We can summarise all these different combinations of process in the two tables V. and VI., denoting a reproduction in facsimile by +, and one in complementary or negative manner as —.

TABLE V.

| — | Type of Plate. | |
|---|---|---|
| | A. Light of complementary colour active. | B. Light of similar colour active. |
| Treatment *a* (silver image retains dye)... | A*a*.<br>Colour, –. Monochrome, –. | B*a*<br>Colour, +. Monochrome, –. |
| Treatment *b* (silver image destroys dye) | A*b*<br>Colour, +. Monochrome, +. | B*b*<br>Colour, –. Monochrome, +. |

TABLE VI.

| Type of plate. | Treatment. | Reproduction of colour. | Reproduction of monochrome. |
|---|---|---|---|
| A | *a* | – | – |
| A | *b* | + | + |
| B | *a* | + | – |
| B | *b* | – | + |

We must now proceed to describe which forms of process may be used in printing, and in what way the modes of treatment *a* and *b* may be carried out.

R. LUTHER.

# THE IVES TRIPAK SYSTEM OF COLOUR PHOTOGRAPHY.

[In supplement to the particulars given of this Ives three-colour process in the paper by Mr. Ives printed in the "Colour Photography" Supplement for July last, page 49, we may reprint here the directions for the working of the process now issued by Messrs. Ives' Inventions, Ltd., 939, Eighth Avenue, New York, by whom the apparatus and materials for the process are supplied.—EDS. "Colour Photography" Supplement.]

THE plate pack consists of three plates, a red (R), a green (G), and a blue (B) sensitive plate, made up in a pack, to be handled like a single plate, in one plate-holder. When the plate-holder is put in the camera, the B plate is turned down in the camera before exposing, and they are put in separate grooves of a tank, or in a "Tripak" developing rack for development.

The blue-sensitive plate (B) is hinged by a flexible strip to a backing card, and the R and G plates are enclosed face to face between them, as between the covers of a book. When the plate pack is placed in the plate-holder, with the backing card on top, the R and G plates rest on ledges, but the B plate, cut shorter, is free to turn down in the camera when the slide is removed. The backing card serves to protect from overhead light when handling in the dark-room and bears a label near the hinged edge to show how it should be inserted in the plate-holder. The plate pack is lifted from the box by the hinged edge, and held together by thumb and finger to prevent the loose R and G plates from slipping out, and deposited face down in the open plate-holder, and the back closed and locked.

The regular Tripak lantern-slide camera is in box-form with a lens and shutter, on a bellows front, which may be drawn out to sharply focus objects as close as six feet. To focus on still closer objects, it is only necessary to add a "portrait" cap lens. A cheaper camera is made, with slip tube for focussing.

The reflector and plate-lifter used in making negatives with the "plate pack" are operated from the outside, the first by a lever on the right side, and the second by a small spring lever on the left, and are out of the way when plate packs are not being used. The 7 x 5 Tripak camera is similar in construction to the "Lantern Slide" size, but with a different and more extended focussing front. The stereoscopic camera is also similar in construction and operation, but with an internal focussing front carrying a pair of single achromatic lenses behind fixed inverting prisms.

### COMPENSATING SCREENS.

To perfect the colour selection and at the same time equalise the action of light on the three plates, especial compensating screens or ray filters are used in a suitable holder either behind or in front of the lens. Several of these are supplied with each camera and instructions which to use are given in each box of plate-packs, in accordance with factory tests of the emulsions used in coating the plates. The compensating screen is to be removed when the camera is used for making ordinary negatives, but *must always be in place for colour photography exposures.* It can also be left in as a colour screen for single orthochromatic negatives in place of dropping the reflector, when a light screen is preferable to a deep one.

### THE EXPOSURE.

When the plate-holder has been inserted the reflector must be turned to the top of the box, if it is not already there, by means of the lever on the right. The slide may then be removed and the B plate allowed to fall down on the bottom of the camera. If the camera happens to be pointing upward, the plate will not fall until the camera is tilted forward, to provide for which it has a hinged base board, permitting it to be tilted forward to drop the plate and then allowed to resume its original position. After the B plate falls down, the reflector must be dropped into position, and the camera is ready to make an exposure. After exposure, the reflector is first lifted by the right-hand lever, then the B plate by the lever on the left side, and held up (with light pressure, to prevent the plate-holder from being pushed back) while the slide is being inserted in the holder. The operations are quite as simple as the winding of the spool film in Kodak photography and more quickly performed.

### TIME OF EXPOSURE.

The plate packs can be made up in two ways—either with the G plate at the back (No. 1), or with the R plate at the back (No. 2), the compensating screen being made to suit the kind of plate pack used. The No. 1 plate packs are about twice as fast as the No. 2, but perhaps may not give quite as perfect colour selection. They require one second exposures on an open landscape, in best sunlight, at *f*/8. Other exposures may be estimated upon this basis. In exposing upon landscapes without figures, it is recommended to reduce the aperture to *f*/16 and expose four times as long as the estimated time at *f*/8.

### DEVELOPMENT.

The process of developing *must* be done in accordance with instructions in order to insure good results. The kind and strength of developer, temperature, and time of development have been carefully worked out to yield the most perfect negatives for this purpose. The most suitable developer is Glycin, used in a tank.

STOCK SOLUTION OF GLYCIN:

| | |
|---|---|
| Hot water | 80 ozs. |
| Sulphite of soda | 3 ozs. |
| Glycin | 1 oz. |
| Carbonate of potash | 5½ ozs. |
| Bromide of potassium | 60 grs. |

To use, take one part of stock solution and one part of water, sufficient to nearly fill the tank. This developer keeps remarkably well, and can be used over and over again for weeks. If, while it still remains clear, the negatives appear too thin after many have been developed, they may be left in somewhat longer, or the developer strengthened by adding a little fresh undiluted stock, stirring it up well to secure perfect mixture.

The pack can be dissected in the dark-room and the plates placed one at a time in separate grooves of a rubber tank filled with the developer, which is then covered to exclude light and the plates taken out and transferred to water after five minutes if the developer is at 70 deg. Fahr., or after eight minutes at 60 deg. The developer should never be warmer than 70 deg. or colder than 60 deg. Correct exposure will insure good negatives under these conditions.

Instead of dissecting the plate pack to develop it, it may be placed in a Tripak developing rack in which it opens like a book, permitting the plates to be held apart by a spring lock. The rack containing the opened pack is then immersed in the developing tank and left the required time, after which it is lifted out, immersed in water for a minute or more, and then the plates taken out one at a time and placed in hypo to fix. This method of developing will be adopted by all who give it a trial. After the plates are removed from the rack it must be thoroughly washed and dried before using again. The negatives for Tripak colour photography should be fully detailed, but thinner than would be desired for making Solio prints. The photographer who does not care to develop his negatives and make the colour prints, can return the plate-pack undeveloped to the box, and send it, properly sealed, to a trade Tripak colour printer, to be developed and printed from.

### IDENTIFICATION OF NEGATIVES.

The B negative may always be recognised by the fact that it is shorter than the other two. The R and G are distinguished by having a small piece chipped off one corner of the R plate in No. 1 plate-packs, or the G plate in No. 2 plate-packs.

Important Note.—Owing to the fact that no perfect yellow can be obtained in pot coloured glass, the reflector in the Tripak camera is a coated one, with hard varnish surface, and the coating upon the upper surface, as the reflector is used in the camera. This coated surface may be dusted off with a soft camel-hair brush, but must not be rubbed. The lower reflecting surface can be cleaned with moist soft linen, like any glass, and must be kept clean. The coated side need never be injured, but if a reflector is broken or otherwise damaged, a new one can be obtained for $1 (small sizes), or $2 (7 x 5 camera). *Avoid finger marks on the reflector.*

### TRIPAK COLOUR PRINT TRANSPARENCIES.

Adequate instruction for making Tripak process colour transparencies occupies considerable space in print, because operations that take only a few moments of time, and would be understood at once from seeing them practically demonstrated, must, in the absence of such practical demonstration, be explained in great detail. If, therefore, the instructions given make the work appear to be a rather formidable undertaking, bear in mind the fact that a complete triple print transparency can be made, mounted in register between glasses, and sealed up in about half an hour, and that no more time than that is necessary to get the very best results when the negatives have been correctly exposed and developed, and the prints correctly exposed. It is in order to obtain good results when the negatives and print exposures are not ideally correct, or to modify the result for artistic purposes, that one should understand much more than the simple routine of operations.

### TRANSPARENCIES ON GELATINE-BROMIDE COATED COLLODION FILM.

Gelatine-bromide coated celluloid film as originally used for making coloured relief-print transparencies was open to the objections that the relief obtained was much too high, making them slow to develop, difficult to colour up properly, slow to dry, troublesome to do local treatment on, wanting in sharpness, and not satisfactory for lantern-slides unless sealed up with Canada balsam. The Tripak system of colour photography owes its inception to the discovery that these defects of the process could be removed by substituting bichromated fish glue on collodion for bichromated gelatine on celluloid, but the same results are now obtained with gelatine by incorporating in the coating a soluble dye which serves to limit the depth of penetration of the photographically active light, but which is discharged in development and subsequent operations, and by treating the developer relief print with dilute chromic acid to sharpen it up and mordant it for the dyes. By this means, sharp, low relief prints are made, equal in every respect to those made by the patent fish-glue collodion process, and the incorporation of bromide of silver in the gelatine makes it possible to watch and, within limits, to control the development. This process also is patented.

The Tripak gelatine-collodion film is sent out sensitised ready for use: fast (GCF), which keeps good for weeks, and slow (GCS), which keeps good for months.

Special printing frames are provided for holding the three negatives side by side, and the sensitive films are sent out cut to size for covering the three negatives (in the smaller sizes), so that one exposure to light only is necessary for the three images.

The film should be handled before development only in gaslight, or very subdued daylight, or in a room or closet having a yellow glass window. It must be placed in the printing frame collodion (glossy) side against the negatives, the back put in and the exposure made to light in the usual way. Owing to the thickness of the film and some tendency to buckle, it is generally best to expose to direct sunlight. If printed in diffused light, keep the frame back some feet from the window. Diffused light is less likely to show up scratches or bubbles in the glass, or make pinholes from dust.

The time of exposure is measured by a modified Woodbury photometer, having a central opening surrounded by eight numbered tints. A small piece of fresh dry Solio paper is inserted so as to cover the central opening, and the photometer placed in the same light as the printing frame. With moderately thin, clear negatives, the GCF film will probably require printing only until the Solio paper matches tint 4. The prints when fully developed should show all details, but the extreme high-lights may be almost, if not quite, clear. Some of the film is sent out to cut up into larger sizes than generally required, in order that trimmed-off strips may be used for test exposures.

The GCS film is very much slower, requiring from five to twenty minutes' printing in clear sunlight, and it may be necessary to print to between 7 and 8 on the scale, and then repeat the operation with a fresh piece of Solio paper.

The exposed film is developed in hot water (temperature about 120 deg. Fahr.), to which a little ammonia may be added to hasten development and rapidly discharge the dye.

The best developing utensil is a lipped agateware pail, about eleven inches deep, resting on a small gas stove used to heat the water. The gas flame may be turned high until the required temperature is attained, and then if turned quite low the temperature may be kept pretty constant. The prints should be held by spring clips at two corners, and suspended vertically from a horizontal wire or rod resting on the rim of the pail. Development is usually complete in less than five minutes when the film is fresh. Tentative development, giving control, consists in commencing with clear water at 100 deg. Fahr., and increasing the temperature, and finally adding ammonia if necessary to develop as far as desired.

Short exposures with low temperature development will yield the same detail as longer exposures with higher temperature development, but the latter procedure will yield flatter (softer) prints, and is better for comparatively dense, contrasty negatives. Film that is nearing its age limit also gives softer prints, and is more sensitive than when fresh.

When the print is fully developed, it is immersed face up in a tray of dilute chromic acid (30 grains to 16 ozs. water) for one minute, then washed for a minute or two, then immersed in hyposulphite of soda solution to dissolve out the bromide of silver, and finally rinsed with water. It may then either be dried first, or, to save time, cut apart while still wet and each image immersed face up (handling with a spring clip attached to one end) in its appropriate dye bath—the print from the R negative in peacock blue, that from the G negative in magenta, and that from the B negative in yellow.

Rock the dishes gently, or dip the prints in and out for a few seconds. They will usually colour up fully in five minutes, and should then be removed, one at a time, dipped once directly into and out of clear water, then into dilute acetic acid (1 oz. of 30 per cent. acid to 9 oz. water), then hung up by spring clips to drain and dry. They will dry quickly if hung near a steam or hot-air radiator. When partly dry, clinging drops may be removed by pressing the prints lightly between clean blotters.

When *quite dry*, the prints may be superposed in register on a glass, and if found correct, permanently registered and bound between two glasses. Always be sure that the prints are perfectly dry, front and back, before trying to superpose them.

A sheet of tracing cloth stretched across a window makes a good background against which to examine prints at all stages.

When the subject has been suitably lighted, the negative correctly exposed and developed, and the prints correctly exposed, excellent results will be obtained by the operations described. As in all other photographic processes, errors of exposure and development affect the work unfavourably, and there is less latitude for such errors in colour photography because defects of gradation, which might pass unnoticed or not be considered seriously objectionable in monochrome photography, may be offensively evident in colour rendering. For example, one often sees photographic portraits in which the high-lights on the face are as white as the shirt front, but a colour photograph in which flesh was anywhere reproduced like starched linen would be an abomination. It is for this reason that it is important to make rather thin, clear, well-detailed negatives, so that every gradation is sure to be reproduced in the colour prints.

### FISH-GLUE FILM TRANSPARENCIES.

Fish glue collodion film can be supplied in place of the GCF or GCS gelatine film. It is sent out cut to size (4 x 9¾, 5 x 7, or 5 x 8) and mounted collodion side out on thin cards, with label and date printed on the back of the card. The card bearing the film is placed in the printing frame to expose, and the film afterwards detached and turned over on a glass plate, to which it is clamped at one edge to develop. It develops when sufficiently fresh under a stream of cold water in about one minute, but it is safer to develop three minutes, and to use warm (not hot) water when the film is getting old. The developed print is without colour, and requires no clearing, but is passed through the chromic acid bath and then washed, after which the operations are the same as with the gelatine collodion film. The fish-glue film should be used up within a few days, as it does not keep as well as the gelatine film, and allowance must also be made for the fact that it increases perceptibly in sensitiveness from day to day, and is faster in summer than in winter. Keep unexposed film wrapped in waxed paper in a cool, dry place.

### THE TRIPAK DYE BATHS.

Material for making the Tripak dye baths is supplied in glass tubes, the contents of each to be dissolved in one quart of hot water and then filtered through paper. These baths should not be tampered with, as they are carefully adjusted to work harmoniously. Sometimes the peacock print may prove relatively too weak, in which case it will take more colour by re-immersion after it has once been coloured, passed through the acetic bath and dried, but no acid should be added directly to the dye bath. The same is true of the yellow print and dye bath.

Dye baths and all other solutions should be kept filtered clean, as foreign matter is apt to attach itself to the colloid relief.

At any time after the developed print has been through the chromic acid bath it may be safely clamped face up on a glass held under the tap and brushed gently with a soft, flat camel's hair brush to remove any adhering dust or sediment. If the developing water and all of the solutions are kept filtered clean and dust avoided this should not be necessary; but as it takes only a minute of time it may be advised as a regular routine procedure, which may perhaps best be done after the hypo bath, or after cutting the images apart if the print is not first dried.

### CORRECTION OF ERRORS.

Within limits, defects due to incorrect exposures or development of negatives can be compensated for in the print making or dyeing. Thus, prints can be made with longer or shorter exposures, dyed for a longer or shorter time, etc., and always if the result turns out to be "off key" because one of the prints is relatively too strong or too weak, that print alone can be reduced by washing or strengthened by reimmersing in the dye bath and transferring directly to the acetic bath instead of first rinsing in water.

Naturally, nothing but practical experience will make perfect in such work, and it is recommended to do some practice work with narrow strips of sensitive film, which should be long enough to extend over the three negatives, but need not be more than an inch wide. A practical demonstration of the manipulations by an expert is desirable, and should be witnessed if possible. In any case, if unsatisfactory results are obtained, it is well to send the negatives and prints to headquarters for criticism and instruction; and at a fair price for cost of labour, prints can be made by an expert and returned with record of exposure, time of dyeing, etc.

Before finally mounting the prints in register they should be held face down on clean paper and the collodion side wiped off with a damp cloth or blotter, to remove any dye which may have become attached and dried on.

### SUPERPOSING THE COLOUR PRINTS IN REGISTER.

The peacock blue print is first laid down, face up, on a piece of clear glass of suitable size, and clamped at one edge with a wide steel spring clip; the crimson print is then laid upon this and shifted by the thumbs until it exactly fits over the peacock blue print, detail for detail, then held in place by the thumb and fingers of one hand while the spring clip is removed and used to clamp both of the pictures together on the glass, then the yellow print is superposed and registered and clamped in the same way, and then another glass put over all to the edge of the clip, to press them flat together for examination. The registering appears more difficult by reason of the tendency of prints to curl more or less; but it is only necessary to see that details anywhere two inches apart between the thumbs are in register, to be sure that everything will be when pressed flat.

If the trial register shows that the result is quite satisfactory, the prints may be permanently mounted as follows:—

First trim off with scissors any film which extends over the edges of the glass—best to trim it a little smaller than the glass. Then upon one edge trim the peacock print about one-eighth of an inch inside the edge of the glass, the magenta print a little shorter and the yellow print still shorter, so that the edges lie like successive steps up from the edge of the glass. Now, holding the prints flat, apply one strip of gummed paper over all the edges, thus fastening them together in register and to the glass at one edge. Finally, put on a cover glass and bind together like a lantern-slide or *passe partout*. It is best to bind the prints only on one edge, as otherwise changes of temperature may affect the register. Large sizes intended for window transparencies may be backed with ground glass.

Fidelity to nature is not always desired in colour photography, and the artistic amateur may wish to modify the colours to suit his individual taste. This may be done with considerable facility.

The dyes used are mordanted by the chromic oxide and discharged by alkalies, and for this reason, combined with the remarkable tenuity of the glue relief, local treatment can be given with extraordinary facility. Any colour which is in excess may be discharged gradually, without destroying the photographic gradations, by means of a brush containing extremely dilute ammonia (2 drops to a pint of water) and the action stopped instantly by applying a blotter. For example, a blue can be given a brighter hue by discharging any yellow which may be present on that part of the yellow print; it can be given a more peacock hue by discharging some of the colour in that part of the magenta print, or more purple by discharging some of the colour in that part of the peacock print. Greens are intensified by discharging magenta. reds by discharging peacock, pinks by discharging peacock and yellow. and so on.

Finally, if the prints are superposed so as to bring the yellow print face up on top of the others, reds, greens, and blues can be intensified by applying magenta or peacock dye bath solution locally with a small brush on the yellow relief print, into which they will absorb without discharging the yellow, the amount taken up depending on strength of solution, time left on, etc. Apply a clean blotter to remove the liquid dye as soon as sufficient is absorbed, and if lint from the blotter sticks to the print it can be brushed off with a wad of soft woollen cloth after the surface becomes perfectly dry.

When the colour print exposures are made in direct sunlight, the sharp reproduction of the grain in the negatives sometimes gives a ground-glass effect which by scattering light makes them practically less transparent for projection purposes than they otherwise would be. Whenever it proves desirable, the prints for lantern slides (only), (after trial register shows them to be quite satisfactory), should be apart and varnished with thin benzole-dammar varnish, which may be applied with a small camel-hair brush, on the face of the print only, after which they should be dried for an hour or so before superposing again. A smooth, even coating of the varnish is easily obtained by commencing at the top of the inclined print and sweeping the brush from side to side, each time a little lower, until the lower edge is reached.

If the prints show any pinholes, they can best be touched out with a sharp lead pencil, working on the varnished surface of the top print when all are finally registered and fastened down.

### Note on Lighting, etc.

A well-known photographer who had considerable experience with the Autochrome process remarked that one must learn the art of lighting all over again to get the best results in colour photography, otherwise they would be apt to get bleached-out high lights and buried shadows. This is true of all kinds of colour photography; while the lightning should be full of gradation, it must be much flatter, and more gently shaded than would be chosen for monochrome photography. It is simply impossible to do justice to light objects in sunlight and dark objects in the shade in the same colour photograph. The colour reproduction is at its best only with normal exposures for the illumination of the particular surface involved. Over-exposure bleaches colour because all surfaces reflect some white light, affecting all three plates, as is proper, but necessarily resulting in drowning out some of the colour if the exposure is excessive. Colours really should appear whiter in the high-lights, as they do even to the eye in nature, but the shortened scale of gradation of the photographic process tends to exaggerate this difference. This does not preclude beautiful and highly satisfactory results in colour photography, but prescribes certain conditions for securing them.

It will also be found that simple, broad compositions are generally more satisfactory in the result than those containing a great many objects and minute details.

### Tripak Patents.

Several patents applying to the Tripak system were taken out prior to 1910. Recent U.S. patents are dated June 7, 1910, and January 10, 1911. Foreign patents have been taken out, and other patents will be applied for. Should attempts be made to exploit similar methods not directly infringing these patents it must be understood that they cannot but be comparatively complicated, difficult, and imperfect; in short, illegitimate and disappointing imitations.

[Since setting the above article in type we have received from Mr. Ives' laboratories, 1,001, Park Avenue, Woodcliff-on-Hudson, New Jersey, U.S.A., some half-dozen specimens of the "Tripak" transparencies. In sending them to us, Mr. Ives writes: "They are probably no better than results which I obtained twenty years ago, but the process is now simple, definite, quick, practical, and commercial. Finished duplicates of the slides I send can be made by an expert in thirty minutes, if he has sunlight for exposures and a current of warm air for drying the prints." The specimens sent by Mr. Ives include flower and still-life studies and a portrait, as well as several landscapes, and are characterised by great brilliancy and delicacy of colouring, as well as by extreme transparency, the density being comparable with that of an ordinary lantern-slide, whilst the slides, from their method of production, may be projected in an ordinary lantern without special precautions. We may, therefore, hope that the appliances and materials for working the Tripak process will, before very long, be available for English users. For the present, enquiries should be sent to Mr. Ives at the address given above.—Eds. "Colour Photography" Supplement.]

## A STEREOSCOPE FOR THE DIRECT OBSERVATION OF COLOUR TRANSPARENCIES WITHOUT REVERSAL.

[In the following article in the "Photo Gazette" the inventor, M. G. Balmitgère, describes a form of direct-vision stereoscope designed primarily for viewing transparencies made on colour-screen plates, and employed without these latter being cut and transposed.—Eds. "Colour Photography" Supplement.]

We know that the two images of a stereoscopic pair obtained on one negative plate with an ordinary stereoscopic apparatus are inverted, the one by the side of the other; that is to say, if a positive has been made by contact by one exposure and is examined in such a manner that the images are seen the right way up, then the image produced with the left-hand lens is seen on the right of the other if the film is turned towards the observer. On the contrary, if the image is seen through the glass, the left-hand image is on the left, but the images are the wrong way round, so that inscriptions have to be read from right to left. In both cases the slide gives in an ordinary stereoscope a pseudoscopic effect, and not one of natural relief.

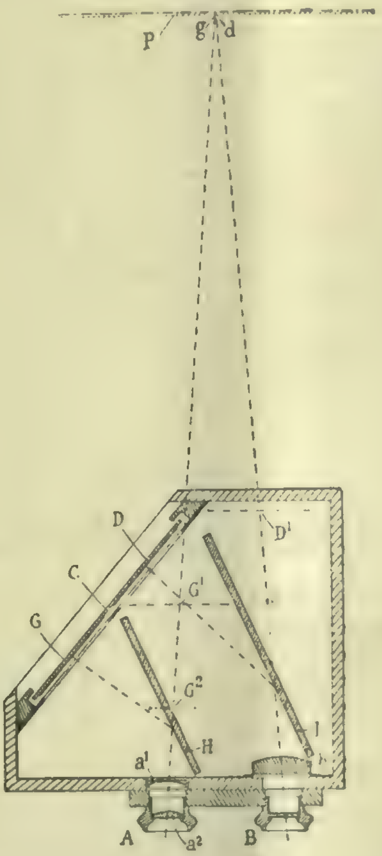
To re-establish the proper order of the images, one is obliged to make the positives either with the aid of a special camera, or to employ a reversing printing-frame, which necessitates two exposures, or else to cut the negative in two parts with a diamond and place the parts in a printing-frame in reversed positions.

The inconvenience due to the reversal of the images is still greater in the case of direct positives in colour. One then has no choice among the various inversion methods mentioned above, and must resort to the separation of the two images with a diamond. This operation is simple enough when the diamond is held by a glass-worker, nevertheless it is very seldom successful with the amateur, and it nearly always happens that the cut is incorrect and that the gelatine film becomes detached from the glass by reason of its extreme delicacy. Afterwards it is necessary to fix the two parts on a glass plate. To these practical inconveniences we may add another not less serious, which arises from the too great separation of the stereoscopic images which involves so much trouble in using the stereoscope that many people are never able to enjoy its charm. It is true one can facilitate the combination of the images by separating the oculars, but these are then only used at their internal margins; they then act as convex prisms and distort the image, the one in one direction and the other in a contrary one, the result being that the remedy replaces one evil by another.

All these difficulties are eliminated by the use of the Balmitgère "Directoscope." A direct positive in colours, for example, introduced into this apparatus, is immediately seen in relief without any effort of accommodation, whatever the vision of the observer (normal, myopic, or presbyopic), or whatever the separation of his eyes, and his surprise is generally expressed by the statement, "One would say that this stereoscope had been made expressly for me; I never saw a stereoscopic slide with so much ease and pleasure."

Fig. 1 illustrates the construction of the Directoscope. In this figure A and B are the oculars; C is the plate on which are the images G and D; H and I are surface platinum mirrors, giving sharp and perfect reflections. The left-hand image, G, is reflected in the mirror H, and so becomes shifted to $G^1$; the right-hand image, D, is reflected in the mirror I, and is shifted to $D^1$. Obviously the two images $G^1$ and $D^1$ are in different planes, but the oculars are calculated in such a manner that the images are optically shifted to the same plane, P, in space, and in this plane they are of exactly the same size. Beyond this they are superposed, owing to the action of the mirrors, which allow the images to combine with one another just as is necessary.

The ocular, B, is formed of an achromatic lens, *b*, the focal length of which is so calculated that the virtual image $D^1$ is formed on the plane P, which is chosen at a near distance, say 50 cms., from the observer. The ocular A is formed of a divergent lens $a^1$ and a convergent lens $a^2$, the combination being appreciably achromatic. The lens $a^1$ has the effect of virtually bringing the image $G^1$ nearer to $G^2$, and its focus is calculated so that $G^2$ will be seen through $a^2$ and appear of the same apparent diameter as $D^1$ when seen through *b*; in other words, the focal length of $a^2$ is arranged so that $G^2$ is carried back to *g* in the plane P. The whole is arranged so that the observer sees with the left eye an image *g* at 50 cms. away, and with the right eye an image *d* of the same size superposed on the other at an equal distance. There is, therefore, no more difficulty in combining the two images and seeing the relief than in seeing a painting at 50 cms. or a picture postcard held in the hand; this explains why myopic, presbyopic, or normal sighted persons can see so easily in the "Directoscope." And here is the reason why, although the position of the oculars is intentionally fixed and invariable, the separation of the eyes of the observer is absolutely indifferent; the oculars are arranged in such a manner that for an observer having normal eye separation of 63 mms. the optical centre of, say, the left eye, the centre of $G^2$, and the centre of *g* are in the same straight line, and it is the same for the optical centre of the right eye, the centre of $D^1$ and the centre of *d*. If, then, an observer having an eye separation of 70 mms. looks through the apparatus, it is obvious that the line which joins the optical centre of his left eye to the centre $G^2$ is deviated across to the right, and so carries the point *g* to the right of the point *d*, the latter suffering a contrary displacement; but this line no longer passes absolutely through the centre of the ocular, and it is slightly deviated by it, so as to return, as before, to the common point *g d*, and it is the same as regards the right eye. The same conditions exist, but in a contrary sense, in the case of an observer having eyes separated by less than 63 mms.



The "Directoscope" shown in Fig. 1 gives, as regards size, an effect comparable with that of ordinary stereoscopes of medium focus, and serves perfectly for views in colour, with which the grain is less perceptible, as the enlargement is less, but it can be constructed so as to enlarge the image either by adding near the image D a convergent lens of sufficient diameter, or by replacing the mirror I by a total reflection prism, which optically brings the virtual image $D^1$ into the same plane as the image $G^1$; in this latter case the two oculars are identical, and are a pair of simple achromatic lenses.

To sum up, in the ordinary stereoscopes, after prolonged and minute manipulations, relief is produced by the simultaneous observation of two plane stereoscopic images superposed in one plane situated at infinity (this does not prevent one from obtaining the effect of objects placed very near the observer), which can only be properly seen by observers endowed with excellent vision.

In the "Directoscope" the two images are superposed at a short distance from the observer (which fact does not prevent the illusion of objects at an infinitely great distance), the oculars are intentionally fixed, and without variable separation, and anyone can see well and without any fatigue. It permits of the observation of positives made with one exposure in an ordinary printing-frame, of positives direct in colour, and of positives in monochrome.

C. Balmitgère.

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## FLASH-LIGHT AUTOCHROME PORTRAITS.

Mr. B. J. Falk, who has long been experimenting with flash-light Autochromy, became sufficiently satisfied with the results to advertise them as a leading line for the Christmas-New Year season. His card in the New York dailies ran as follows:—

The New Photography.
The Distinctive Holiday Gift.
Instantaneous Portraits in the Living Tints.
Exquisite miniatures from life, without hand colouring, yet in all the colours of Nature.
In elegant Diascope case $50.00.

This, of course, was followed by name and address.

The exact details of the method are not for publication, but we can say that the flash-powder and the light-filter used with the lens have been adjusted to each other for Mr. Falk.

The flash is exploded in a narrow tray, 15in. x 1in. x 1in., which is always used in one fixed position, under a draught-funnel which clears the smoke through the roof of the studio quickly, without allowing any of it to spread about the room. Variation of lighting is obtained by re-arranging the positions of sitter and camera, and very pleasing results are being obtained. So far as can be judged without detailed comparison with the originals, the Autochromes appear truthful, with perhaps a tendency to emphasise the warm colours, which is all to the good with most complexions. The modelling is good, and the lighting of heads, busts, and half-lengths is very good and even. In some cases the relative smallness of the source of light shows itself by strong cast shadows (of the nose, for instance), and we expect that Mr. Falk will find it advisable to use a wider flame.

The focussing and lighting are done by means of a few very powerful electric incandescent lamps arranged on the same standard as the flash-tray, and having the effect of filling the sitters' eyes with light, so that the flash is not startling—in fact, it is scarce noticed—and the distended pupils that would result from faint lighting are avoided. In the normal course, for heads and half-lengths, Mr. Falk uses 200 grains of flash-mixture, at from eight to fifteen feet from the sitter.

The experiment is new, and it remains to be seen whether these fascinating ten-guinea transparencies, in their beautiful Diascope settings, will take the fancy of opulent New Yorkers. At present there is no great rush, but since the beginning of December the sitters have come in steadily every week, and a very significant fact is that almost every sitter has taken at least two portraits. For security against "spoils," and also for the sake of making a collection of specimens, Mr. Falk always makes two exposures on one 7in. x 5in. plate, thus making two 5in. x 3½in. portraits. So far, he has made very few "spoils," but he has also made few specimens, for when the pictures are shown to the sitters they almost invariably want both, so that the sitting, which began for one colour-miniature only, ends by resulting in a hundred-dollar, or a twenty-guinea, order—which is not at all bad in these days, even in New York.

# Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SUGGESTION FOR A NEW COLOUR SCREEN-PLATE.

To the Editors.

Gentlemen,—The patent which has been exhumed by my friendly correspondent is altogether unknown to me. One thing, however, has struck me immediately, and it is here where there is a difference.

I have well defined in my note the simultaneous effect of diffraction and dispersion, which does not figure in the opposing patent. In effect, the imaginary or real screen which is provided for in the Frauenfelder patent is practically unrealised, and I think that many competitors could claim to have priority in this matter. I have not, it is true, established the optical calculations of the diffraction screen, but the effect is already obtained in the Metzograph screen, and also in the Ferry screen, which does wonders, but is not exploited commercially, as far as I know. I have, therefore, refrained from giving an interpretation which might be erroneous, on account of my incompetence to explain it. The diffraction screen permits the joining up on the negative plate of the white and black elements, which it forms optically. This would not be the case with an opaque screen even if this, as is the case with Fig. 3 of Frauenfelder, were constituted simply by blackening the surface and the horizontal hollows. There would, however, be a great difficulty in doing this blackening in the hollows without impairing the prismatic faces. I agree that the similarity is very great, yet I am convinced that a better result would be obtained from the method I have suggested, both on account of the simplicity of manufacture of the plates and of the economy resulting therefrom.

It goes without saying that the diffraction screen is considerably more luminous, which, in the case of instantaneous exposures, would be a valuable point, as it condenses and restores all the visible radiations emitted.

E. Dogilbert.

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To the Editors.

Gentlemen,—Mr. F. Dogilbert's note in your issue of January 6 and Mr. E. J. Wall's letter in your February 3 issue have interested me, as I have for some time been experimenting on perfecting the prismatic dispersion method of colour photography, of which these suggestions are variants, and amongst other plans I have given some thought to similar arrangements to those referred to.

It is somewhat curious that in both letters we are rather led to infer that, given plates such as described, the same would show correct colours on being viewed in the ordinary way, just as any screen-plate does, for no mention is made of any special viewing arrangement. But, as a matter of fact, it would be necessary to re-insert the positive in the camera for viewing purposes, or at all events secure that the light falling on the plate proceeds from an aperture placed in regard to the plate in the same position as the camera objective, when the photograph was taken.

For the direction of the light which is dispersed is all-important, and unless the segregated beams impinge on the prisms from precisely the same directions as they did when the photograph was taken, no similar colour rendering can be expected. Both by Mr. Dogilbert and in the Frauenfelder Patent it is assumed that the light impinging on the prisms is in separated narrow parallel beams; the latter partially provides for this by the segregating plate, a necessity overlooked by the former.

There is, however, another important point, constituting a rather serious defect, presuming the methods were practicable, which has probably not occurred to either of the authors of these suggestions, as it is one unlikely to occur to anyone before practical experiments have been carried out. It is due to the well-known fact that the prism spectrum is inordinately long in the blue and violet region, whilst the red and yellow region is cramped up, and when we consider that to secure optical fusion the individual spectra may not be wider than about one hundredth of an inch, the method suggested does not afford the opportunity for adequate colour rendering of the reds and yellows. I may perhaps mention that I have overcome this difficulty in my own method of prismatic dispersion colour photography by a suitable device, but will not enter into the matter further here, as I hope shortly to bring a complete paper on the whole subject.

May I add that my object in writing is not in the least to disparage these interesting suggestions, but simply to point out that the problem is not quite such a simple one as may at first sight appear.—Yours faithfully, Julius Rheinberg.

23, The Avenue, Brondesbury Park,
London, N.W.
February 14, 1911.

# News and Notes.

At a recent meeting of the Royal Society of Arts a paper by Mr. George A. Stephen on "Modern Machine Book-binding" was illustrated by a series of colour slides of typical book covers and end papers. The transparencies were made on the "Thames" colour plates.

**Colour Photographic Portraiture.**—Messrs. Heath and Stoneman, professional photographers, of George Street, Plymouth, have been recently holding an exhibition at their studios of about one hundred photographs, mostly portraits, on colour screen-plates. A lengthy notice of the exhibition, commenting favourably upon the many portraits of local personages there shown, appears in the "Western Morning News" of February 27 last.

**Colour Photographs in the Press.**—The book of English wild flowers published by Cassell, and deriving its illustrations from the colour transparencies, presumably Autochromes, by Mr. H. Essenhigh Corke, is no doubt only the first of many volumes of a like kind which will be issued as a result of the colour screen-plate. The "Illustrated London News" in its issue of February 25 makes a special feature of a supplement in colours of views in Egypt, described as produced by a "new process of colour photography." Doubtless this is the Autochrome or the Dufay process. In either case the reproductions are excellent, and should serve to keep before photographers the fact that publishers, of both books and periodicals, are prepared to respond to the taste of the public for what we may term "photographic colour," just as "photographic drawing" has largely supplanted the work of the draughtsman and artist in the weekly and daily Press.

No. 52. VOL. V. APRIL 7, 1911.

# THE BRITISH JOURNAL OF PHOTOGRAPHY

MONTHLY SUPPLEMENT

ON

# Colour Photography.

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# TWO-COLOUR AND THREE-COLOUR PHOTOGRAPHY IN TWO EXPOSURES OF THE SAME TIME.

[In the following article, by M. R. Moreels, in the "Bulletin" of the Belgian Photographic Association, the author describes his system of preparing sets of two-colour and three-colour negatives, by means of a one-lens camera, the special feature of which is a dark-slide allowing of plates being rapidly changed.—EDS. "Colour Photography" Supplement.]

IF the three-colour process of late has attracted only a few skilled workers since the introduction of the Autochrome and other processes, the reason clearly is the facility of these latter processes. Nevertheless, it would not be true to say that three-colour work has been at a standstill. It has progressed slowly, and, when employed under the most favourable conditions, the total time of exposure required for the set of three negatives is reduced, except in the case of instantaneous or very short exposures, to the time which is required for a screen-plate.

During the last few years progress in the manufacture of dyes has placed within our reach light-filters of great selective power, of high transparency, and considerable permanence. Moreover, the modern dry plate has similarly gained in orthochromatic and panchromatic qualities to an unexpected degree. Among all the modern plates of these classes there is none in my experience which approaches those sold as "Panchromatic" by Wratten and Wainwright, and obtainable on the Continent from the Neue Photographische Gesellschaft. These plates are more sensitive to the red-orange than to the green, whilst with panchromatic plates in general the reverse is the case. Their great sensitiveness to all rays and their general rapidity are such that when loading them into the dark-slides it is necessary to work in complete darkness, as it is also during development. Properly treated, they give shadows of bare glass, but the least light, even that of the Lumière "Virida" safelight, in which Autochrome plates may be safely handled, rapidly causes fog. Unfortunately, they are superior to all other plates in the matter of price, but this difference is discounted by the particulars contained in each box of the exact ratio of exposures necessary for the set of three negatives. In other words, the panchromatic qualities vary for each batch of emulsion, and the exact indication of the ratio effects a considerable saving in the use of the plates. This ratio for the "Panchromatic" plates is, as a rule, 1 for the blue-green, 3 for the green, and 2 for the red. The screens with which these plates should be used multiply each of the three exposures by 4, so that the total time, including that necessary for changing the plates, is 4 x (1 + 3 + 2), or 24 times that of one plate without a screen. As the "Panchromatic" plate is of great rapidity, it will at once be seen that the exposures on the above system fall below those necessitated by the multiplying factors 40, 50, 60, and more required with screen-plates in conjunction with their compensating filter. Granted that we are including the time occupied by changing the plates, and that with the best form of apparatus for three-colour work this time, which does not vary with the actual period of exposure, may be as much as the total of the three exposures, or may even exceed it when, as in the case of a portrait, the shortest possible exposures are required. In this case there is a very considerable difficulty in giving to the three plates their respective exposures, even in the ratios 1 : 3 : 2. My efforts have been directed towards equalising the exposures, and I believe I have arrived at a result of considerable interest.

In place of using for the yellow negative a panchromatic plate with a blue or violet screen, or an ordinary screen with, or without, a blue screen, I reasoned that a slow plate requiring an exposure, without a screen, of 8 or 12 times longer than the panchromatic plate without a screen, would be very suitable, providing that it was insensitive to yellow. My choice has fallen to the Ilford "Alpha" lantern or transparency plate. It is so little sensitive to yellow that it may be exposed to a strong yellow light without showing the least sign of fog, and for a time much greater than would suffice to completely fog an ordinary bromide plate, or to produce a certain degree of veil in the case of a red safe-light. On the other hand, the "Alpha" plate is very sensitive to blue, violet, and even red rays, and is thus preferable to the ordinary gelatino-bromide plate, which is frequently used. In his treatise on three-colour work (1902 edition), Baron von Hübl mentions the ordinary plate used without a screen as answering to practical conditions, although Professor Namias has recommended since 1899, for the yellow negative, the use of a plate more sensitive to the red in conjunction with a violet screen.

I made a first experiment as follows:—Photographing the chart of 9 colours, contained in the volume by von Hübl, first on an "Alpha" plate without a screen, and next on a "Panchromatic" with a green screen, I found that the white margin was obtained of about equal density in the two cases, giving the same exposure in each. From this I concluded that a modification of the intensity of the green screen would compensate perfectly for the slight difference in rapidity. Comparing next a print on P.O.P. taken from the negative on the "Alpha" plate with the positive rendering of the von Hübl chart (Plate IV. in the book), I found that the result corresponded best with the method suggested by Namias. The patches of geranium and ultramarine colour, of equal depth in the chart, were similarly rendered, whilst in the case of the result reproduced by von Hübl the ultramarine was much lighter than the geranium. On the other hand, the yellowish-green and the chrome-orange, of equal depth, and appearing to contain the same quantity of yellow, were of precisely the same value. It is true that in my positive these two colours are darker than the chrome-yellow, whilst the monochrome reproduction in von Hübl shows them a little lighter than the chrome-yellow, and, in appearance at least, his monochrome does not correspond with this point of view.

But, as an amateur photographer, I am less anxious to print from my negatives in numbers by such processes as collotype than to obtain a few prints by the carbon process, and I, therefore, prefer my negatives described above—that is to say, the monochrome yellow, which is not transparent, is first placed on the final support, the red and blue of lesser transparency being successively laid upon the yellow image. Thus, in order that the yellow shall obtain its full quality through the blue and red, forming with them yellowish-green and orange, it is better that it should be present in greater quantity only in those parts where neither blue nor red colour it, and where, therefore, it retains its full value.

For the red negative I used the panchromatic plate with a green screen. It remains to find the plate which, when exposed under the red-orange screen, requires the same exposure as the "Alpha" plate without a screen, or the panchromatic with a green screen. In practice, however, it would be better to use a second panchromatic plate but for absorbing the excess of luminosity of the image by the red-orange screen, rendered thereby of greater intensity. The idea, however, occurred to me of using the "Alpha" plate itself for absorbing this excess, and thus exposing the two plates simultaneously by placing between their sensitive surfaces an extremely thin screen of a faint orange-red. The yellow-orange emulsion of the "Alpha" plate absorbs a portion of the violet and blue-violet rays. I obtained, as for the blue, a negative identical with that shown by von Hübl, in the form of a monochrome positive for the blue.

In reducing the process to this form I have thus gone further than my original intention, for, in place of three exposures of the same length, I gave only two. True, one of these—the negatives for the yellow and blue—are exposed together, so that the images in these two are always precisely similar, even should there be any movement in the subject. The loss of time in changing the plates is reduced one-half, since there is only one change to make instead of two. On the other hand, the total of the exposures which the three panchromatic plates with a filter for each require is not prolonged. The filters increase the exposure four times, that with the blue screen, for example, being 4 seconds, with the green screen it will be 4 x 3, or 12 seconds, and with the red 4 x 2, or 8 seconds, a total of 24 seconds. With the "Alpha" and the panchromatic plate exposed simultaneously, the exposure is the same as the panchromatic used with the green screen, so that the two exposures are 10 seconds each.

A doubt existed in my mind as to whether the blue negative made through the double screen of the "Alpha" plate and the red film would not show diffusion of definition. After some experiments indoors, I conducted some more conclusive tests on outdoor subjects. The exposures were made on a woodland subject, for the reason that, if there were any defect in the process, halation would be still more pronounced on the blue negative. The focussing screen was reversed, as when focussing for an Autochrome exposure. Using a stop of *f*/26, I gave two exposures of 30 seconds in somewhat diffused light. The trunks of the fir trees and the foreground of the subject are shown in good detail on all three negatives, and it can scarcely be seen in the blue negative that there is some slight halation in the case of two tree trunks. It was found, when making the paper print, that these two trunks came out with a slight orange tint, but they show up the better on that account against the light bluish sky with a contrast of colour which, though it is not perfectly true to nature, imparts to the whole scene what painters call atmosphere and "vibration." The various greens in the foreground and distance were delicately rendered, and the experiment seemed to me satisfactory.

Passing now to the preparation of the print, the process differs from the ordinary three-colour method, in that it is simpler, and gives images which adhere better to the paper support. After having experimented with many of the three-colour tissues upon the market, I have chosen those of the Autotype Company, which are easy in use and have not led to any trouble. The "Alpha" plate, exposed through the glass, bears a reversed image, which is a convenience for the carbon process. The yellow monochrome printed from it is developed directly by single transfer on the final support. This reverses the image for the second time, so that the result is obtained, as regards right and left, corresponding with the red and blue monochromes developed on a temporary support and transferred in succession on to the yellow print. Thus, in place of three double transfers, we have only two and one single transfer. Moreover, the yellow print adheres perfectly to the final support, which is not always the case when working by the double transfer method. Further, the contact of the red and yellow monochromes is likewise satisfactory, since it occurs between the two developed surfaces of these prints.

With a view to simplifying the mechanical operations concerned in the exposure of the plates, I have devised a special dark-slide for use on a portrait camera, portraiture being the chief subject in which it is of importance to cut down the total time of exposure. A description of the apparatus should present a number of points of interest to portrait workers. The construction is simple, the bulk of the apparatus is reduced, as is likewise the cost.

The portrait lens of an aperture *f*/4, and of focal length 27 cm., is provided with rack and pinion for focussing. It is mounted on a square panel, A B C D (Fig. 1), 16 cm. along each side, the circular aperture for the lens being placed, however, a full centimetre below the centre of the panel. The latter is fixed into a square opening made in the front of a wooden box, but this opening is itself placed about 3 cm. out of centre of the ground-glass focussing screen, which is fixed centrally at the back of the box. The fixed stops B and C hold the lens-board at the bottom, the turn-buttons T and T′ holding it at the top.

Fig. 1 represents the panel decentred to the maximum position downwards, this being the position for head and shoulder, three-quarter, or even full-length portraits. If the panel be reversed, so that the top comes at the bottom, a decentring of about 2 cm. is obtained suitable for large heads. On turning the panel 90 deg. to the right or the left one gets a double decentring of a full centimetre towards either side and 3 cm. towards the base, the adjustment convenient in the case of the portrait of a seated person with the face in profile. This arrangement allows of the apparatus being reduced by more than half in size; thus the front measures only 17½ cm. in width by 22½ cm. in height: for purposes of carrying, the lens can be reversed in its mount, and so placed inside the camera. This latter is made of light wood, and of depth 23 cm.

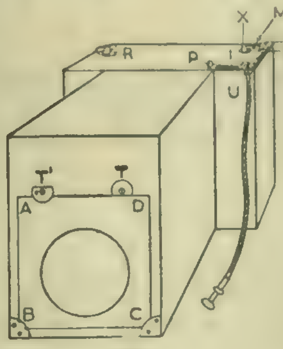

Fig. 1.

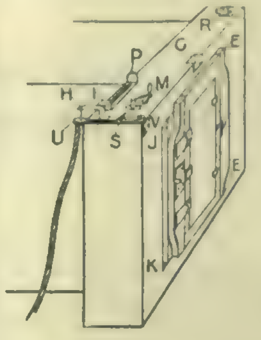

Fig. 2.

For ordinary photography, as well as for colour work on screen-plates, it is well to use a focal-plane shutter, since the lens is of long focus and of considerable aperture. In a large frame, which on one side is fixed to the camera body, and on the other carries the rear portion of a 13 x 18 cm. landscape camera, is mounted a blind shutter, the mechanism of which is reduced to the simplest form, without gear-wheels of any kind. The blind has a fixed aperture of 13½ cm., which travels from a cylinder provided with a variable tension spring on to a large cylinder of card, the circumference of which measures 13½ cm. The axis of the cylinder passes through the point X, and to it is firmly fixed the key M. In order to uncover the ground-glass it is sufficient to give one turn to the key. After focussing, a second turn of the key sets the shutter. At the first, as also at the second, turn the key M is held by a ratchet S, fixed on a lever U V, actuated by an "Antinous" release. In order to give an instantaneous exposure, the stop P I is pushed so that it arrests the lever U V at the middle of its course U H. The lever U V raises the ratchet S, the point of which then comes to the height of the slot made in the key M, and this latter being no longer held, the blind pursues its course and completely unrolls.

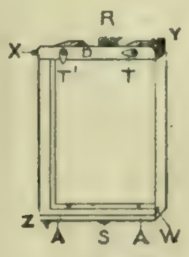

Fig. 3.

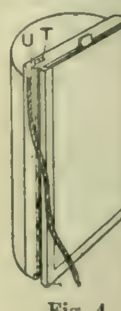

Fig. 4.

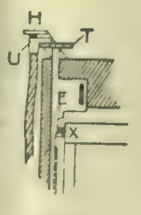

Fig. 5.

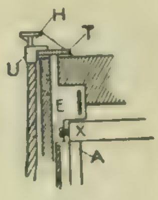

Fig. 6.

In order to give a time exposure the stop P I is drawn aside. As soon as the ratchet S arrives at the height of the key M the shutter opens, but as the stop P I no longer holds the lever U V midway, this latter rises at once to H. Thus, when the key M returns, after having made one complete revolution around the ratchet S, this latter comes to a stop above the slot, and the shutter remains open. As soon as one lets go the release the lever U V and the ratchet S drop, and the point of the latter falls again into the slot of the key; the blind at the same moment continues its course, and the shutter closes.

The dark-slide employed with the apparatus is no larger than the ordinary 13 x 18 slide, but to its front surface is fixed a semi-cylindrical iron box (Fig. 4), in which a metal frame (Figs. 3 and 7) can make freely a half-turn, actuated by an internal spring R (Figs. 3 and 7).

In order to make a two-colour exposure, according to the method described in "B.J.," July 8, 1910, p. 514, the dark-slide is loaded with two plates and two glass screens. In the dark-room, illuminated with a safe-light, the special dark-slide is laid out flat on its back. The shutter is opened and a half-turn given to the metal frame. Then the outside cap T (Figs. 4, 5, and 6) is withdrawn in order to hold the frame, as shown in Fig. 5. There is then laid in the frame first a green screen of the same thickness as the plates in use, then a Schleussner "Viridin" plate, and on this a wooden panel covered with black paper, and fitted on the upper side with a solid spring (Fig. 7).

The room having now been made completely dark, a "Panchromatic" plate is placed, gelatine side up, in the frame, and lastly a red screen, the thickness of which is equal to double the thickness of the "Viridin" plate. When one has pushed the screen up to the level D of the frame, the stops T and T' (Fig. 3) are turned, and the shutter closed.

For a three-colour exposure the charging of the dark-slide is done as follows:—By yellow light an "Alpha" plate is first laid in the metal frame, gelatine side up, then the red film-screen; then, in complete darkness, a "Panchromatic" plate, film down; on this the spring partition, and on this again a second "Panchromatic" plate, film down, and finally the green screen. The "Panchromatic" plates being packed in pairs, gelatine sides in contact, the loading is very easily done in the dark; one has only to raise the upper plate and to lay it, without reversing it, on the red film-screen, and to do the same in the case of the lower plate of the pair on the spring partition.

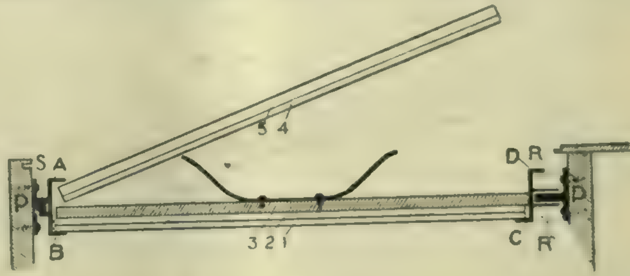

Fig 7.

In place of a frame containing the shutter, the body of the camera may be fitted behind with a frame in which a focussing screen may be inserted, and, after focussing, the special dark-slide. For three-colour work the ground side of the focussing screen is turned towards the lens; for two-colour, the focussing screen is reversed. The lens is provided with any suitable shutter, or with simply a cap.

The shutter of the special dark-slide having been withdrawn, one takes with one hand the "Antinous" release fixed to the dark-slide, and with the other hand uncaps the lens: the plate last loaded into the apparatus is thus first exposed. Exposure having been judged, sufficient pressure is made on the release. The plunger of the release projected from the portion U (Figs. 4, 5, and 6) of the apparatus presses against the fixed plate H and depresses the button T, as shown in Fig. 6. The stop X of the metal frame, which was held in A by a metal plate attached to the cap T (Fig. 5) passes into the slot E, and the spring R (Figs. 3 and 7) causes the frame containing the plates and screens to move through a half-revolution. At this moment the stop Y butts against the metal plate attached to the cap T. In order to prevent all deformation of the frame, the latter is provided on its lower part with two stops, W and Z, and the inside of the dark-slide fitted with three metal plugs, against which the stops X, W, and Z respectively butt at the exact moment when the stop Y butts against the metal plate attached to the cap T. The half-turn movement is so rapid, and during this movement the oblique rays have so little action on the plates, that it is unnecessary to uncover the lens, even with exposures so short as 2 seconds. The second plate in two-colour work, or the second and third plates in a three-colour exposure, are thus impressed. The lens is then covered, and the operations are complete.

R. Moreels.

# ORDINARY NEGATIVES FROM AUTOCHROME AND OTHER SCREEN-PLATE TRANSPARENCIES.

A paper in the "Photo Gazette."

Since the introduction of colour photography by the screen-plate method much attention has been given to the duplication of the transparencies in colours, either by contact or, better, by reproduction in the camera, this latter process giving superior results. Although the production of colour duplicates is of interest to many workers, it is never likely to be of supreme interest, even to the most enthusiastic Autochromists, while we still lack the means of producing such colour facsimiles as paper prints. Yet, if we have not at present the means of doing this, we, nevertheless, are able readily to make from a colour transparency a negative which is as suitable for ordinary printing as (or, at any rate, only a little less so) one made direct from nature.

By some it may be thought that such an aim on the part of the colour worker is a retrograde one and, therefore, to be discouraged, but it seems to us that, in fact, it should attract many new workers into the field of colour photography. How many amateurs indeed there must be who have not thought that it was possible to obtain a negative at home, and at their leisure, from a colour transparency, and who have, therefore, given up the colour process, even after having experienced its charms, simply for the reason that they believed themselves compelled to make duplicate exposures on ordinary plates if they wished to obtain prints on paper in addition to their transparencies in colour. It cannot be contended, at present at any rate, that colour photography by means of screen-plates supplies a complete substitute for ordinary monochrome work. The colour transparencies have their use in projection and in the stereoscope, but apart from these particular applications it must be confessed that their field is limited. Thus there is still, and we may say there will always be, a large place for ordinary black-and-white photography, since the number of ways in which it may be used is so great. It is common to meet, even among those most enthusiastic in colour work, a firm attachment to ordinary photography, which, we repeat, cannot be actually supplied by the more attractive form of work. The question, therefore, of preparing negatives from colour plates is not without interest.

Just as in the preparation of colour duplicates, two methods may be followed in producing the negatives, namely, by reproduction in the camera, or by contact in a printing frame. We will take the former method first, as it is the one which we have chiefly employed. Fearing that the starch grain immediately behind the extremely thin emulsion which forms the image would considerably affect the fine grain desired in the print, we conceived it necessary in the first experiments which we made to prepare the reproduced negative on a scale smaller than that of the colour transparency, and this was why we first turned our attention to the camera method of reproduction.

However, having need of a negative the same size as the transparency, we prepared one by copying a 7 x 5 Autochrome transparency the same size. The results obtained were satisfactory, the starch grain being scarcely perceptible even in the uniform portions of medium density, whilst the details in no way suffered. The positive print obtained gave, to some slight extent, the appearance of having been made from a paper negative, although with much finer detail even in the half-tones, the granular structure of the colour transparency being considerably finer and more regular than the grain of the paper. A bromide print from a negative prepared from an Autochrome somewhat resembled a print by the oil process, or one made through a fine half-tone screen. In short, the definition is amply sufficient.

The production of the negative presents no difficulty. The most simple process is that described below, that is for those who possess a double-extension camera with which copying may be done on various scales of reproduction. The transparency to be reproduced is mounted, without its cover glass, to the inside of a window. It is well to use the uncovered transparency in order to avoid reflections which might otherwise be caused by the cover glass and might appear in the negative. In order to secure prints which show the original subject correct as regards right and left, the emulsion side of the Autochrome transparency should be placed facing the lens. Outside the window is placed a sheet of ground glass in order to supply a diffused and even lighting over the transparency. This diffusing screen should be placed a few inches behind the transparency in order that it may be well out of focus; it therefore requires to be somewhat larger than the colour plate being reproduced.

In obtaining a negative of good quality it is well to place the Autochrome in a black frame made either with opaque black paper or card so as to cut off light completely round the edges. This can frequently be done sufficiently well by placing the Autochrome in one of the wooden frames sold for display purposes. When using a lens of long focus for a given plate, as also when reducing in scale to a considerable extent, the margin given by the binding of the transparency itself may be sufficient, but in no case should any light, other than that passing through the transparency, gain access to the inside of the camera through the lens.

It is no easy matter to obtain sharp focus, even with the lens at the full aperture, at any rate in winter. For this reason we advise that focussing should be done before placing the outside diffusing screen in position, installing this latter just before making the exposure. A further aid to sharp focussing is to oil the ground glass of the copying camera with a little vaseline.

In order to obtain the maximum sharpness in the negative it is best to stop down a little, and to do so has the further advantage of requiring a longer exposure and one, therefore, which can be more readily timed. Exposure is fairly short in spite of the considerable opacity of the screen-plate transparency. When copying same size with the transparency placed in a window facing north we found that from 20 to 30 seconds were required at *f*/14 on plates of medium sensitiveness, and when working from good brilliant Autochromes which had been varnished. More opaque transparencies and those which have not been varnished necessarily require a somewhat longer exposure.

When the originals have received correct exposure and development the negatives show good orthochromatic rendering without the use of orthochromatic plates or compensating light filters. Foliage is excellently rendered, and the different colours of the original are reproduced in their relative values.

Although, as we have said, the making of the negatives in the camera is the better method, yet, as it requires an apparatus of considerable extension, it is beyond the means of many amateurs, whose equipment is of the most modest kind. The latter may be recommended to work by contact with a printing frame, which method will likewise yield quite good results, in fact even better as regards invisibility of the starch grain.

The Autochrome transparency is laid glass side down on a printing frame fitted with a stout plate-glass front. Then in the dark room, illuminated only by yellow or green light, an ordinary negative plate is laid in film to film with the Autochrome. A sheet of black paper is then placed on, and finally the back of the printing frame. Exposure is then made at a distance of from 8 to 12 inches from an electric or incandescent gas burner. Although the plates usually used for negative making will furnish good results, yet it is better to use a quite slow emulsion, though not one of the chloro-bromide class as sold for lantern slide making, which is apt to give a certain hardness in the negatives. During exposure it is a good plan to keep the printing frame constantly turning (at a slight angle) as though it were pivoted on a vertical axis, the object being to allow the rays of light from the lamp to impinge upon the surface at different angles and so assist in rendering the grain less apparent in the negative.

Nothing need be said as regards development, except that the plate should be examined by transmitted light and the developing operation continued until sufficient density is obtained to yield prints of the necessary contrast. It is needless to say in conclusion that the methods here described apply equally to colour plates made with regular geometrical screen, such as the "Dioptichrome" (Dufay) or the "Omnicolore."

V. Cremier.

# SHORTER EXPOSURES WITH THE AUTOCHROME PLATE.

(A Paper translated from "Wiener Mitteilungen.")

Although many experiments have been made with a view to shortening the exposures with the Autochrome plate, they have so far failed in effecting a notable improvement, as, for example, in enhancing the colour-sensitiveness of the emulsion in order to allow of the use of a lighter filter. From time to time in the photographic papers methods are described by which Autochrome exposures as short as 1-50th of a second may be made in sunlight with a large-aperture lens. But these methods are difficult to carry out, and depend upon conditions which cannot be definitely fixed, and, therefore, are not suitable for general use, since they involve so much previous work in the dark-room.

The author has himself put such methods to the test, and has had the opportunity of judging of the many difficulties which stand in the way. The chief of these is the fact that the baths used for this extra sensitising of the plates contain more than one dye. It is extremely difficult to ensure the correct ratio of the different dyes in a sensitising solution, and, moreover, it is impossible to prescribe exact formulæ, since the properties of the dyes vary with different samples. Thus it was found that one dye would prejudice the sensitising action of another, nullifying the expected improvement, whilst in other cases a strong sensitising action was obtained, but at the expense of the colour-rendering.

A sensitising bath thus composed of several dyes can only be adjusted by trial experiments, and this is both a tedious and expensive process, and even when a bath has been found its sensitising effect soon alters to such an extent that it cannot be used for further work.

It, therefore, seemed worth while to try the possibility of increasing the colour-sensitiveness of the Autochrome plate in a way which could be adopted by any worker without resorting to elaborate testing methods. In trials along these lines ease of carrying out the process was given the preference compared with the maximum of increase in sensitiveness. If the time of exposure can be reduced to one-half this would be a valuable result in many cases, provided that, at the same time, the process is readily carried out.

In the course of numerous trials, which need not here be described in detail, a method which is satisfactory under certain conditions was found in the use of pinachrome. As already stated, the use of a sensitiser containing more than one dye was considered out of the question. The following is a suitable sensitising bath:—

| | |
|---|---|
| Water, distilled | 200 ccs. |
| Absolute alcohol | 50 ccs. |
| Pinachrome solution, 1 : 500 | 2 ccs. |

The plates are bathed in this bath in complete darkness for two minutes, rocking the dish the whole of the time. They are then, without rinsing, put to dry in a proper cupboard. The time of sensitising should be kept as short as possible, otherwise the alcohol in the bath is liable to exert an effect on the varnish coating of the film. Quick drying is likewise important, and for this reason a drying cupboard should be used.

A suitable filter for plates treated in this bath is the following of extremely pale greenish-yellow:—

| | |
|---|---|
| Water, distilled | 100 ccs. |
| Soft gelatine | 10 gms. |
| Aesculine | 15 gms. |

One cc. of this mixture is used for every four square centimetres of the glass to be coated. When the gelatine mixture has set, a cover glass is cemented down with Canada balsam in the usual way.

The colour rendering and increase in sensitiveness were tested by making exposures on both a colour and monochrome scale as well as in the field, using a stereo camera with one lens fitted with the Lumière filter and the other with one made by the foregoing formula, untreated and bathed plates being used behind the filters respectively. It was found that the exposure in the case of the bathed plate could be curtailed to one-third. Each pair of plates was developed for the same time in the same metoquinone solution.

Although the method allows of considerably shortened exposure, yet the pinachrome-sensitised plates are not satisfactory as regards colour rendering in all cases, and, therefore, the process is not suitable for the reproduction of oil paintings, or scientific subjects. In those cases where the predominant colours are red and orange of considerable intensity, and where there is no green, the use of the sensitised plates is advantageous. Autumn landscapes, made up almost entirely of yellow, reddish, and brown foliage, architectural subjects, etc., yield satisfactory results, and the extra rapidity of the plates may doubtless be used by those whose aim is purely pictorial rather than a faithful transcript of the scene.

Though the reduction in time of exposure is from one-half to one-third, and that at the partial sacrifice of colour rendering, there are, nevertheless, many cases where the process is of value. For example, an exposure which, on the untreated plates, would require to be at least one-quarter of a second, may be reduced to one-tenth of a second, and thus a shutter exposure given with the camera held in the hand, where otherwise a stand camera would have to be used. Again, in medical subjects, the shortening of exposure from one second to one-half or one-third second is of advantage in avoiding loss of definition from movement of muscles, etc.

In conclusion, it may be mentioned that a more correct colour rendering can be secured by using a yellower filter, and, as a consequence, giving a somewhat longer exposure. The formula for such a filter is as follows:—

| | |
|---|---|
| Water | 100 ccs. |
| Filter yellow solution 1:1,000 | 6 ccs. |
| Echt rot solution 1:15,000 | 1 cc. |

This gives correct colour rendering even of the greens, reducing exposures to the extent of about two-thirds of a second in place of a normal time of one second. ALBIN VON PALOCSAY.

## PAPER COLOUR PRINTS FROM SCREEN-PLATE TRANSPARENCIES.

(A Paper in "Photo-Revue.")

In preparing a set of three negatives for printing on paper by a subtractive process from a screen-plate transparency, such as the Autochrome, Dufay, or Omnicolore, the necessary selecting filters can be made by dyeing ordinary plates, fixed and washed, in appropriate solutions. A freshly made hypo bath of 20 per cent. strength is used for the purpose, and the clear plates, which should not be put through any alum or hardening solution, are set up to dry. To make the orange filter, the following solution is prepared:—

| | |
|---|---|
| Filter red (Hoechst No. 1) | 1 gm. |
| Water distilled | 100 ccs. |

The dye should be dissolved by aid of heat. A plate fixed as above is put to soak in this solution for about three hours. The dish should be rocked four or five times during this period. The plate is then taken out, the dye-bath mopped off the surface with a tuft of cotton wool, and the plate put away to dry where dust will not fall upon it.

For the green filter the dye solution used is a 1 per cent. bath of filter green (Hoechst No. 1). Or the following may be used:—

| | |
|---|---|
| Tartrazine | .3 gm. |
| Carmine blue | .6 gm. |
| Water | 100 ccs. |

This solution should also be made by aid of heat. The plate is soaked in it as before, two hours sufficing for the immersion. For the blue-violet filter a solution of 1 per cent. strength of Hoechst crystal violet is prepared in hot water, adding 1 cc. of acetic acid per 100 ccs. of bath. The gelatine-coated plate is allowed to soak in this solution for half an hour with frequent rocking.

For cleaning the dish used for the violet bath a little acetic acid should be employed, a weak solution of the latter, or ordinary vinegar, serving to remove stains from the fingers.

In the case of each screen two plates should be dyed and bound up film to film to form the filter. In the case of the green screen a single plate would be sufficient; this is bound up with a piece of plain glass.

### Making the Negatives.

The negatives are printed from the screen-plate transparency in an ordinary printing-frame, using as the source of light an ordinary candle, which has the advantage over oil lamps, incandescent gas, or electric light that it is practically of constant intensity. The colour-filter is laid in the frame, then the screen-plate transparency, and finally the sensitive plate, film to film with the colour plate.

Some trial exposures are necessary to determine the multiplying factor of each screen. For this purpose an ordinary negative is taken and a series of positives printed from it under each of the screens in turn, varying the exposures until equal density is obtained in all three positives made under the three filters. The time of exposure necessary for each then represents the factor for each screen. The actual plates to be used for making the negatives should, of course, be employed in these tests, and all three positives treated together in the same developer for the same time.

For exposures through the blue-violet screen an ordinary plate is used. For that through the green screen one of the orthochromatic plates sensitive to green and yellow, and for the orange filter a panchromatic plate.

The factor of each screen having been found, the subsequent work is easy. It is judged from the density of the colour transparency what exposure will be required through, say, the blue-violet screen; the exposure through the other two are then given in accordance with the factors found. It may be said that using the Blue Label Lumière plate for the blue-violet screen and the Lumière Panchromatic for the other two, the exposures for these latter are, in each case, ten times that for the blue-violet. For the development of the negative hydroquinone or ferrous oxalate may be used.

### Printing from the Negatives.

A number of processes are at the disposal of the amateur for this purpose, *e.g.*, pinatype, directions for which have been frequently given in the past. With this process, however, in which printing is done from positives, not negatives, it is more convenient to work from a negative (unreversed) colour transparency.

Simplified processes of collotype, such as are offered on the market, may also be used. The method which I myself employ is that already described in a past number of the "Photo-Revue."* A. LE MEE.

## HERR E. VALENTA ON THE NEW KRAYN SCREEN-PLATE.

In a recent issue of "Photographische Korrespondenz" Herr E. Valenta, of the Vienna Imperial School of Photography and Process Work, presents a report upon the colour screen-plate now being made and commercially supplied in Germany under the patent of R. Krayn, whose name will be remembered as the inventor also of the section-cut celluloid, now practically obsolete. The following is the text of his communication.

Since the appearance of the first Autochrome plate this branch of photography has been almost exclusively in the hands of French workers; I need refer only to the "Omnicolore" and the Dufay plates. Recently, however, a similar product has been brought upon the German market. These are the German colour films of the Neue Photographische Gesellschaft. This firm was concerned more than two years ago in the preparation of colour screen films, the process being in accordance with the patent of R. Krayn, and consisting in the superimposition of celluloid sheets, coloured in the primary colours, which sheets were united into a solid block, from which sections were then cut. The process did not realise the success which was anticipated, and Herr Krayn has now devised and patented a further process, the results of which I have examined with interest. According to the particulars in the Krayn patent the colour screen is manufactured as follows: A film-surface, coated with gelatine, is impressed with a series of black lines by means of a fatty ink; the portions left uncovered, which are half the width of the covered parts, are treated with a solution of red dye, *e.g.*, the cinnabar scarlet of G. von Beyer and Kegel. The dye penetrates the portions of the film not covered by the fatty ink, and is fixed by means of a mordant of gelatine, such as ferric chloride in 10 per cent. solution. By means of this mordant the gelatine, in the parts thereby tanned, acquires the property of taking up other dyes. After drying the fatty ink is removed with a solvent, such as turpentine, after which a second impression of fatty ink is given, but with the lines crosswise with the first. A second dyeing then follows with a blue colouring matter, such as the "methyl blue for silk" of the Hoechst factory. This is in turn fixed with ferric chloride solution, the fatty ink removed, and the portions still remaining uncovered finally treated with a fine green solution, *e.g.*, a mixture of Hoechst Patent Blue A and Yellow F, being finally fixed with the ferric chloride as before. The colour screen prepared in this way is fairly transparent. Examined under the microscope it shows six to seven red lines per millimetre separated by interspaces. The interspace between each two red lines is occupied by green and blue-violet units, arranged at an angle of 45 deg. to the red, so that the portions of green and blue-violet between each pair of red lines form a series of rhomboids. If the green and blue-violet elements be taken as a measure and the red lines in these elements printed-out, there will be found on one square millimetre about 220 such elements, of breadth about .04 and of length about .11 mm. The screen is thus of sufficient fineness for the preparation of lantern transparencies.

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* "Colour Photography Supplement," June 3, 1910, p. 41.

As regards the spectral properties of the three colours used in the screen, the bands of the spectrum transmitted are as follows: The red lines transmit light from wave length 560; the green light from 570 to 480; and the blue chiefly rays from 490 towards the ultra-violet.

The gelatine film, which forms the screen, is isolated from the sensitive panchromatic emulsion by a film which is quite waterproof. The sensitive emulsion film has a thickness of about .020 to .025 mm., and is sensitised with a dye of the isocyanine group. The sensitising effect impresses a region from 640 to 510, at which a minimum begins, though one which is not at all pronounced.

The method of preparation of transparencies by means of the new German films is different from that of other screen-plates upon the market, inasmuch as it is a negative process. The positive (in colours) is made in the ordinary way by printing from the negative in a printing frame, developing, etc., so that any required number of transparencies may be made from one and the same negative. For this purpose the Neue Photographische Gesellschaft supplies two descriptions of film—negative for use in the camera and positive for printing. The difference between the negative and positive films consists in the arrangement of the bands of the colour film, which, in the case of the negative films, traverse the plate at an angle of 90 deg. with the direction adopted in the positive films, so that the bands, when the films are laid one upon the other, cross at a right-angle.

The exposure is made through a colour-filter, which at the same time forms a carrier for the film, being placed with the film in the dark-slide in place of a printing plate. The light-filter consists of a gelatine film (on glass) of a reddish-yellow colour; its absorption spectrum, apart from the effect upon the blue, shows absorption bands in the less refrangible part of the spectrum.

In focussing the procedure is exactly that customary with screen-plates: a correction is made after focussing for the thickness of the plate, or the ground glass may be reversed in its frame. The exposure required is about 50 to 70 times that of an ultra-rapid dry plate.

Development is a more simple operation than with the ordinary screen-plates, since there is no reversal of the image to be done. A somewhat dilute rodinal developer is employed, the time of development in the case of correct exposure being two and a half minutes. Development must be commenced in complete darkness; after the lapse of a minute its progress may be watched by careful use of a very dark red light.

Over- and under-exposure may, to a certain extent, be compensated for in the usual way by modifying the strength of the developer. The negative is then washed, fixed in an acid hypo bath, again washed, and, after immersion in a 2 to 3 per cent. solution of glycerine, is hung up to dry. The colours thus produced are, of course, those complementary to the original subject.

Coming now to the preparation of positives in natural colours, the negative, film side up, is laid on the requisite light-filter in an open printing-frame; the positive film is laid, film down, thereon, covered with a piece of black card attached to the colour filter glass, and the back of the frame put in. The frame is then covered with a couple of thicknesses of oiled paper and the exposure made. Exposure is best done to incandescent gas at a distance of twenty inches from the frame. The time varies, according to the density of the negative, from twenty to sixty seconds. The light-filter employed is one of blue colour, which is supplied by the firm and cuts down the light to the portion 620 to 550 of the spectrum. Printing by daylight is less advisable, owing to the great variations in the strength and character of the light. If, however, daylight is used, the ordinary film carrier, with its colour-filter, is employed, printing being done at from three to four yards from a window, again covering the printing-frame with oiled paper. Development, fixing, etc., as usual, are then proceeded with. If exposure has been correct there results a clear transparency which affords a good reproduction of the colours of the original. The positive films may also be used for the preparation of copies (transparencies) from Autochrome negatives.

The use of these films for the making of colour results has, first of all, the advantage over other screen-plates of the possibility of readily preparing duplicates from the original colour negative. Further, the treatment of the films is much simpler. Like screen-plates the films carry a very thin and readily damaged emulsion.

According to the particulars given by the Neue Photographische Gesellschaft the films are also to be placed on the market in the Hemera form of film-pack, a further convenience for the amateur worker.

As in the case of every screen-plate, when first issued by the manufacturers, the films show certain defects in the screen colour coating, which, however, when the difficulties of manufacture are fully mastered, should be completely avoidable.

As regards the projection of the prints, it should be remembered that the celluloid base is a readily inflammable material, on which account the transparencies to be employed for projection should be bound between two glass plates. Also in using powerful illuminants, such as arcs, consuming more than 30 amperes, a glass trough filled with a heat-absorbing liquid should be placed in the optical system. The German colour films, the first screen-plate materials to be manufactured in Germany and brought upon the market, are, as will be seen from the above description, a notable product, and it is to be hoped that it will find its way widely into practice.

E. VALENTA.

## THE THREE-COLOUR CARBON PROCESS.

### PHOTOGRAPHY OF COLOURS.

I BEG to call the attention of serious amateurs to the fact that since the appearance of Autochrome and other similar plates, the photography of colours on opaque grounds—such as paper, linen, ivory, wood panels, etc.—seems to be quite put aside, and the three-colour tissues process has been forsaken. True, in some photographic papers one reads of pinatype or of the bleach-out process, but never of the three-colour tissues process. I wonder at this, because this process gives the most beautiful and only permanent results, and is really very simple and quite easy for people acquainted with carbon.

The difficulty of registering and sticking together the three monochromes has always been greatly exaggerated, and one may say that it is now reduced almost to zero owing to the improvements introduced by the Autotype Company, viz., the first transfer on gelatinised plates and the use of hydrofluoric acid to remove the images from the glasses.

I must, however, acknowledge that in my opinion there is yet a small drawback in the process—the pigmented tissues in the market are not quite up to the required point.

Hitherto, no manufacturer seems to have considered and realised the absolute and imperious necessity of homogeneity as well as identical stretching of the three papers under similar circumstances, hence the existence in the market of trichromic sets of rolls of pigmented tissues either too thin for large pictures or coated on papers differing from each other in strength, weight, or contexture.

None but Mr. Vaucamps (of Courbevoie-Seine) ever imagined and produced the perfect trichromic tissue. He had the happy idea of using for every three-colour set but one single roll of strong paper, and to coat it with the three colours disposed in three parallel bands separated from each other by a ¾ in. blank space. He has unfortunately ceased his fabrication, which is to be highly deplored. Why should not his idea be picked up by some enterprising firm?

Nevertheless, I ought to acknowledge that on my demand the

Autotype Company has several times graciously coated for me sets of three well-chosen rolls of an equal, regular, stronger paper, and that by my using them with intelligent care and due strict attention they are giving me full satisfaction.

Now, coming back to the thought that induced me to write this short note, I call on my fellow amateurs, and insist on their trying, or resuming, the three-colour tissues process—it is easier than pinatype, is the only one giving permanent results, and will afford them an inexhaustible source of artistic delight.

LUGDUNENSIS.

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# Correspondence.

⁂ *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

⁂ *We do not undertake responsibility for the opinions expressed by our correspondents.*

## SUGGESTION FOR A NEW COLOUR SCREEN-PLATE TO ACT BY DIFFRACTION.

To the Editors.

Gentlemen,—Mr. Dogilbert's letter in your issue of March 3 illustrates, I fear, the danger of speaking vaguely about principles such as diffraction and prismatic dispersion without going into details. It may possibly interest those of your correspondents who are following up ideas as to new methods of colour photography if I give reasons why I have come to the conclusion that diffraction as an adjunct to prismatic-dispersion colour-photography is totally inadmissible for practical purposes.

To start with, we obtain by a prism a spectrum in which the red end is nearest the prism, the violet end furthest away from same. A diffraction spectrum has its violet end nearest and its red end furthest from the part of the grating giving rise to same.

Next we must remember that the ordinary action of diffraction is to split up any beam of light into various beams or bundles widely differing in their luminosity and colour dispersion—in fact, the most luminous or dioptric beam suffers no dispersion at all. Clearly anything that will cause the resulting colour effect to overlap in all sorts of ways would cause confusion so far as the object aimed at is concerned.

Thirdly, we have to bear in mind that a prismatic spectrum is formed by light passing through any single prism; but a diffraction spectrum, to have any appreciable luminosity, is formed by the combined action of a considerable number of elements of the grating.

From all of which considerations it follows that any project for combining the principle of prismatic and diffractive dispersion must be approached with extreme caution. Now, the only way, I believe, that has yet been propounded to combine these principles and obtain pure spectra is the one first pointed out by Lord Rayleigh. He showed that a grating might be made to concentrate by far the greater part of the light incident upon it into a single diffraction spectrum, provided the separate elements of the grating were serrated or formed into prisms shaped in a particular way. At first sight Mr. Dogilbert's suggestion for present purposes bears some resemblance to this, but further examination shows that the resemblance is but superficial; moreover, the plan of using such prism gratings leads to formidable difficulties.

In the first place, we must realise that we are now dealing with a modified diffraction spectrum rather than a modified prism spectrum. A simple proof of this is that the spectrum is one in which the violet end is nearer to the part of the grating giving rise to it than the red end.

I am the fortunate possessor of several such prism gratings, made experimentally by Mr. T. Thorp, of Manchester, to whose kindness I am indebted for the same. They have 1,000 prismatic elements per inch. They are probably made as perfectly as it is reasonably possible to make them, and illustrate the theory beautifully, yet they do not come up to theoretical perfection, for they pass a considerable portion of light as a non-dispersal dioptric beam, and a further appreciable portion in other spectra besides the predominant one.

Now for another matter. I may recall that the general conception of the plan suggested is to have a film or plate coated one side with the prismatic surfaces, the other side with the emulsion, so that light passing through the prismatic moulding would form the spectra on the emulsion-coated side. We may assume that we require 100 spectra per inch to be formed—*i.e.*, each spectrum to have a dispersion of 1-100th inch. An ordinary photographic glass plate is 1-16th to 1-20th inch in thickness. It may readily be experimentally demonstrated that to form a spectrum one-hundredth inch wide at a distance of one-sixteenth of an inch from the grating that grating must be of the order of 14,000 or 15,000 lines per inch.

In order, therefore, to have a chance of realising the idea in question, each plate would have to consist of a prism grating of about 14,000 per inch of a much more perfect description than those of 1,000 per inch referred to. We should require to have on its prismatic surface, or in immediate contact with same, a line screen or segregating plate about 100 per inch, the bars being about three times as wide as the spaces, and we should still have to comply with certain conditions as regards viewing the positive, one of which was referred to in my letter in your issue of March 3.

The consideration of such theoretical possibilities is undoubtedly interesting, but between these and practical possibilities there is unfortunately a wide gap.—Yours faithfully,

JULIUS RHEINBERG.

23, The Avenue, Brondesbury Park, N.W.
March 14, 1911.

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CROYDON CAMERA CLUB.—As an example of a straightforward and thoroughly practical demonstration, the exposition of Mr. Treves Dawson last week on the Thames colour-plate could hardly have been bettered. Among the large and appreciative audience was Mr. O. S. Dawson, who, quietly smoking a pipe in a corner, listened with the closest attention, and with evident gratification, to all his son had to say. The strong points of the plate in question and the general procedure for obtaining colour records being well known, need not be alluded to, but one or two points arose deserving of mention. Many excellent slides were shown, but under the electric-arc projection it was noticed that the greens of foliage and grass were generally rendered distinctly on the blue side, rather opposed to Nature's tints and inimical to a feeling of sunshine. Some rough experiments tried by placing yellow filters in front of the projection lens seemed to indicate that a compensating filter of a very light yellow hue would be of advantage in toning down the greens, especially in those cases where there were no pure blues which might suffer degradation in consequence. The screens at hand were of far too deep a tint for any definite conclusion to be arrived at, but even they undoubtedly improved one or two slides in which the greens and reds predominated; conversely in others where blues were prominent.

Mr. Dawson strongly recommended the "separate method" on various grounds, and certainly everything seemed in favour of this system, except that the subsequent registration and binding-up of the two plates appeared to require considerable dexterity. The lecturer, however, said this difficulty was more apparent than real, and registered two in the lantern, eliciting applause as a pretty little girl suddenly emerged from a medley of colours in a bright blue dress. "That is quite incorrect," Mr. Dawson observed quietly, "the dress was red," and, with a further minute shift, red it was. It was recommended that one or two screens should be solely applied to "taking" purposes, and one for temporary registration to judge results by visual inspection. Sometimes only a small portion of a large plate might be required; in such a case a small-size screen-plate obviously was only requisite, thereby limiting expense. In answer to a question it was stated that the cost of a finished lantern plate, all being well, was 10d. Mr. Keane said he had been employing the Thames colour-plate in night photography in conjunction with a $K^1$ filter, which for this class of work seemed all that was necessary. The exposures required were by no means as long as might be anticipated; with a large aperture and on suitable subjects, exposures of one to five minutes gave excellent results

No. 53. VOL. V. MAY 5, 1911.

# THE BRITISH JOURNAL OF PHOTOGRAPHY

## MONTHLY SUPPLEMENT

## ON

# Colour Photography.

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# SIMULTANEOUS OPENING OF SHUTTER AND FIRING OF FLASH-POWDER IN AUTOCHROME PHOTOGRAPHY.

(A Paper read before the French Photographic Society, and published in the Society's "Bulletin.")

In the course of a previous communication to the Society on April 16, 1909, we exhibited the practical results obtained by M. Pavie, and showed that, by the use of a powerful flashlight, and a light-filter adjusted thereto, it was possible readily to obtain instantaneous photographs on the colour screen-plates. The method was quickly taken up by members of the medical profession, who have been able to make use of it in securing records of great value in the study of diseases. Dr. Morax was the first to establish in the Lariboisière Hospital a regular installation for Autochrome photography by flashlight, and in Great Britain Dr. Waymouth Reid, Professor of Physiology in the University of Dundee, was likewise one of the first to take advantage of this new method.

Since, for the most part, the subjects of such exposures are portraits in the studio or persons in a hospital, it is advisable that as short a space of time as possible should elapse between the operations of focussing and of making the flash exposure, in order that the subject should have as little opportunity as possible of changing the position or expression. We pointed out the advantage from this point of view of using a T-tube, connecting the release of the shutter and that of the flash-lamp, both being then actuated by a pneumatic release. The use of an electric method to give a short circuit, and so ignite the flash-powder, coupled with the use of a blind shutter released by the well-known Antinous device, has led us to devise a further method, by means of which it is possible to effect the ignition of the flash-powder at the exact moment when the lens is uncovered, and so to reduce to a single movement the two operations necessitated by the opening of the shutter and the ignition of the powder.

As far back as 1903, M. Guerry, in connection with the shutter of his design, adopted an arrangement allowing of the electrical ignition of the flash-powder at the instant of uncovering the lens.

In order to obtain the same result with a shutter of the Thornton-Pickard roller-blind type generally obtainable, we sought to obtain the completion of circuit giving rise to the firing of the flash-powder by using the movement of the released lever at the moment when it is acted upon by the tiny plunger of the Antinous release.

Figs. 1 to 3 show the arrangement adopted. On one of the shutter discs, P, controlling the axis of the blind, p, we attached a strip of copper, C, fixing to one end a steel spring, R, to the free end of which we riveted a silver contact piece. By means of the copper plate, D, these pieces are brought within the electric circuit by means of the terminal and the wire $F^1$. To the disc P we fitted three small projecting pieces of metal, 1, 2, and 3, so as to obtain three positions of the blind, namely, (1) set or closed, (2) open for focussing, and (3) open for exposure; whilst to the lever L, controlling the release of the shutter, we attached a non-contact plate, A, and to this latter a piece of copper, B, provided with a silver contact piece, and

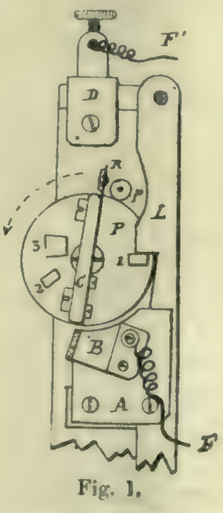

Fig. 1.

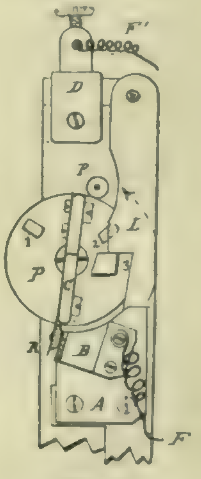

Fig. 2.

so adjusted that it is caused to make contact with the disc P in the position of the latter corresponding with exposure of the plate. This copper plate B, which is connected with the flash-lamp by the wire F, is made of such shape that the plate R can easily pass above it when setting the shutter, or when adjusting it for focussing, or for closing—in short, in all the positions when the lever L engages with any of the attached metal pieces other than No. 3.

But, the shutter being set, if we cause the plunger of the Antinous release to act, we raise the lever L; the metal piece 1 being then disengaged, the blind rolls down, the metal piece 2 passes under the lever, but piece 3, which is made higher, butts against the lever, stopping the travel of the blind, which thus uncovers the lens. At this moment the metal piece B, having travelled upwards when the lever L comes in contact with the spring R, and an electric circuit which includes the flash-lamp is thus formed, the flash thus taking place at the exact moment when the shutter is opened.

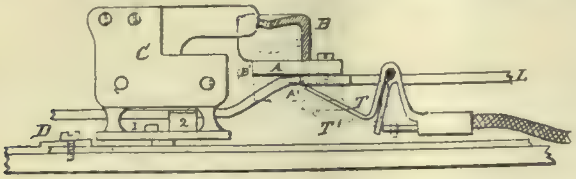

Fig. 3.

By releasing pressure on the Antinous, the lever L falls, bringing with it the metal piece B, and, the spring being now able to pass above the blind, closes the shutter.

This arrangement is so simple that it can be readily constructed by any amateur worker, and is a most easy means of making flash-light exposures on colour screen-plates.

In using this method for medical purposes, we have noticed that it is frequently necessary that the upper portion of the subject of which the photograph is being taken should be as strongly lighted as possible during actual focussing, in order to make certain of sharp definition. For this purpose, it occurred to us to use the light of a small lamp placed on the shutter itself, and so arranged that the rays could be readily directed on the exact spot to be photographed. By combining the use of this supplementary lamp with the shutter and flash device just described, we obtained a complete arrangement which is of considerable practical service. In Fig 4 is shown a diagram of the arrangement adopted. A wire, 1, is led from the accumulator, P (giving a potential of 12 volts), to a commutator, C, from which the current can be passed in two directions. One of the terminals is connected by the wire 2 to the lamp, thence to the accumulator, and the other by the wire 3 to the shutter, thence to the lamp and the accumulator, and, on the other hand, through a suitable resistance, r, to a terminal, to which is attached a wire $2^1$, conducting the current to the lamp, and thence to the accumulator.

The shutter being open, we bring the lamp into action by using current No. 2, thus providing ample light for arranging and focussing the subject. This having been done, the shutter being set and the plate uncovered, we push the commutator into the second position: in consequence of the resistance r on the circuit 2, the intensity of the lamp is reduced, indicating that the circuit has been closed on the shutter and the flash-lamp, and that it is now only necessary to put both into action by actuating the plunger of the Antinous. When this is done, the whole current passes along circuit No. 3, causing the short-circuiting, which ignites the flash-powder at the exact moment when the shutter is opened. The whole series of operations takes place with great certainty and rapidity.

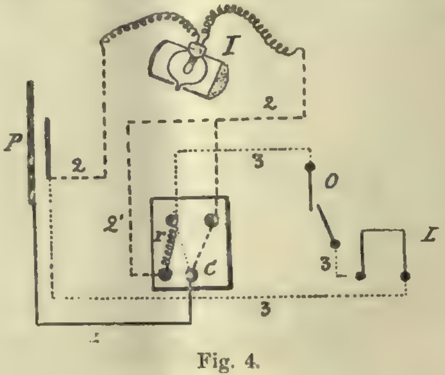

Fig. 4.

F. MONPILLARD.

# DEVELOPMENT OF AUTOCHROME PLATES ON TOUR.

(A communication to the French Photographic Society, and published in the Society's "Bulletin.")

IN a previous number of the Journal of the French Photographic Society I gave a very convenient formula, for use on tour, of the Autochrome reversing bath.[1]

Some correspondents have since expressed their fear of imaginary difficulties in the development of Autochromes while upon tour, the method, however, of working the process which I consider indispensable to producing first-rate results. The following description, therefore, of the method I adopt with satisfactory results will doubtless be of interest. I carry with me three celluloid dishes, two cups, two graduated tubes, two wooden drying racks, and a pocket-lamp, working with a dry battery and fitted with a "Virida" filter, which latter supplies sufficient light for the development of 200 negatives. The materials for the development of the plates include a number of glass tubes containing weighed amounts of pyrogallic acid and bromide for making 50 and 100 ccs. of solution, allowing of the developer being thus prepared in any convenient vessel. A flask of ammonia is carried in a tin case, another bottle contains the mixture of bisulphate and permanganate for the reversing bath, and two further small bottles hold the diamidophenol and sulphite of soda for the second development. These two latter baths are made up immediately without the need of any weighing out. Thus I am able to travel without the anxiety of bulky bottles containing liquids, with the exception only of ammonia, which, in the event of accident, may be easily procured. The whole outfit does not weigh more than three or four pounds, and can be placed safely in a cardboard box at the bottom of one's portmanteau.

Development is done at night in the hotel bedroom, converting this into a dark-room by blocking up the window with a counterpane. The ordinary toilet set of a bedroom allows of the necessary washing being done.

If metoquinone is used instead of pyro, it becomes necessary to carry a solution, and the advantage of double development in the same dish cannot be taken: it is necessary to wait until the next day (daylight) in order to finish the operation, since the burning of magnesium ribbon in an hotel bedroom is hardly practicable. For myself, I consider that the method of developing with pyro is the better of the two. It allows of ready modification of the proportions of the three constituents—acid, bromide, and alkali (I use no sulphite)—in place of working by simple dilution, and does not require a longer exposure than any other developer. The only difficulty consists in finding and making up in advance the bath best suited to the degree of exposure and the character of the subject in order that the development of the negative may be complete in from 120 to 160 seconds. A little skill and a careful examination of the first negative developed will be all that is required, unless the errors of exposure are very great indeed.

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[1] Soda bisulphate 50 gms., potass permanganate 2 gms., to be dissolved in 1 litre of water. Powder the crystals of the salts and mix them in the above proportions in a well-corked bottle. A mustard-spoonful of the mixture dissolved in 60 ccs. of water is sufficient for one quarter-plate.

In the case of great contrasts, and particularly with exposures made against the light, such straightforward development necessitates a fairly large proportion of alkali. There is no need to fear the production of a slight veil from the developer on the surface of the film, but development should be stopped only when the image, as seen by reflected light, has almost entirely disappeared. The colours will then appear extremely weak, but will come up again, without leading to harsh results, on application of a strong intensifier. If the development is slow (the bath too heavily dosed with bromide), the high lights are developed through before the shadows show sufficient detail, and any intensification will then exaggerate the original defect. In cases of over-exposure, dilution is insufficient: one should increase the bromide and reduce the alkali, so that the plate is completely developed in at least 150 seconds, a time which is necessary for the action of the weaker developer to take place through the film.

The plates having been dried, they are re-packed in their original wrappings, where they remain perfectly protected until the return home. Here in the dark-room I complete the treatment—that is to say, intensify and fix—but I do not varnish, as I find that varnish invariably yellows after a time. In order to make sure of the keeping qualities of the finished transparencies, fixing appears to be necessary; but if it is not preceded by some slight intensification, the colours undergo slight degradation. By treating the plates this way, nothing is lost in the way of fidelity to colouring; in fact, the transparencies possess the brilliancy and clearness characteristic of good work on the Autochrome plates.

COMDE DE DALMAS.

# A FREQUENT CAUSE OF FAILURE IN THREE-COLOUR SYNTHESIS: EXCESS OF RED.

(A Paper by M. L. P. Clerc in a recent issue of "Le Procédé.")

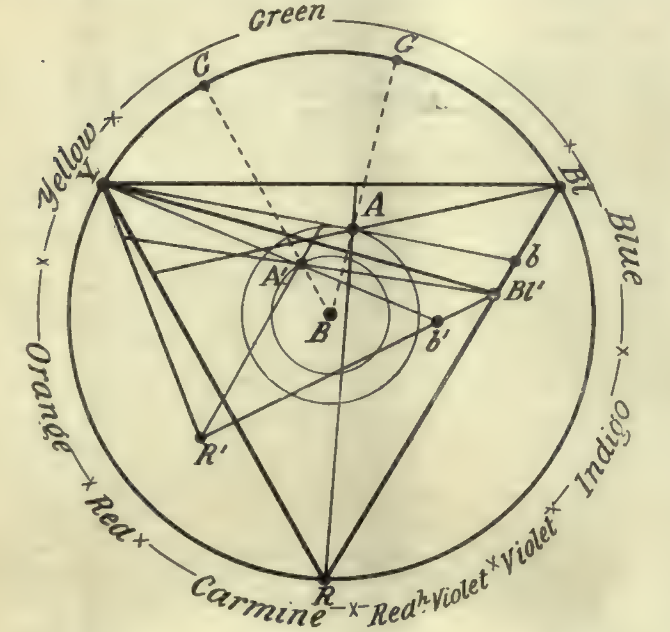
ALTHOUGH for a number of years past three-colour authorities have frequently demonstrated a frequent cause of failure, namely, the excess of red in three-colour synthesis by photomechanical processes, it does not seem that hitherto their appeals to the practical workers have been sufficiently comprehended. In the present article we will not attempt to offer new arguments in regard to this question, for in this respect the matter may be considered to have been exhaustively treated, but we will endeavour to place some of these arguments in a new form in the hope that practical workers will be induced to depart from the error of their ways—errors in which, unfortunately, they are encouraged by the makers of inks, whose desire, so it would seem, is to ignore systematically the requirements of three-colour printing. It cannot be repeated too often that the most frequent failures in three-colour printing by the subtractive method are due, almost exclusively, to defective shades in the pigment, which are customarily used in the manufacture of inks which are "primary" only in name. Without wishing to quote here all the authors who have discussed this question, we may reproduce one passage from the classic work of Baron von Hübl, "Die Dreifarben Photographie," which, though published in 1897, still applies to the present day: "We have an instinctive tendency to discover the cause of a failure in those phases of a process with which we are less familiar, and notably, in the present case, in the properties of the selecting screens, to which the practical worker generally attributes the leading part in the process. Let the red or the blue predominate in the final result and immediately the screens are blamed. It is particularly the red printing-plate which incurs censure and the green screen which, therefore, plays the part of the scape-goat. The attempt is then made to try various methods of correction, such as reducing the positive, intensifying the negative, all of which is done in an empirical way. The use of a more intense green screen meets with no better success, and finally the worker undertakes a laborious retouching either of the negative or the plates themselves.

"But it is not in the negatives that the cause of this failure should be looked for, but only in the selection of the inks. If the greens are blackened on application of the red, the reason is that the yellow and blue pigments are so impure that they cannot bear the least addition of red, which, normally, is necessary in order to complete them. If, in place of Prussian blue, which one persists in wishing to use as the primary blue, the green-blue correctly complementary to the red transmitted by the filter and therefore reflecting all the rays other than those which pass through the filter were used, the cause of the error would be found."

No lithographic colour-printer having to produce greens by superposing yellow on blue would choose for the blue the pigment described as "primary" by almost all the ink-makers, but it seems that the three-colour process is credited with the power to work miracles, and particularly to supply the means of evading the laws of the mixtures of colours. In order to show the importance of the sophistication of tints which is caused in three-colour printing by the substitution of the usual yellow, Prussian blue, and madder inks for the correct pure yellow, blue-green, and rose, we will have recourse to the diagrammatic chromatic circle, which, though it may be conventional to a certain extent, has the advantage of showing in a clear diagrammatic way the rules of colour mixture.

Imagine that we have arranged on the circumference of a circle, in the same order as they occur in the spectrum, the saturated and pure colours neither weakened with white nor degraded with black, the distribution being made in such a way that two complementary colours are at opposite ends of the same diameter. We complete the circumference of the circle, thus obtaining opposite the greens, of which they are the complementaries, the various tones of purple (red-violet), of pink (equal parts of red and violet), and of reddish-violet, which have no corresponding colours in the spectrum. The centre of this circumference is occupied by pure black, whilst the interior of the circle is made up by dark tints, each of the rays representing mixtures in different proportions of the pure colour situated at the intersection of the particular ray and of the circumference with the black, the tints becoming darker in proportion as they are nearer to the centre. If the distribution along the circumference is made correctly in the first instance, and if, in placing the intermediate tints, we are restricted to placing a tint A, composed, for example, of a 32 per cent. green G, and 68 per cent. black B, in such a position that the distances AB and AG are in the ratio 32 : 68, we shall be able to work out the tint which the mixture of two or any number of colours placed within the circle will give. A mixture of equal parts of two colours is thus at the mid-distance from the straight line which joins them. A mixture formed by 40 per cent. of yellow Y and of 60 per cent. of blue *b* will be placed at A in such a position that the distances A*b* and AY are in the ratio of 40 : 60. The tint *b* being itself considered as a mixture of blue-green Bl and of pink R, the proportions of this mixture are indicated by the ratio of the lengths *b*Bl and *br*, which are in the proportion of the numbers 19 and 81. We may thus consider *b* as made up of 19 per cent. of pink and 81 per cent. of blue-green.

We can now replace in the expression representing the position of the colour A the proportion of *b*, which is represented by the equivalent proportions of Bl and R, say 16 x .19 of R and .6 x .81 of Bl. In short, the colour A may be considered as formed from the three primary colours R, Y and Bl in the proportions of 40 per cent. Y, 11 per cent. R, and 49 per cent. Bl.



The three selecting light-filters, the part played by which is simply that of decomposing each colour into convenient proportions of the three primary colours, will affect this analysis in these proportions, and if the synthesis is done by means of the correct primary colours we shall require to mix 40 per cent. of Y, 11 per cent. of R, and 49 per cent. of Bl, supplying each by one of the impressions.

If for the correct primary pink and blue-green we substitute a red and a Prussian blue, which stand on the diagram respectively at R and Bl, and if we then retain the same yellow (the ordinary primary yellow, which may be considered correct) we shall see what tint will be obtained by the mixture of these three colours in the above-mentioned proportions; we shall be led, proceeding in the opposite way to that which we have just followed, to form by mixing R and Bl′ the tint B′ which is fairly near to marine blue, the distance B′R′ and B′Bl being respectively proportional to the distances *b*R and *b*B. If now we mix with this blue B′ the necessary quantity of Yellow Y we shall arrive at an olive-green placed at A′ on the diagram, which is a position such that the distance A′*b*′ and A′Y are respectively proportional to the distances A*b* and AY.

That is to say, we will have replaced the leaf-green A formed of 32 per cent. of green and 68 per cent. of black having, say, a luminosity equal to 32 per cent., by an olive-green of luminosity equal to only 20 per cent., formed of 80 per cent. black and 20 per cent. of yellow-green, that is to say, a green of luminosity less than one half in which the proportion of red can be considered as double, since if we determine its composition as before in terms of the three primary correct colours we find that it is composed of 44 per cent. of yellow, 22 per cent. of pink, and 34 per cent. of blue. In the same conditions we can see that a violet may be replaced by a dark violet red, a bright pink by a red, a pure red by an orange vermilion.

The study of the chromatic circle shows us also, without having recourse to these calculations, the utter inferiority of the customary inks to the correct primary colours: the use of the three correct colours, Y, R, and Bl, allows of all the tints comprised in the triangle traced in heavy lines joining these three points, whilst the use of the three ordinary colours Y, Bl, and R allows only of the colours included within the triangle in lighter lines formed by joining these three points, the area of the second triangle being scarcely one half that of the first. It is thus seen that the ordinary primary inks have a "capacity" which is scarcely one half of that afforded by the ideal theoretical inks.

Now, though no ink manufacturer has been able to produce a rigorously satisfactory blue-green primary ink, particularly as regards purity of tint, several have already produced inks which approach it in a way fairly satisfactory for the requirements of practice. As regards the pink ink, some foreign manufacturers supply a perfect product, as proved by the colour chart which was published in the issue of "Le Procédé" for February, 1909.

In conclusion, a few words may be said as to the means which are at the disposal of the practical worker for testing the inks to be used for three-colour printing. The Wratten ink tester is undoubtedly the most rapid method, inasmuch as the inks are compared directly with ideal primary colours supplied in the form of transparent filters. For a more severe test, which we should like to see undertaken some day by a French ink manufacturer, the Wratten tester may be considered as only a preliminary to a complete spectroscopic test. In carrying out this latter, two methods may be used: for a thorough test—and particularly for the test of curves of absorption—comparison may be made in the spectro-photometer of two sets of rays coming from the same source of light and reflected respectively from a white paper and from a paper covered with the ink to be tested. A less exact test, but one sufficient up to a certain degree, may be made in a dark-room, projecting a spectrum on a band of paper printed with the ink to be tested and placed next on either side with a band of white and of black paper. In observing the projection of the spectrum we may assume that the particular rays are totally absorbed in those parts where the tint is the same as on the black paper, and as totally reflected in those parts where the luminosity is equal to that on the white paper. One could even form an idea of intermediate absorptions by moving along, in contact with the band of paper being tested, a strip of a degraded grey, suitably standardised and gradated, bringing opposite to the region which is under examination a grey, the tint of which is the same as that of the ink under trial. The classical objection, consisting in a denial of the possibility of producing lacs which are stable to light and are suitable for the preparation of greasy inks used in conjunction with coal tar colouring matters, has been disposed of by the researches of Valenta, which have shown the possibility of producing, by means of aniline dyes, greasy inks which are infinitely more stable to light than the madder lac, which is usually considered as one of the most stable of colours.

L. P. Clerc.

# EXPERIMENTS WITH THE DIOPTICHROME COLOUR SCREEN-PLATE.

(Translated with some abridgment from an article in the "Photo-Revue.")

As one who has personally followed the advances which have successively been made by manufacturers of screen-plates, I have constantly sought to obtain the best results of which commercial plates are capable, not only in respect to fidelity of colouring, but also in brilliancy and transparency of the results. Undoubtedly the most transparent screen which is now available is that of the Dufay or Dioptichrome plate, manufactured by the firm of Guilleminot.* The Dufay plate also possesses other distinctive qualities. It is characterised by remarkable regularity and homogeneity of the colours, which are of equal tint and depth over the whole surface. On the other hand, I found in the first plates which I was able to purchase, those of emulsion No. 55, a somewhat marked yellowish tint. This tint was due chiefly, according to the manufacturers, to the too great thickness of the emulsion film, which, in consequence of this fact, reversed somewhat slowly and irregularly, giving rise to a yellowish veil of dichroic fog. The thickness of the emulsion film has been reduced in all batches later than No. 57.

Fresh experiments made on emulsions issued before this latter have no longer given the yellow tint, but one of greenish colour. This was to some extent to be anticipated, the green existing in the screen in the form of broken lines of width equal to the blue-violet and orange squares, and, therefore, present in greater proportion than the other colours. This prevailing tint of green was especially noticeable in landscapes containing sky without clouds, which, in Provence, is of a blue-violet colour tending towards indigo. This was rendered not as a blue, but as a green of slightly bluish tint: the whites also were slightly greenish. The plates having impressed me as excellent in other respects, I sought to remedy the colour-rendering by eliminating this excess of green. I had previously tried other filters than that prepared for use with the Dufay plate in cases where the colour required modification from one cause or another and would have produced incorrect colours in the result, although the alteration of the colour of the filter tended more towards a prevailing blue than green. Although I had noticed small differences in the tint of the different screens used in these experiments, they nevertheless all gave practically the same result.

The first idea which I had in mind in order to obtain a reduction of the green tint was to employ a screen containing more red than was supplied by that of the makers of the Dufay plates. I, therefore, used one prepared specially for the Autochrome plates, this filter containing sufficient red to correct the excess of green-sensitiveness in the emulsion of these plates. Under these conditions I obtained Dioptichrome transparencies which no longer showed the green tint, much less in every instance, than with the Dufay filter. Nevertheless it was found that the prevailing green tint gave place to one of reddish-orange, whilst the skies still lacked the true blue-indigo rendering.

I then had recourse to another method. I discarded a screen which cuts out the blue, but used one which allowed more blue-violet to pass, and as a result gave a certain excess of these rays over the yellow. This, theoretically, should lead to the formation of a more bluish green in consequence of the reduction of yellow and increase of blue. In order to realise this I took the simple course of using the screen supplied for the Jougla Omnicolore plates, a filter which, as is well known, allows to pass not only more blue rays than the others, but also a certain quantity of violet. More satisfactory results were obtained with it, but the result desired was very slightly exceeded, the shadows and the mist of early morning subjects showing a very faint lilac tint.

I then made experiments to see the influence on these results of the time of exposure. In the case of under-exposure the shadows show the blue-lilac tint. With an exposure which is about correct, this excess of blue-violet was reduced, or even disappeared. But as the correct exposure is slightly exceeded there is obtained, even with the Omnicolore filter, a very slight green tint: the skies are not green, as when using the Dufay filter, but are blue with a very slight green tint.

All these experiments were made on different emulsions of later date than No. 70, and with different lenses, in order to include the effect of colour in the glasses of the objective, which in certain recent lenses of large aperture is quite distinct. I was about to devise a screen specially adjusted to the Dioptichrome plate when I learnt of the appearance of a modified Dioptichrome plate issued as B. In the first specimens which I was able to secure, those bearing emulsion numbers 200 and 201, I noticed an appreciable improvement in the fineness of the colour-screen, but the experiments made on these plates gave me, so far as colour rendering, the same results as those of the earlier batches.

This was not the case with emulsion No. 203, which gave a colour-rendering considerably more correct and without any prevailing green tint, even when using the Dufay filter. It is quite possible that this result may be due to a modification in the colour-sensitiveness of the plate, which has perhaps been made less sensitive to the green by altering the sensitiser, but I think that the improved rendering is chiefly due to alteration in the colours of the filter units. From examination with the naked eye it is possible to see the difference between the old and the new screen, the latter no longer showing a faint green tint. The effect is more of a transparent very slightly bluish glass in which one can see certain areas of slightly unequal colouring tending to pink.

By means of the microscope it is possible to trace better the difference of the colours used in the two screens. The red is actually less orange: the blue is distinctly more violet and more intense, whilst the green is still produced in the form of broken lines, but these are now kept somewhat narrower than the other colours. The new screen is very slightly less transparent than the old one in which the colours were of lesser saturation, but, nevertheless, the Dioptichrome B is still much more transparent than any other of the screen-plates obtainable.

The treatment of the new plate does not differ from that of the old. The makers still recommend the developer prepared with metol-hydroquinine and ammonia, a formula which works particularly well with these plates, but not so with the Jougla Omnicolore. In treating the Dioptichrome we may use either the Dufay formula or the time method introduced by MM. Lumière for Autochromes; this in cases where there is some doubt as to the exposure. But regard should be paid to the fact that the figures of times of development in the Lumière table do not apply exactly to the Dioptichrome plate, for the reason that the emulsion film is much thicker than that of the Autochrome, and consequently the solutions, and particularly the first developer, penetrate it more slowly. Nevertheless, the figures supply a certain degree of assistance in controlling the first development. As a general rule it will be well to prolong development somewhat further than indicated in the table. The Dioptichromes require this, and if, in the case of the Autochromes, it is well not to allow development to be complete in the parts representing the high-lights if one wishes to obtain harmonious results, it is even more so in the case of the Dioptichromes, which, as we have said, are more slowly penetrated by the first developer. The development should, therefore, be taken up to a point when the darkening is complete when viewed by reflected light so as to reduce completely the silver bromide through the whole thickness of the film, and thus obtain highly transparent results.

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* Supplied in this country by the Autotype Co., 74, New Oxford Street, London, W.—Eds.

As regards reversal, the bath of acid bichromate should be used in preference to permanganate, which is best employed for thin emulsion films, such as the Autochrome.

With reversal with the bichromate a bath of bisulphite may be used, but it is not indispensable so long as one washes out the traces of bichromate in several changes of water. Leaving bichromate in the film will give rise to failure in the second development. However, the bisulphite bath has no other drawback than that of retarding, to some slight extent, the redevelopment of the positive image. When using it the plate is simply rinsed and then the second development immediately proceeded with, employing the solution which has already been used for developing the negative image. This second development should be continued long enough to reduce the whole of the silver bromide left after reversal.

There is no object in fixing, and washing need not be prolonged for more than a quarter of an hour.

If the first development has been insufficient, and one has thus obtained a somewhat dense and flat transparency, advantage may be taken of the Farmer reducer, suitably diluted. This, while reducing the density, will, at the same time, improve the brilliancy of the result. A suitable formula for the reducer is as follows:—

| | |
|---|---|
| Potass ferricyanide five per cent. solution...... | 5 ccs. |
| Hypo twenty per cent. solution .................. | 5 ,, |
| Water to make ........................................ | 100 ,, |

The film being at the present time of a harder nature than that of the first emulsions (which at times gave rise to frilling), no accident need be feared in carrying out any method of after-treatment of the plates, and the Dioptichrome worker should thus not hesitate to employ intensification or reduction processes in cases where the straightforward result is not all that can be desired. Such accessory measures are very easily applied in the case of the Dioptichrome.

The colour transparencies which result are remarkable for their gradation, softness, and depth of colour: clouds are obtained with great ease and correctness of rendering at the same time as heavy foregrounds. The plates appear to give less heavy contrasts than the other screen-plates.

As regards their use in stereoscopic photography, in our experience, the screen, although much finer in the recent plates, is still somewhat too coarse, at any rate, for the sizes most commonly employed, for which viewing lenses of somewhat short focal length are used, the effect of which is to lose extremely fine detail in the screen of the plate. It may even sometimes happen in the case of small sizes that certain subjects are rendered with completely false colours in consequence of falling upon some tiny point in the plate where the screen structure is incapable of proper analysis.

But let it be said, in conclusion, that the great transparency of the Dioptichrome plates is a strong recommendation to all those whose first object is the production of colour lantern-slides. In employing them in the lantern it is not necessary to install an illuminant of extra power. The ordinary spirit mantle burners, now so largely in use, are amply sufficient with these plates, which, although the later product of the skill of the screen-plate manufacturer, are no less interesting and worthy of attention. V. Cremier.

# SOME NOTES ON AUTOCHROME WORK.

[A paper published in "Progresso Fotografico," and here translated from the "Photo Gazette."]

Having had of late the occasion to prepare a large number of Autochrome transparencies, some notes of recent experience in working the process will doubtless be of general interest. In the first place mention should be made of the perfection to which MM. Lumière have now evidently brought the manufacture of the Autochrome plates as regards the uniformity of production. It is now extremely rare to find specimens defaced by black or coloured spots, the result of defects in manufacture. Also, as regards keeping properties, there is evidently a marked improvement. In the summer of 1909 we obtained some inferior results on plates which, according to the markings on the box, might still have been used for a further month, whilst last summer we obtained excellent results with plates which had passed the time limit prescribed by the makers for their employment. In developing plates which have been made for some time, it is well to add to the customary metoquinone developer a further 2 gms. of potass. bromide per litre. This is a remedy for any tendency to give veiled images lacking the full transparency of colour.

As regards the best method of development, that used is invariably the system set forth by MM. Lumière, using metoquinone and based on the time of appearance of the image. The worker should convince himself that in the use of orthochromatic plates perfection of results depends almost exclusively on the two factors, time of exposure and time of development. Even when employing the exposure-meters or calculators, and multiplying by sixty the time found for extra-rapid plates, the worker is far from being certain of having given a precise exposure, or at any rate such an exposure that he can develop for a fixed time in the same bath at a given temperature. The results which are obtained in this way will be satisfactory, but it is more difficult to secure transparencies with the brilliancy of colouring produced than when working on the system of development according to the time of appearance worked out by MM. Lumière and Seyewetz.

We have, it is true, made attempts to develop without recourse to the Lumière method, basing the exposure on the indications of a Wynne meter and seeking to control the time of development by occasional examination of the image. But our experience is that such examination is invariably highly fallacious. This, not from the fact of the feeble illumination under which the plate is examined, because as soon as the plate has been one minute in the developing-bath—and development could never be complete in a minute—it has so far lost its colour-sensitiveness that it may be treated, with the usual precautions, in the customary red light of the dark-room. The real reason of failure, however, is the impossibility of forming a correct judgment when examining the plate by reflected light. It is not safe to go upon the appearance of detail appearing in the darkest parts of the subject. Frequently, when these details are visible to the eye, development has already been too greatly prolonged, and the final result is too weak. Only those possessed of quite exceptional skill will be able to secure correct results apart from development by time. Thus, we know of one extremely expert Autochrome worker in Italy, Signor Pellerano, who develops Autochromes from the appearance of the image in the developer, yet we suspect that the success of this method in his hands is the result of three years' quite exclusive work with Autochrome plates.

The method of MM. Lumière and Seyewetz permits, as is well known, a certain degree of compensation. The effect of the developer upon the plate is watched up to the moment when the first details of the picture (not the sky) appear, and from the time occupied in this part of the process the total period of development is known. Thus from this point onwards the development is automatic: all that is necessary is to see from the table the total time required for development and the quantity of solution to be added.

Thus the first treatment of the plate according to this Lumière method is a tentative operation undertaken as a means of forming a judgment of the exposure. It is done with a weak metoquinone developer. Then, according to the time required for the appearance of the first details of the picture, we add to the solution from 15 to 45 ccs. of the concentrated bath, developing for the time indicated in the Lumière table. The addition of as much as 45 ccs. is necessary only in cases of great under-exposure.

In our experiments we find that it is somewhat more simple to proceed in a slightly different way. When using an exposure-table or meter it is difficult to make a very great error, and to give an exposure so much under the proper time as to necessitate the use of the strongest developer. It will thus be sufficient, as a general rule, to work development by a two-dish method, dish No. 1 containing the more diluted solution, consisting of 5 ccs. of the stock bath and 80 ccs. of water, and dish No. 2 the normal developer, made up with 20 ccs. of stock bath and 80 ccs. of water. Both developers are used at a temperature of 60 deg. F. Development is commenced in solution No. 1 in order to ascertain the time of total development from the time of appearance of the image, and the plate is then transferred immediately into dish No. 2, containing the normal bath.

It should be noted that, as the developing solution contains the volatile alkali ammonia, the bath, when used in an open and uncovered dish, may undergo a change at a considerable rate. Therefore, the same bath should be used for several plates only if a considerable volume of the solution is in use, and when the development of all the plates is done in quick succession; or, if it is not, the solution placed in the meantime in a corked bottle. The worker is more certain of obtaining constant results if a new bath is used for each plate, not only because the bath then contains its full proportion of ammonia, but also for the reason that irregularity due to the formation of bromide in the developer is thereby obviated. It must, however, be admitted that the use of a fresh metoquinone developer for each exposure adds, to a perceptible degree, to the cost of working the process, and for this reason we have sought to work out a developing formula which can be used in the same way and by means of the same table of MM. Lumière, whilst, however, making up the developer with the less expensive metol and hydroquinone. The action of this developing formula is similar to that of metoquinone, the metol and hydroquinone being present in a proportion which gives a bath of the working properties of the single compound. The following is the formula:—

| | | |
|---|---|---|
| Soda sulphite cryst. .................. | 100 gms. | 2 oz. |
| Ammonia, 22 per cent. Beaume ... | 32 ccs. | 4½ drams. |
| Potass. bromide ........................ | 6 gms. | 54 grs. |
| Metol ........................................ | 4 gms. | 35 grs. |
| Hydroquinone ........................... | 12 gms. | 105 grs. |
| Water .......................................... | 1,000 ccs. | 20 oz. |

We have found that this bath, used just as the metoquinone formula, behaves similarly, and is capable of giving results of equal brilliancy. It is easy for anyone to find, by means of comparative tests made with the original formula and with the above, the difference which may exist in the time necessary for the appearance of the image. The worker may thus reduce the speed of the developer by increasing slightly the quantity of bromide, or increase the speed by using more metol. Those who do much Autochrome work would certainly find it of advantage to adopt the bath.

A few words may also be said as to the methods of after-treatment which may be applied to Autochrome plates. Many transparencies would benefit by the use of clearing and intensifying processes. It frequently happens that a lack of brilliancy is found in Autochromes due to a slight general deposit of silver arising either from insufficient development or some other cause. Thus, omission to wash (or insufficient washing) before treatment with the acid permanganate bath introduces into this latter small quantities of bromide, the effect of which is to give a slight general fog of silver bromide over the plate. Moreover, the presence of small quantities of a chloride (arising from the water) in the acid permanganate bath results in a veil of silver chloride. This silver chloride, like the bromide, is reduced to metallic silver on the second development.

This lack of brilliancy due to a general veil on the plate has nothing to do with that which is the result of insufficient density, and it would be completely wrong to attempt to remedy it by an intensifying process: the result would be still worse owing to the increase in the intensity of the veil. In such a case, assuming that the colours are satisfactory, the plate may be converted into a perfect result by first passing through a clearing bath to remove the fog, and then intensifying. As a clearer we have used the following reducing solution:—

| | | |
|---|---|---|
| Hypo, 10 per cent. solution .......... | 50 ccs. | 3 oz. |
| Potass. ferricyanide, 3 p.c. solution | 50 ccs. | 3 oz. |
| Ammonia .................................... | 4 ccs. | 2 drams. |

The addition of ammonia to this Farmer reducer has the advantage that the solution retains its working properties for a much longer time—for twenty-four hours. The above mixture is diluted with, at least, twice its bulk of water. Careful watch is kept on the action of the bath, taking care not to lose any detail. The plate is then washed for a few minutes and the image then intensified in the following mercury bath:—

| | | |
|---|---|---|
| Mercury bichloride .................... | 0.5 gm. | 44 grs. |
| Sodium chloride ........................ | 1 gm. | 88 grs. |
| Water ........................................ | 100 ccs. | 20 ozs. |
| Hydrochloric acid ...................... | q.s. | q.s. |

The plate, when completely bleached, is rinsed, and then darkened in the metoquinone, or metol-hydroquinone, solution as used for the first development. In many cases it is sufficient to intensify to the lesser degree obtained by using, as a darkening bath, a freshly made 5 per cent. solution of soda sulphite. Our own preference is for the above method in comparison with the pyro and citric acid formula advised by MM. Lumière, since this latter presents more difficulties.

The mercury method may be recommended particularly to those who, in making Autochromes, desire also to prepare from them colour-sensation negatives for three-colour printing.

PROFESSOR R. NAMIAS.

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## COLOUR PRINTS ON PAPER.

A DESCRIPTION in popular language is given in the "Daily Express" of Tuesday last, May 2, of a process which is said to have been worked out by Mr. A. Hamburger, of the Dover Street Studios. Mr. Hamburger is reported as saying that "thousands of prints can be made with ease," a phrase which suggests the application of some photo-mechanical process, though this assumption is inconsistent with the statement, also made in the "Express" article, that within ten minutes of the exposure having been made "a photograph" in real colours is sent up for approval. However it is possible that this proof is a colour-screen plate transparency from which three-colour prints are subsequently prepared. We will, however, give the interviewer's own account of what he learnt at the Dover Street Studio:—

Mr. Hamburger's process is patented, and to a certain extent secret, but its main features may be mentioned.

"The first difficulty we had to overcome," Mr. Hamburger said, "was that of light. The problem was to discover some light containing the same qualities as sunlight, but more concentrated, for I found it was necessary to make a much shorter exposure than is possible with sunlight.

"The shortest sunlight exposure hitherto possible for a sensitised colour plate was two seconds. In order to get every colour tint absolutely perfect I found, after prolonged experiment, that I should require a much shorter exposure than two seconds.

"Here is the result," said the inventor, pointing to a large canvas enclosure in the studio. "After two years' experimenting I have hit on a scheme of passing a high-tension electrical current through a mixture of chemicals equivalent in composition to the spectrum analysis of the sun.

"Twelve arc lamps are employed, and a current of 60,000 volts. A long high-tension spark leaps across a chemical bath, and the result is an incandescent gas of such incredible photographic efficiency that we have been able to reduce the exposure of the plate from two seconds to one-hundredth part of a second, and thereby photograph every hue of colour in any picture with perfect truth and accuracy."

Mr. Hamburger's next difficulty was that of transferring the colours from the negative to paper. His solution of this difficulty was due partly to the invention of a German who was introduced to him, and partly to his own skill as a chemist.

The German knew how to reproduce the three primary colours —red, yellow, and blue—from three separate plates exposed at the same time. Mr. Hamburger discovered a method of improving this process, so that he was able to reproduce the finest gradations and combinations of colours—or an exact photographic "record" of colour.

The whole process now works with business-like simplicity. The sitter is "snapped" in one-hundredth part of a second, the negative is taken downstairs to the developing-rooms, and ten minutes later a photograph in real colours is sent up for approval.

Among those who have been photographed in colour by Mr. Hamburger are Prince Alexander of Teck, the Gaekwar and Maharanee of Baroda, the Hon. Mary Villiers, Miss Mabel Gye, and the Hon. Venetia Baring, maids of honour to the Queen, Mme. Réjane, Mme. Acté, Mrs. Scott Gatty, Lord Esher, Sir Joseph Lyons, Mlle. Pavlova, and Miss Ada Crossley.

## POSSIBLE METHODS OF COLOUR PHOTOGRAPHY.

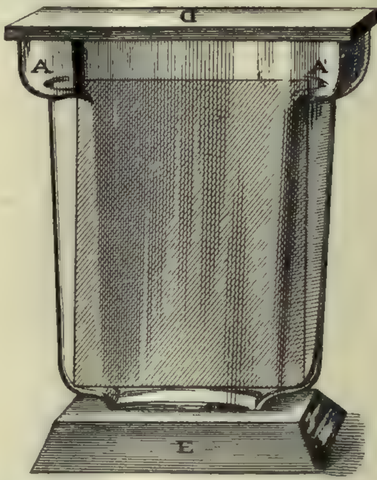
In a short note, in a recent issue of "Photographische Rundschau," Dr. Fritz Kropf makes the following observations on the methods suggested by Professor Luther for preparing colour photographs, a translation of which appeared in the "Colour Photography" Supplement for March 3. Dr. Kropf writes: As such methods as these have been a subject of study by myself for some time, and as I have come to conclusions similar to those of Dr. Luther, it may be of interest if I describe some of my experimental results. The experiments have not, as yet, led to a satisfactory conclusion, and I therefore only publish them as a means of making public my work in this direction. The leading idea in the experiments was to use the silver salts of colouring matters containing a sulpho- or carbo-acid group. Many difficulties were experienced in using the dyes at my disposal: either they did not form insoluble silver salts, or, if such salts were producible, they re-dissolved in gelatine solution. I therefore used, as Luther has recommended, the adsorption properties of silver salts, and undertook the preparation of organic silver salts in presence of potassium bromide or potassium sulphocyanide. Silver sulphocyanide proves a particularly active means of adsorption. The following were prepared:—

| | |
|---|---|
| I.—Water | 130 ccs. |
| Gelatine | 20 gms. |
| Potass. bromide | 8 gms. |
| Guinea green (Agfa) | 10 ccs. |
| II.—Silver nitrate | 10 gms. |
| Water | 60 ccs. |

In the second emulsion the potass. bromide was replaced by 6 gms. of potass. sulphocyanide. On then adding II. to I., the dye was completely precipitated, and on washing the emulsion after setting and breaking up, the wash water ran away without a trace of colour. The bright green emulsion was coated on plates and paper, the silver sulphocyanide plates proving much thicker and density-giving than those on the bromide emulsion. After several hours' exposure, under a positive transparency in diffused daylight, the emulsion prepared with potassium bromide showed only a weak image, whilst that made with sulphocyanide gave a strong black image on a green ground. Both images could be considerably intensified by developing with metol-hydroquinone. The developer did not become green-stained, apparently in consequence of the formation of a colourless sulphite compound of the dye. The silver image was now removed with Farmer's reducer, or with persulphate, leaving a green positive image. I have also observed that on longer exposure the sulphocyanide emulsion gave direct a green image on a white ground. Silver sulphocyanide thus appears to be a body which is very readily solarised. Other experiments are in progress, using other dyes, and with the object also of discovering a practicable method of fixing.

## A VERTICAL DEVELOPING DISH FOR AUTOCHROME PLATES.

A special dish for the development of Autochrome plates has been designed by M. Seyewetz, and is placed upon the market by M. Leune, 28, Rue du Cardinal Lemoine, Paris. The dish allows of the plate being watched without the necessity of removing it from the developer. This is a great advantage for the many workers who are sensitive to developing re-agents, such as metol. The dish is of white glass, and made in a form requiring the minimum of developing solution. The upper part, A, A$^1$, is made somewhat wider, so that the two upper corners of the plate can be readily grasped when removing it after development. Two grooves keep the plate in position without allowing it to come in contact with the walls of the tank, whilst the well portion at the base allows of impurities settling out of the developer. By using a bath coloured, say, by the Lumière chrysosulphite, development may be done quite readily in full daylight. Another advantage of the dish is that the surface of developer in contact with the air is extremely small, and the solution thus retains its activity for a long period. Also the vertical design of the dish allows of its being readily placed in a tank of water in order to bring it to a given temperature.



**Ives' Tripak Plate Pack.**—Mr. F. E. Ives sends us, from his laboratories, 1,001 Park Avenue, Woodcliff-on-Hudson, N.J., the following note on the Tripak process for producing colour transparencies:—In order to make an ideal plate pack combination for the Tripak camera it will be necessary to use a special fine-grained green-sensitive plate of greater transparency than those now regularly on the market. There is no insurmountable difficulty about making exactly the kind of plates required, but some experimental work in the plate factory will be required to get them just right, and action by the plate manufacturers appears just now to wait on demand sufficient to justify the trouble involved.

Meanwhile, the packs are made up with red-sensitive plate in front of green-sensitive, and give good colour selection with the compensator provided to use with them, but the reds suffer a little in luminosity, and owing to the occasional unevenness of a thick coating the negatives are not always perfectly even. In consequence a "straight" Tripak transparency from them will sometimes turn out too cold in key at one edge or end when it is correct or even too warm on the opposite side. When such unevenness appears it may be readily corrected by devoting a few minutes to local treatment, as explained in the Manual of Instruction.

It should be understood that these conditions are only temporary.

At present, when extreme accuracy is demanded, as in some scientific work, three plates of identical character (panchromatic) can be exposed in succession through separate colour screens in a Tripak (or other) camera, provided with three colour screens in mounts made to slip successively over the front of the lens.

No. 54. VOL. V. JUNE 2, 1911.

# THE BRITISH JOURNAL OF PHOTOGRAPHY
MONTHLY SUPPLEMENT
ON
# Colour Photography.

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# THE IVES TRIPAK PROCESS OF COLOUR PHOTOGRAPHY.

[In recent past issues we have published articles describing the newly introduced method of trichromatic negative-making and printing worked out by Mr. Ives and introduced by him under the name of "Tripak." In the current issue of our contemporary, "Camera Craft," appear two articles on this subject, which we reprint below. The first, by Mr. Ives, gives a succinct account of the process; the second records the experience of a worker, Mr. H. E. Blackburn, in regard to the use of the materials for the process now available in the United States.—EDS. "Colour Photography" Supplement.]

THE only processes of colour photography which have any practical importance are trichromatic. This fact is interesting because the trichromatic principle, although more than half a century old, was, apparently, quite discredited twenty-five years ago; and, even after the application of scientific procedure brought successful results in 1888, it was, by most people, long regarded as at best but an imperfect, clumsy, temporary makeshift, to be played with only until the imminent discovery of a direct process. This prejudice against what I have always contended was the only rational line of experiment aiming at achieving practical results has been a very serious handicap to the very men who have done most to evolve the methods that are now universally recognised as having great and growing importance, and this prejudice has greatly retarded progress. And, furthermore, the true prophets were men of such limited financial means that they could give but a portion of their time and apply effort only along the lines of least resistance. They were, by this same financial restriction, forced to rest, from time to time, on successes too limited in character to bring material reward in view of the prevailing prejudice against indirect methods.

The first real success, the most scientifically accurate and the most perfect as to results, setting aside its lack of commercial importance due to limitations as to application, was colour photography by triple lantern projection and the photochromoscope. By the invention of special cameras and other devices, this was made almost as simple in practice as anything we have to-day, but an optical instrument was required in order that the colours might appear as properly mixed to the eye.

Then followed the development of my method of three-colour half-tone printing, of great commercial importance, but practically limited to reproductions in large editions and under special conditions, requiring an expensive plant and the employment of specially trained and highly skilled labour. Meanwhile, lantern and window transparencies were successfully made by a comparatively simple process of my own, and later by other like processes; but none of them had much commercial value. The mosaic three-colour screen process of Du Hauron, Joly, and MacDonough was also experimented with; and the first simple and practical process, a modification of this, the Autochrome of the Lumière Brothers, was made available. This last is not really a very simple process, but the fact that most of the work is done in the manufacture of the plates makes the practice of Autochrome photography quite simple.

The Autochrome and similar processes which have followed, now known as "screen processes," have come to stay, because they meet certain requirements with the least possible exercise of labour and skill on the part of the photographer. But they also have serious limitations. The best Autochromes transmit less than a quarter as much light as ordinary lantern transparencies; they can be duplicated only with serious loss of quality, and the results cannot readily be modified for artistic purposes. These limitations are inherent in processes of this character.

It will be admitted that an equally simple and practical process, free from these limitations, would be immensely more valuable, but that is not possible as long as we have a multicolour screen ground to our pictures. For that and other reasons I have always believed that the process that would develop the greatest ultimate importance would be a process of triple negative and print making, something on the lines of my original transparency process of 1890.

The new Tripak process is the successful development of this idea. It is not as simple in operation as the Autochrome process, but it is incomparably simpler than any other method which does not have the characteristic Autochrome limitations which I have mentioned. It bears to the latter somewhat the same relation as does the production of ordinary negatives and prints to the production of tintypes. In the Tripak process we make three negatives to represent the three primary colours, and from them in turn make three transparent colour prints; which, when superimposed in register, complete the colour photograph. I did this more than twenty years ago, but it is now done differently and by more simple means. With plates, screens, films, and dye baths standardised, as they now are, the process is eminently practical.

The negatives are made in a simple, special camera, simultaneously on three plates used in the form of a pack that allows of their being handled, exposed, and developed as a unit. The transparencies made from these negatives are also handled as one plate until cut apart after development and before inserting in their respective dye baths. An unlimited number of transparencies can be made of any one subject, from the one set of negatives made thereof, and prints on paper can be made by the pinatype process or with trichromatic carbon tissue; but, owing to its simplicity, only the transparency application is at present recommended for amateurs generally. If the several steps of the process are correctly carried out, the results are remarkably true to nature; but one of the characteristic and most important features of the process is the facility with which the effects may be modified, generally or locally, for artistic purposes. Any colour can be reduced or intensified, or altered in hue, in a few moments, using ammoniated water or acidified dye solution.

F. E. IVES.

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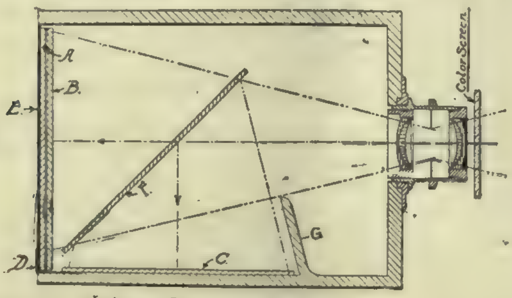
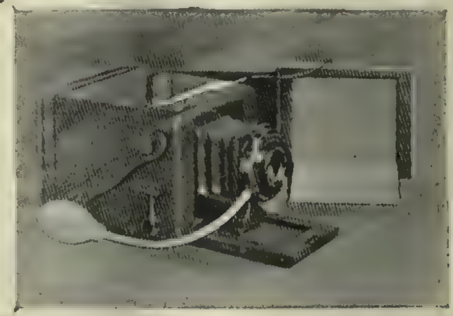
Roughly, those processes designed to give us photography in colours may be divided into two classes, the "screen plate" processes, of which the Autochrome is the most familiar example, and the trichromatic or three-plate process. Laying aside the first, the three-plate process is one that has engaged the attention of workers all over the world for a number of years. Hinging, as it does, upon the securing of three negatives of the same subject, each of the three recording its own separate and distinct primary colour sensation, or, in other words, each of the three plates taking care of the colour sensations of a given portion of the spectrum. Positives or prints from these three negatives, made in the correct colours, and superimposed, give the photograph in the colours of nature.

The research and experiments of the plate-makers, the manufacturers of dyes, and investigators along the line of spectroscopic photography, have, within the past few years, made possible a much more satisfactory supply of available material. But the difficulty inherent in any plan to expose the three necessary plates in succession has only recently been met by a simple, practical method of making the three exposures simultaneously, despite the efforts in that direction for many years past. Cameras have been devised in which the grouping of three small lenses, or some ingenious arrangements of prism or reflectors, or both, have solved the problem more or less satisfactorily. Mr. Ives patented a large variety of such cameras. But, despite the easily overcome disadvantage of having one of the three negatives in a reversed position to the other two, the Tripak System of Ives seems to be the most practical method yet offered to the worker seeking to produce photographs in natural colours by the three-plate process.



*Interior Arrangement of Camera.*

As the name indicates, the system hinges on the use of a trichro-plate pack, which consists of three plates, a red-sensitive one and a green-sensitive with their face or emulsion sides together, and a third, or blue-sensitive plate, hinged thereto with a strip of gummed paper. The same strip of gummed paper also holds in position a black backing card. These three plates, the gummed strip, and the backing card are shown as A, B, C, D, and E in the illustration herewith; the blue-sensitive plate is cut a trifle shorter than the other two, and in the illustration is shown as allowed to drop forward flat at the bottom of the camera, after the withdrawal of the slide of the special holder designed for the plate pack. When the pack is inserted in the holder, two ledges at the ends hold them, by means of a spring, with their films in close contact, while the hinged blue-sensitive plate is allowed to fall forward as shown. This done, a transparent yellow reflecting screen, F, is lowered from the upper part of the camera by means of a lever on the outside, taking the position as shown in the sketch. The usual colour-compensating screen is, of course, used at the front of the camera. This equalises the exposure for the three plates and assists in the colour selection. The exposure is about the same as for an Autochrome plate. G, as shown, is simply an opaque shield to protect the blue-sensitive plate from any light from the lens other than that reflected from the yellow reflector, F. It is apparent that the blue-sensitive plate receives the blue rays reflected by F, while the green and red rays are the only ones allowed to act upon the green and the red-sensitive plates at the back of the camera. These green and red rays act first upon the green-sensitive film from the back, the red passing through and acting upon the red-sensitive film from the front, or vice versa, according to the construction of pack and compensator. After the exposure the reflector F is raised out of the way, the C or blue-sensitive plate turned up into position by another lever, and the slide of the holder replaced.



This arrangement assures all three of the images being exactly the same except that two are reversed from the ordinary negative image, one by being taken through the glass and the other by being reflected, much as one reverses the image in copying by using a prism in front of the lens instead of this reflecting screen behind. In making positives from the three negatives it becomes only necessary to reverse the position of the prints from the positive positioned or reversed negatives, the collodion positive films being so thin that the registration of the prints is not affected. The exposed "pack" is developed by time development in a special rack in which they are held separated like the open leaves of a book. To make colour transparencies the three negatives—these negatives themselves showing no colour—are placed side by side in a printing frame, a collodion film placed thereon, the back closed, and the exposure, from one to twenty minutes in direct sunlight, made. The length of exposure is found with a simple photometer, and the great variation given is only due to there being two speeds of the collodion film, the slow being much the best in keeping quality.

Development is accomplished by less than five minutes' washing in hot water, the film given a hardening and mordanting bath, then washed for a minute or two, and finally immersed in a hypo bath to remove the bromide of silver. A short washing follows, after which the prints may be placed to dry or at once cut apart and each immersed in its proper dye bath; the print from the red-sensitive plate in peacock blue, the one from the green-sensitive plate in a magenta red, and the blue-sensitive in a yellow. About five minutes are required for the absorption of the requisite amount of the dyes; and, in order that all three may be of the right depth at the same time, suitable dyes have been selected and their strengths standardised, as has everything else possible used in connection with the process. These coloured films, rinsed off, given a weak acid bath, and then dried, require only being brought into register and bound together between two sheets of glass to form the perfect transparency in colours. A complete, triple-print transparency can be made complete in about half an hour. The negatives are available for as many of these transparencies as one may wish to make, and they are also perfectly suited to the production of prints on paper by the superimposed carbon, pinatype, or other like processes, although these last have not as yet been made so simple and satisfactory as the transparency process.

In the above brief résumé of the Tripak System I have failed to more than mention the advantages afforded by Mr. Ives' care in standardising every possible factor that could add to the simplification of the process. The worker who employs the ordinary three-plate process finds, quite early, that to use three different kinds of plates, the relative sensitiveness and suitable colour sensitiveness of each liable to change with different emulsion numbers, and adjust the relative exposures and depth of filters so as to produce equal density and gradation in the resultant negatives, he has set himself quite a task. While the production of three-colour pictures may justify the care and attention otherwise demanded, the effort to harmonise the plate, filter and exposure factors is a discouraging affair. In the Tripak System this last has been so nearly standardised that the process becomes well nigh automatic. On the other hand, correction of errors in exposure and development is a very simple matter. Prints can be given a longer or shorter exposure, dyed for a longer or shorter time; and if the result should be "off key" through one of the prints being too strong or too weak, that print alone can be reduced or made stronger by re-immersing in the dye bath or by taking it at once to the acetic acid bath without rinsing. But, as supplied, the packs are made up of plates of recognised standard manufacture having good keeping quality, the screen and filter used are in perfect accord and so selected as to give one uniform exposure to all three plates, and an exposure that permits of time development that results in equal density and gradation in all three.

The camera is compact and simple, perfectly adapted to the making of ordinary negatives in the ordinary way, should the user so desire. And concerning the results, the writer has had the pleasure of seeing a number of slides by the Tripak process and can vouch for their excellence. They transmit almost as much light as the ordinary lantern slide, and many times as much light as the Autochrome. They are perfectly free from granularity, and exhibit a most pleasing brilliancy, making them particularly suitable for lantern projection. These advantages, coupled with the unlimited duplication of the positive transparencies, together with the beauty of the finished results, compensates the worker in a great measure for the lack of corresponding facility in the production of positives on paper, a shortcoming not inherent in the Tripak System, but one only emphasised by the facility provided for the making of transparencies by the process.

Prints can easily be made upon paper from the Tripak negatives by the Pinatype process. Three positives are made, successively, from the red, green, and blue negatives, upon Seed's positive celluloid films. Three fixed-out, unexposed dry plates are sensitised in a 4 per cent. bichromate bath and dried in the dark. The positive from the red negative is printed direct, film to film, on one of these print-plates; the positives from the green and blue negatives are turned over and printed through the celluloid on the print-plates, so as to overcome the reversed images of those negatives.

The print-plate from the green negative, after washing, is dyed up in Pinatype Red, rinsed and transferred to the wet gelatine paper of the Pinatype process. The print-plate from the blue negative is next washed out and dyed up in Pinatype Yellow, and placed in register with the still wet red print. The print-plate from the red negative is washed out and stained up in Pinatype Blue, and then placed in register with the wet red-yellow print; when, upon removing the blue print-plate, one has a three-colour print with all the colours in one film. The dyes, print-plates, and gelatine-coated paper can be purchased from Victor Koechl and Co., 122, Hudson Street, New York City.

H. E. BLACKBURN.

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## A NOTE ON THE DEVELOPMENT OF AUTOCHROME PLATES.

In the current issue of the "Photo-Revue" a French Autochrome worker, M. P. S. Chataux, gives the following short account of the method which he employs in working the Autochrome process:—

MM. Lumière (M. Chataux points out) have recommended two methods for the development of Autochrome plates, namely, pyro and metoquinone. Both give excellent results, and there is no need to modify the formulæ in the slightest degree. Nevertheless, practice in the development of Autochrome plates has led me to alter to a slight extent the mode of using the developers.

Pyrogallic acid in use offers more latitude than metoquinone, and with the former reducer it is possible to compensate for considerable errors of exposure when these latter are in the direction of over-exposure. In practice—for the reason that the many plates which I am called upon to develop are not exposed by myself—I make it a rule to assume that too much exposure has been given. In absolute darkness I first immerse the plate in a solution made as follows:—

| | |
|---|---|
| Pyro A A solution | 10 ccs. |
| Water | 100 ccs. |

I rock the dish for about 20 seconds, and when this time has elapsed I turn on the switch of the electric lamp in the lantern fitted with the Lumière "Virida" filter. Up to this instant there is no trace of image on the plate, since no ammonia has been added to the bath. I now add a few drops of BB solution and wait for about 10 to 15 seconds. If the image appears, I continue to add the ammonia solution, a drop at a time, every 10 to 15 seconds, that is to say, at a rate sufficient for the complete development of the image in 2½ minutes. The plate will be developed when all detail, even in the shadows, is visible, and when the highlights commence to veil over; in short, when the plate, seen by reflected light, presents the appearance of an ordinary good negative.

If, after several tentative additions of the BB solution, only a thin image is produced, I then call in the aid of the stock metoquinone solution, which is more energetic in its action than the pyro. I add 10 to 15 ccs. of it to the pyro-ammonia bath, and thus obtain a fairly good image, such as the pyro developer alone would not give me.

This method is no doubt open to criticism on technical grounds, but it has given me results so satisfactory that I have thought it well to lay it before the many workers of the Autochrome process.

# Correspondence.

**** Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

**** We do not undertake responsibility for the opinions expressed by our correspondents.*

## PRINTS FROM AUTOCHROMES.

To the Editors.

Gentlemen,—Enclosed print is from a negative made from an Autochrome. I think the Lumière Co. would benefit considerably if they made it more widely known that ordinary prints like enclosed could be produced from Autochromes. I may add I have met a good few users of colour-plates, but have not come across one who has made an ordinary negative from one. The enclosed is from a negative on an orthochromatic plate. It would have been considerably improved by using a panchromatic plate, as the reds—the little red coat and some of the flowers—would have come out lighter.

In photographing a red object in the ordinary way it is the quantity of light reflected that acts on the sensitive plate; in the case of using a coloured transparency the reds hardly impress themselves at all unless a panchromatic plate be employed.

It seems to me that an advertisement in your Colour Supplement, including a block from a print made from an Autochrome, would increase the use of them.

Enclosed is from an Autochrome of my little girl. It had seven seconds exposure in sunlight at $f/8$; she is really sitting on a table with a green cloth on it, as had she been on the ground the sunflowers would have been too high to show in picture.—Yours truly,

4, Ethelden Road, Shepherd's Bush. C. Hankins.
May 20, 1911.

## A NEW PROCESS OF COLOUR PHOTOGRAPHY.

(To the Editors.)

Gentlemen,—On getting my usual copy of the "B.J." (we get it here about ten days late) I turned at once to the "Colour Supplement," and was much edified to read of a "new" process for colour photography. It took "prolonged experiment," did it, to find out that a shorter exposure was needed? What chemicals are "equivalent in composition" to "the spectrum analysis of the sun"? A "current of 60,000 volts," however, ought to produce something unusual, especially when used in twelve arc-lamps. Information is also wanted as to a "long, high-tension spark," "leaping across a chemical bath"; it must be something awesome, never seen outside a nightmare or pipe-dream. It sounds like a newspaper reporter "doing his darnedest." Perhaps the "B.J." has some inside information; if so, I hope it will soon be given to a hushed and shuddering public.—Yours sincerely, Geo. H. Leggett, D.D.S.

133, West 123rd Street, New York.

[Since publishing the newspaper account of the process in question we have learnt that the "photograph" in real colours shown to the sitter is a transparency on glass, presumably an Autochrome or other screen-plate. It is obvious that prints on paper are prepared from this transparency through the intervention of three negatives. These prints may be prepared by the carbon or by a photomechanical process such as collotype.—Eds. "B.J."]

# News and Notes.

A New Colour Paper.—A new company has been organised at Denver, Col., for the manufacture of a photographic paper which reproduces colour pictures from the ordinary photographic negatives. The inventor of the process is H. G. de Roos, a Denver man, who has been in the photographic business for a number of years. The process employs a machine which passes the sensitised paper through fifteen or more different baths, and it is claimed by the inventor that the paper is especially adapted for reproducing landscapes, water scenes, and the general run of outdoor pictures. Its applicability for portraiture is not stated.

The company, which is known as the Photo-Colourgraphic Co., has incorporated with an authorised capital of $300,000, and headquarters have been established in the Colorado building. L. C. McClure, a prominent scenic photographer, is president of the company; J. C. Rice, vice-president; E. A. Rich, secretary and treasurer. Mr. de Roos, the inventor, has been engaged as sales manager. He will cover the entire United States, introducing the paper in all of the large cities.

Using Autochrome Plates in a Changing-box.—A French worker, M. E. Legeret, in a recent issue of the "Photo-Revue," gives the following hints on using Autochrome plates in the changing-box, or magazine, such as that of the "Verascope" camera, without the necessity of making any alterations in the apparatus:—With each box of plates a number of black protecting cards are obtained. To the white side of each of these cards an edging of lantern-slide binder is applied, but to the short sides only, taking care to allow two-thirds of the edging to project. This done in the dark-room, the Autochrome plates are placed on these cards, the portion of the edging which projects slightly moistened, and also the margins of the plates. When the whole is dry, the plates, thus prepared, are placed in the changing-box, without any sheaths, and the whole is then ready for use. If it is wished to use less than the whole charge of Autochromes, the remaining space may be filled with old negatives placed in the ordinary sheaths, or with ordinary sensitive plates, which will then allow of the usual photographs being taken after the colour plates have been used.

Colour Paper Prints.—Mr. F. E. Ives has issued the following note from his laboratories, Woodcliff-on-Hudson, New York, in reference to the Tripak process of three-colour photography:—

Beautiful natural-colour photographs can be made on paper from Tripak negatives, by experts employing comparatively complicated, slow, and roundabout processes. Some amateurs have found the work sufficiently fascinating to justify them in taking it up, but not many would do so, so long as they could make perfect transparencies with a small fraction of the time and skill required to make prints on paper.

No other duplicating process of colour photography has ever come anywhere near to the Tripak transparency process in simplicity, speed, and precision. It is obvious that a process on paper must be nearly as simple and reliable in order to come into extensive use. A very simple and beautiful compromise process is now nearly ready for the use of Tripak photographers. Special thin Tripak film prints are superposed on a white paper or card backing, with either a metallic mat or a glass cover, and a cushion back and binding to keep them in perfect contact and register. They have exactly the appearance of a glossy (natural colour) photograph on paper in a passe-partout mount or frame.

This process has all the simplicity and other characteristic merits of the Tripak transparency process, and like it depends for its success upon procedures in accordance with Mr. Ives' U.S. Patent No. 980,962, 1911. Complete prints, framed for hanging on the wall, or to use as easel pictures on the table, or set in cases, can be made in half an hour.

No. 55. VOL. V. JULY 7, 1911

THE BRITISH JOURNAL OF PHOTOGRAPHY
MONTHLY SUPPLEMENT
ON
Colour Photography.

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# FILTER ABSORPTIONS FOR TWO-COLOUR.

DURING the year 1910-11 my attention was directed to the Kinemacolor system of two-colour cinematography. In this process the colours of nature are more or less approximated by a system of two-colour photography. Soon after my first acquaintance with the filters then used in making the colour records I came to the conclusion their absorptions might be radically improved upon. Moreover, my efforts in this direction were crowned with at least a measure of success. Since two-colour methods in still as well as animated photography seem to command more or less attention, and since my researches (such as they were) into two-colour filters are perfectly applicable to still view work, I now venture to send the accompanying note.

Filter sets used in Kinemacolor have in the past been of two classes—namely, "light" and "dark" sets. The dark set is simply the regular tricolour red and tricolour green of the Wratten standard trichromatic set. In practice it will be found that a two-colour positive consisting of combined orange-red and blue-green transparencies made from negatives taken with the aid of the above two filters will give (when viewed by artificial—yellowish—light) a fair representation of colours other than those containing a pronounced admixture of pure blue. For brilliant rendering of sky and water effects the pioneers of Kinemacolor had resort to the "light" series filters, consisting of, respectively, orange—transmission to about D ½ E—and an over light edition of tricolour green, passing distinctly more greenish-blue than the regular or darker tint.

With these "light" filters blues are rendered far brighter than before, as are also artificial greens, by virtue of their large blue-green content. Exposures are also very much shorter. On the other hand, grass and foliage green are reproduced in the resulting two-colour image as a bronze brown.

Upon my introduction to the theory of the process it was explained to me that this browning of natural greens when using the "light" series filter set was due to the green content passed by the orange filter, but the explanation was fallacious; the true reason of the difficulty having to be sought in the swamping action of the additional blue-green and greenish-blue rays passed by the green filter, as was speedily proved by experiment.

The problem then remaining for solution was how to obtain a set of two-colour filters as light as possible, so as to allow of very short exposures (a necessity in the Kinemacolor system of cinematography), and at the same time giving renderings of foliage shades which were at least green and not brown. The solution was found to lie in the employment of a small proportion of pure blue, or even blue-violet, light in the form of a restricted transmission band in the green filter wherewith to make the necessary records of blue objects, at the same time cutting out the offensive blue-green rays from little *b* to F ½ G or thereabout.

Dyes used for the purpose were, for preliminary experiments, Metanile yellow to cut out blue-green, coupled with the use of small additions of filter yellow to damp down violet and ultra violet light which might have otherwise upset the apparent transmission values of natural colours as recorded in the blue-green record negative. Such a dye combination was found to have considerable practical advantage over whatever may have been originally used, but it was latterly superseded by the use of fluorescine and filter yellow employed in a similar manner to the above. In each case the green colour was imparted to the filter by a sufficient addition of filter blue-green to the dye bath. Screens so dyed were a light yellowish-green hue, being much the colour of spring foliage itself. On spectroscopic examination they could be seen to pass an inconsiderable but yet sufficient amount of pure blue light. Unfortunately, it is not possible to give definite spectroscopic charts, since the research was hurried through at the behest of the proprietors of Kinemacolor, the most successful specimens of filter being at once returned, with the object of standardisation at the laboratories of Messrs. Wratten and Wainwright. It may be said, however, that green screens so compounded for two-colour work, though having widely different apparent tints and densities, all show great practical advantage over the usual blue-green previously in use.

The orange-red screen, which should go with the above to make the set complete, was not found to present any difficulty whatever. Almost any orange to orange-red tint not transmitting farther than E can be used with success. The more yellow the orange the more will apparent yellows be bleached in the resulting two-colour transparencies. Naphthol orange combined with filter yellow in the proportion of four to one and in strong solution will be found to be very useful for drying up the red screen. Mono and di-brom fluorescine combined with filter yellow in equal proportions give dye solutions useful for redder screens.

Obviously, all two-colour systems must show colour-blindness over a considerable range of the spectrum. The reason why my division of the greens and blues with cutting out of blue-green action from the green record is preferable to the original way of dividing the spectrum is clearly because thereby I shift such colour-blindness to the recording of tints mostly met with as artificial hues, at the same time removing from the field the always over-energetic action of the blue-green rays. It is not claimed that filters made on my system give natural colour rendering, which is, of course, an impossibility in two-colour. It is claimed that they give pleasing greens in grass and foliage together with a distinctly more convincing reproduction of natural blues than has hitherto been possible.

COLIN N. BENNETT, F.C.S.

# THE MANNERS PROCESS OF THREE-COLOUR PRINTING WITH CARBON TISSUES.

At the exhibitions organised by the Society of Colour Photographers, and in the colour sections of the various large photographic shows held in different parts of the country, many examples of three-colour printing have been shown by Mr. Samuel Manners. In regard to these it has, we believe, been generally understood that the process used in their preparation was carbon worked on a modified system devised by the exhibitor. Mr. Manners has recently applied for, and been granted, patent protection for a process which, presumably, is that employed in the production of his exhibited prints. Since these were invariably of high quality in respect both to colour rendering and registration, the details of the method as recorded in the complete specification (No. 25,646, 1910) should be of general interest.

The claims made by Mr. Manners for his invention are:—(1) The use of a temporary support, consisting of paper coated with a soluble gelatine solution containing sugar, or glycerine. (2) Applying this temporary support to each printed tissue, so that its longest stretch, when wetted, is in the direction of the narrowest dimension of the print. (3) The arrangement on a piece of the temporary support (of size equal to the print to be placed thereon) of a second similar piece, or series of strips laid side by side, and cemented thereto: this second piece or series of strips being arranged so that the longest stretch when wetted is at right angles to that of the first-mentioned piece.

In preparing the temporary support, paper such as white demy is floated on a warm solution made as follows:—

| | |
|---|---|
| Gelatine, such as Coignet's | 1 part |
| Gelatine, hard, such as Heinrich's | 1 part |
| Sugar or glycerine | 1 part |
| Water | 20 parts |

In using this coated paper it is soaked in cold water until limp, squeegeed on to the blue or red carbon print (previously prepared on glass), allowed to become perfectly dry, and then stripped from the glass support by means of solution of hydrofluoric acid, about 20 to 30 drops of strong acid per ounce of water. It is then washed until free from acid, and applied, preferably under water, to the red or blue carbon print—that is to say, if the blue tissue was placed down first, we follow with red, or *vice versâ*. The whole is then removed from the water, excess of moisture is squeegeed off, and the second print quickly adjusted until registration is obtained. When dry, it is again stripped as before, washed, and applied in the manner already described to the yellow carbon print, and again allowed to dry thoroughly.

The temporary support bearing all three prints is now finally stripped, washed, and squeegeed down on the final support, which may be paper, wood, etc., coated with insoluble gelatine. When thoroughly dry, the whole is placed in hot water, and in a short time the temporary support can be removed, leaving the complete colour prints on the final support, which is then washed to free it from soluble gelatine.

This is the method which is found to answer well for small prints, or for prints in which the subject proper lies chiefly in the centre of the picture.

In practice it is found that paper treated with the gelatine solution as described when soaked in water stretches more in one direction than in the direction at right angles and does not return to its original dimensions when dried, so that each print applied to the temporary paper support, as above described, will not register so well in one direction as the other direction with the next or subsequent print to which it is applied. To obviate this disadvantage, it is advisable to cut the prepared paper so that when wet its longest stretch is across the narrowest part of the print to which it is to be applied. For example, if a print measures two inches by six inches, the temporary paper support should be cut so that its longest stretch when applied will be in the direction of the two-inch measurement.

When large prints, or prints with full details to the edges, are required, the following method is adopted:—When the soaked temporary paper support is squeegeed on to the first carbon colour print, we then squeegee on to the top of it another piece of paper, treated and soaked in like manner to the first, but cut so that its longest stretch will be at right angles to the lower or first piece of prepared paper. In place of this second paper, joined as above mentioned, it is also possible to utilise suitable cloth, such as thin muslin or calico, by adhering it in like manner. By doing so any subsequent stretching is minimised, whereby it is possible to obtain excellent superimposition.

It is not necessary that the second piece of temporary support should be of the same dimensions as the first, as for some subjects a strip, or two or three narrow strips, will serve the same purpose.

Such temporary paper supports could be manufactured or prepared ready for immediate use by joining two pieces of paper together with their longest stretches at right angles to each other. The adhering medium could be agar agar (Japanese isinglass), gum, or other colloid rendered insoluble in water by such a method as the addition of bichromate of potassium and exposure to light when dry, or simply gelatine left soluble or rendered insoluble by bichromate of potassium and light, or chrome alum.

For use, a piece of the combined paper is cut to the required size, soaked till limp, and its soluble gelatine surface applied to the colour carbon print as before described.

It is to be understood that the prepared temporary support is applied and stripped in the manner before described when the colour carbon prints are developed on glass, but if the colour carbon prints are on other supports, such as transparent celluloid and the like, then the treatment with hydrofluoric acid is omitted and the methods of the double transfer carbon process adopted.

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A French Colour Photography Competition.—The competition organised some time ago by the French Photographic Society attracted forty-one competitors. The committee in their report regret that many well-known colour workers should have refrained from taking part. Medals have, however, been awarded as follows:—Stereoscopic transparencies; Bronze medal, M. M. Hanus; bronze medal, Dr. J. Garel; honourable mention, M. B. Montefiore.

Scientific Section.—Silver medal, M. Dangles, of the Larieboisiere Hospital; bronze medal, M. C. Delval, of the Cochin Hospital.

Window Transparencies.—Silver-gilt medals, M. Leon Gimpel and M. Georges Henry (bracketed equal); silver plaque, M. Meys; silver medal, M. Jean Luce; bronze medal, M. Guinand; hon. mentions, M. E. Dolivier, M. J. Hulster, and M. d'Erville.

Lantern Slides.—Plaques, M. Adrien and M. Schulz (bracketed equal); silver medals, M. Georges Henry, M. L'Abbe Archambault, and M. Leon Gimpel (bracketed equal); bronze medals, M. Herve and M. Gatellier.

Studio Portraits.—Bronze medal, M. Adrien and M. Ch. Bonnefond. The judges were MM. Augrand, Balagny, Comte de Dalmas, A. Hachette, Jeuffrain, Monpillard, Dr. Papillon, Personnaz et Wallon.

# PINACHROME AS AN EXTRA SENSITISER OF AUTOCHROME PLATES.

(A Paper in "La Photographie des Couleurs.")

The attention of many amateur workers has been drawn to the possibility of reducing the times of exposure of Autochrome plates by employing a method of preliminary treatment of the plates in a sensitising bath. Recent articles in the press on this process have contained a number of recommendations, but I would lay stress here on the absolute necessity of a method which is both easy and certain.

In making experiments on the conditions of sensitising which would allow of photographing on the Autochrome plates, with the use of a compensating light-filter, or, at any rate, with a colourless screen, I had occasion systematically to study the action of various dyes on a special emulsion of these plates. My observations in this direction led me to confirm what had been previously noticed in connection with other rapid emulsions, and I will express, as shortly as possible, the general facts which will be found scattered throughout the numerous papers on orthochromatism.

The result of impregnation of the plate with a dye solution depends on the composition of the bath and on the conditions of using it. As regards the composition, apart from the specific effect of each colouring matter, it should be noted that immersion in a solution only partly consisting of alcohol (for example, two-thirds water and one-third alcohol) gives a lesser degree of sensitiveness than immersion in an entirely watery solution. Moreover, the addition of ammonia (say 1 per cent.) conduces to more intense, but less permanent, sensitising, and, lastly, the relative sensitiveness of red compared with that of blue is generally increased by increasing the concentration of the dye bath. The conditions of manipulation which affect the final result are as follows:—Time of immersion, rinsing, and temperature. Drying has very little effect providing that it is fairly regular. There is, for each concentration, an increase of the sensitising action with the time of immersion up to a maximum which is the more quickly reached the greater the concentration. The time of rinsing, which supplies the maximum sensitising, is found to decrease with the concentration of the bath, and, lastly, these "best times" of action also become less as the temperature rises. It would be easy to justify these general conclusions on purely physical grounds. It will be seen, in all cases, that it is fairly difficult, regularly to obtain a given sensitising action if the variable factors are not reduced to a minimum. For the photography of colours any process of panchromatic sensitising may be employed if it extends sufficiently into the red; the emulsion, in short, is exposed behind the trichromatic filters of the screen-plate, as also through the compensating light-filter. This latter supplies a variable factor which may be utilised in order to adjust, in every instance, the isochromatism which is necessary under these conditions. This, whatever may be the actual curve of sensitiveness of the emulsion used without a screen. But this adjustment of the compensating light-filter calls for a considerable degree of skill, and, for practical colour photography, a sensitising process is of value only if its results may be obtained constantly with sufficient degree of precision to allow of a good compensating light-filter being used once and for all.

In order to obtain this precision of result it is obviously of importance to employ only one dye in preference to a mixture. Among the various sensitising colouring matters pinachrome presents particularly favourable properties.[1] It gives the greatest colour-sensitiveness with the Autochrome emulsion as with other rapid emulsions, whilst the curve of sensitiveness allows of true isochromatic effect being obtained behind the colour screen with the aid of compensating light filters of extremely simple composition.

In order to supply grounds for this latter quality of pinachrome, I would refer to a previous article of mine on "Orthochromatisme Pratique," published in this journal last year.[2] There will be found reproductions of spectra which will supply the basis of a theory established on the ordinary doctrines of trichromy. But, in the field of reproduction in colours, I believe that we have everything to prove, and the Autochrome plate particularly should be the instrument which we can use for demonstration purposes. It is from this experimental point of view that I have referred to the observations in the previous article. As regards the reproduction of colours with the sensitised Autochrome plates, there is no more regular method of procedure than to compare the experiments with the result obtained on a plate untreated and exposed behind its normal filter.[3] It will thus be found that it is possible to obtain identical results either in the reproduction of colour-scales (in which should be included faint grey tones which very readily assume the predominant tint), or in making exposures of outdoor scenes, with plates sensitised with pinachrome under various conditions with a compensating light-filter adjusted to each case.

A few figures may be quoted which will tend to confirm the truth of this statement. After immersion for two minutes in an aqueous solution of 1/100,000 of the pinachrome bath, and washing for three minutes at a temperature between 60 and 65 deg. F., we obtained a proper degree of correction by using a filter containing .25 gm. of Filter Yellow K per square metre. Using a solution, again in water, of strength 1/200,000 for two minutes, but without washing, the correction was obtained by using a Filter Yellow K screen containing .30 gm. per square metre. Employing a sensitising bath of 1/500,000 for five minutes and without washing the compensating light-filter, should somewhat reduce the blue-green, and should therefore contain a little red. This may be secured by means of a combination of aesculine, tartrazine, and erythrosine—I will not give figures, since aesculine formulæ are largely misleading.[4]

It is thus found that sensitising with pinachrome extends a fair distance into the red, although spectroscopic tests show that its action stops at about 65 $\mu$, that is to say, distinctly in advance of the region of the visible spectrum colours. This result is not surprising, for there is nothing in common between the reproduction of colours and the reproduction of a spectrum. Moreover, it will be understood, without the aid of any theory, that there is no advantage in giving the plate considerable sensitiveness to deep red tones which it would render by uncovering the red-orange elements of the screen-plate, that is to say, by a tint which is entirely false.

All these considerations have led me to adopt pinachrome by itself in sensitising the Autochrome plates, and the facts which I gave in the article "Instantaneous Exposures on Autochrome Plates," published in 1909, would still appear to me as containing the best recommendations which can be made, had I not recently had the opportunity of disposing of one of the difficulties involved in their use—namely, the adjustment of the light-filter to the exact colour. This is an operation which requires considerable skill, even when working with a formula as simple as that containing only Filter Yellow K.

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[1] This is a product of definite chemical constitution. The commercial article is supplied by Meister Lucius and Brüning, Hoechst. Alcoholic solutions of 1:100,000 strength are supplied by M. Calmels, 150, Boulevard du Montparnasse, Paris.

[2] "La Photographie des Couleurs," April, 1910.

[3] The most certain process is, as stated recently by M. A. Paloxcsay, to use a stereoscopic camera in which two plates can be exposed simultaneously.

[4] Aesculine dissolves in sufficient quantity only in presence of ammonia, and the absorption of the screen depends chiefly on the quantity of ammonia retained at the time of cementing of the surfaces of the filter, that is to say, on the time of drying, on the temperature, &c.

The kind assistance of the learned inventors of the Autochrome plate has allowed of my studying recently a number of screens made in the ordinary way in the Lumière factory: of these there is one, among those regularly employed, which plays exactly the part of compensation suitable for the special degree of sensitising obtained with pinachrome. This is the screen made for use with exposures obtained with magnesium light. By using this special screen it is easy to adjust the sensitising action of the pinachrome so as to obtain correct results by daylight, with the advantage, at the same time, of reducing the time of exposure to one-quarter or one-fifth that which is ordinarily necessary.[5]

The following are some details of practical working which I now recommend in reference to the use of the special screen mentioned above. Sensitising is conveniently done by immersion of the plates for five minutes, at a temperature of 60 deg. F., in an aqueous solution of pinachrome, of strength 1 : 1,000,000, without subsequent washing. The following is the procedure:—Water is rendered slightly alkaline by addition of a minute quantity of ammonia, two or three drops of ammonia per litre. It is best not to use distilled water. This recommendation may appear paradoxical, but in this work it is often better to use ordinary tap water. The solution of pinachrome is made up at the time of use by adding 1 cc. of a 1 : 1,000 alkaline solution of the dye to a litre of water. This bath is poured into the dish in which the plates are to be sensitised, and these latter are then introduced and left for five minutes with constant rocking. The bath being extremely weak, there is no occasion to be economical in using the solution. For example, it is well to work with a tank in which the plates can be placed vertically, since this allows of a very regular action, and of a number of plates being treated together.

After five minutes' immersion the plates are withdrawn and allowed to drain by standing them simply against an upright box, or wall, placing their lower edges on a strip of clean filter-paper. After thus draining for two or three minutes, the face of each plate is wiped, and they are put in the drying cupboard. This latter is formed very simply from a closed light-tight box, on the floor of which is placed a dish containing strong sulphuric acid. The plates are stood, film outwards, against the sides of the box. If the box be kept in a perfectly dry state by charging it with a fresh supply of sulphuric acid the day before sensitising is done, the drying of the plates will take place very rapidly—in the case of four quarter-plates within an hour at a temperature of 60 deg. F. Drying by this method will always be satisfactory, even when the conditions or the temperature are less favourable, and there is, indeed, nothing to lose by allowing the plates to remain for several hours in the drying box. It may be added that in all this work absolute cleanliness is an essential condition of success, and one must avoid any contact with the emulsion throughout the process. Stains after sensitising are due either to contact with the plates, or in some cases to unequal action in sensitising or drying. Immersion in a vertical tank, draining and drying in an almost vertical position, reduce the occurrence of this species of defect to the minimum. One is practically certain, when working in the way above described, of obtaining, both with Autochrome and ordinary plates, a perfectly regular sensitising which is stainless and permanent.

It may, perhaps, happen that the first trial will show a want of correct compensation when using the screen above mentioned. It is impossible to avoid slight variations in the screen and in the method of making up the bath, but every worker should easily be able to obtain the results required if he will bear in mind the effects of such variations. A predominating yellow tint indicates too long an immersion, or too high a temperature. Predominating blue, on the other hand, is due to too short a period of immersion, whilst a prevailing reddish or orange tint points to too high a proportion of the dye, which should, therefore, be used in somewhat weaker solution. A prevailing green tint, on the contrary, points to too weak a bath. After one or two trials, anyone can easily ascertain the conditions which are most favourable to correct results.

The whole series of operations above described is not at all complicated nor tedious in practice. The material is very simple, and any amateur worker can readily carry out the process without the equipment of an elaborate dark-room.[6]

Indeed, he can work without a dark-room, for, as I have pointed out in treating of ordinary plates, the sensitising may be done on one evening, and the plates removed from the drying cupboard on the evening of the next day. The process would, therefore, appear to be readily at the disposal of amateurs working the Autochrome process. I think, however, that it is well to limit the application of the process to those cases where a shorter time of exposure is an essential factor to success, since there is inevitably a certain amount of risk in subjecting such delicate material as the Autochrome emulsion to additional processes. And choice may be readily exercised in this way, since the process conduces to the production of a plate of excellent keeping properties. Sensitising a freshly made emulsion was found to yield plates which, on exposure three months later, gave transparencies fully equal in purity and brilliance to those made on an untreated plate. This is an advantage which is not to be despised, the sensitising process yielding plates which may be afterwards exposed as occasion offers.

The gain in speed resulting from this extra sensitising is likewise of interest in Autochrome work by artificial light. I may mention in this connection the possibility of obtaining, on the pinachrome-treated plates by means of magnesium flashlight, a suitable degree of correction by the use of the green compensating filter manufactured by MM. Lumière for the use of the ordinary Autochrome in conjunction with "Photogenine" flash-powder. This screen may likewise be used when working with this same powder if the Autochrome plate be extra sensitised with 1 : 500,000 erythrosine solution. There is no need to insist further on details, since these branches of work are usually done in laboratories provided with the experimental facilities necessary for ascertaining the correct degrees of sensitising and the adjustment of the light-filter. It may, however, be useful to mention that an extra sensitising allows of the illumination, or the charge of flash-powder, being reduced to one-quarter.

J. Thovert.

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A collection of Autochromes, made by Miss Helen Messinger Murdoch, of Boston, U.S.A., was shown during last month at 80, Wigmore Street, London, W., and included a number of landscapes taken in Europe and North Africa. The most pleasing examples, however, of Miss Murdoch's art in Autochromy were portraits of ladies in which the introduction of a slight amount of diffusion, together with great transparency of the plate, produced some most charming and delicate portraits in colour.

Colour Photographs at the Royal Horticultural Flower Show.—One of the most striking of the exhibits at the big flower show, and certainly the most unusual, was that of Messrs. Kelways in the gallery, which consisted of no less than ninety-four Autochromes, illustrating the products of this firm of nurserymen. The photographs showed the gardens at various seasons of the year, and also many photographs of choice individual blooms. A notice stated that these Autochromes were produced in 1907, 1908, and 1909, and thus were the first application of screen-plates to this branch of business. Certainly Messrs. Kelways' catalogues, which are perhaps the most sumptuous of any issued by seedsmen, have been illustrated for some time past by fine three-colour half-tones made from such Autochromes.

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[5] No method of bathing will give a greater increase of speed to the Autochrome emulsion than 5 times, even with concentrated baths and considerable addition of ammonia.

[6] Do not forget, however, that these sensitised plates should be kept away from full light as far as possible, and if they are manipulated by the light of the "Virida" filter, they should be kept away from direct rays as far as possible.

No. 56, Vol. V. August 4, 1911

THE BRITISH JOURNAL OF PHOTOGRAPHY

MONTHLY SUPPLEMENT

ON

Colour Photography.

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# SUGGESTED METHODS OF DIRECT COLOUR PHOTOGRAPHY.

A Note in "Deutsche Photographen-Zeitung."

AMONG many investigators work has been done on a process which aims at employing coloured silver bromide, chloride, or iodide, the silver bromide, for example, being precipitated with the dye from a solution at the time of its preparation, or being subsequently dyed. The first to suggest this process and to experiment in this way, so far as I know, is H. Vollenbruch, who, as far back as 1907, was engaged in examining suitable colours. Basing his work on previous experience, he found that a satisfactory result could only be expected from such silver dyes by which silver bromide and dye were *simultaneously* precipitated from the parent solution. So far as I know, Vollenbruch has hitherto not published his results, but I owe my knowledge of his work to several personal communications. The principle which Vollenbruch has adopted is exactly that which has been discussed by Dr. R. Luther,[1] and subsequently by Dr. Fritz Kropf.[1] As regards the dye which can be used Vollenbruch states that it should fulfil the following condition:—The dye, on mixing its solution with one of iodide, bromide, or chloride, together with silver nitrate, so as to form a silver halide, should unite with these latter, and be completely precipitated from solution, the solution remaining colourless. Also the silver compounds of the dye, on washing, should yield no colouring matter in the washing water. Hypo must completely dissolve the silver dye compound left unreduced by the developer, the reduced and blackened silver halide should retain the colouring matter tenaciously in the hypo bath and washing water. That silver bromide which is dyed at the time of its formation and that which is subsequently dyed possess quite different photographic properties has been proved to me by my own experiments. Starting from a brief note of Vollenbruch's, I proceeded as follows:—I prepared the following stock solutions:—

| | | |
|---|---|---|
| I.—Ammonium bromide | 65 | gms. |
| Potassium iodide | 2½ | gms. |
| Water, distilled | 250 | ccs. |
| II.—Silver nitrate | 100 | gms. |
| Water, distilled | 250 | ccs. |
| III.—Auramine, Hoechst | 2 | gms. |
| Water, distilled | 500 | ccs. |

The coloured silver bromide emulsion may now be prepared in two ways.

In a small flask a mixture is made by red light as follows:—

| | | |
|---|---|---|
| Solution III. | 40 | ccs. |
| Solution I. | 30 | ccs. |
| Water | 100 | ccs. |

To this is added, a drop at a time, with vigorous shaking, 30 ccs. of Solution II., the whole well shaken, and then poured into a vessel containing about a litre of distilled water. It is then well stirred, and a small portion of the wash water brought out into daylight: it should be completely colourless. A test of the resulting silver precipitate brought into daylight showed an intense pure yellow colour. The wash water was renewed a further three or four times, and, finally, as much as possible poured away, so that the mixture left behind did not make more than 250 ccs. The vessel was now placed in hot water, and the temperature raised to about 30 deg. Then, in another vessel, 20 gms. of soft gelatine, which had been previously softened in water and pressed, were liquefied. The gelatine solution was mixed with the silver compound of the dye, shaken up in water, and, by vigorous shaking, a fine emulsion obtained. This was now filtered through wash-leather, and coated on to ordinary baryta paper, or ordinary photographic raw stock, and allowed to dry in the dark. This paper is referred to below as A.

In a second experiment I proceeded exactly as above, only without addition of the dye Solution III., in preparing the silver bromide. After the silver salt had settled and the greater part of the liquid had been poured away, 80 ccs. of Solution III. were poured on to the residue, the whole shaken vigorously for a few minutes, and then again allowed to stand. The solution was then decanted off and the now dyed silver salt washed several times by stirring up with frequent changes of distilled water. Finally, the silver compound was emulsified, as already described, filtered, coated on to paper, and the latter allowed to dry. This paper I refer to as B.

The following experiments showed that papers A and B are altogether different in their photographic properties. Exposed in the spectrum, A showed a strong maximum in the blue: a faintly visible action extended on one hand beyond H, on the other hand up to E.

In the case of paper B, treated and exposed in exactly the same way, the maximum of sensitiveness was towards G and H, with a strongly visible action up to K on one hand and D on the other.

Thus, plate A is chiefly sensitive to blue, whilst plate B has its sensitiveness chiefly in the violet, with a strong action into the ultra-violet in one direction and in the other into the red. If we now expose plate A under a negative, develop and fix, we obtain a black image on a yellowish-white ground: the yellow colour of the silver bromide thus almost completely disappears in the parts not exposed, the hypo and first wash water showing a yellow colour. Plate B, treated in the same way, shows more yellow in the high-lights: in this case also the hypo bath is coloured yellow, much yellow colouring being left in the lights of the picture. Plates A and B were now thoroughly washed, and both placed in a 6 per cent. solution of ammonia bichromate. After the plates had remained about 10 minutes in this bath addition was made, to 100 ccs., of 5 drops ordinary hydrochloric acid and 25 ccs. of Solution I. The black silver bromide image then commenced to bleach, and became invisible at about the end of 2 minutes. In the case of plate B the original image was no longer recognisable, whilst plate A, on the other hand, showed an image of yellow colour, which became more distinct after fixing out the silver chloride and thorough washing, plate B, on the other hand, showing no visible image.

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[1] "Colour Photography" Supplement. March 3, 1911, p. 17, and May 5, p. 40.

The foregoing experiments thus prove the correctness of Herr Vollenbruch's theory that a silver halide precipitate along with the dye is capable of retaining certain colouring matters throughout development, fixing, and washing. I am not aware how far Vollenbruch has since progressed with his experiments: he has been engaged by a photographic factory, and has naturally, therefore, not disclosed the results at which he has arrived.

Turning now to the bleach-out process, in regard to which the improvements which have been made hold out the hope that a useful result may be arrived at, it has occurred to me that it may be possible to utilise, in this process, the sensitiveness of silver haloid salts. There are various dyes which, when compounded with silver salts, acquire the property of rapidly bleaching in light: the bleaching effect, when once commenced, progresses in the dark by aid of soda sulphite, or bisulphite, baths. As an example of this may be mentioned the red orthochrome (Hoechst) dye, and there are likewise blue, yellow, green, and other dyes with similar properties: it may, perhaps, be found that these will be of service in the process.

E. Klein.

# THEORETICAL NOTES ON THE BLEACH-OUT PROCESS.

[The following is a condensed translation of an article in "Photographische Rundschau," in which the author, Dr. Kurt Gebhard, suggests certain lines of classification and certain precautions in following them, which may be considered by those interested in investigating the bleach-out process of colour reproduction.—Eds. "B.J."]

The bleach-out method of colour photography, as is well known, utilises the fading of colouring matters in the light. Whether a practicable printing paper may be prepared on these lines depends on the latter possessing a sufficient sensitiveness to light, of the sun or diffused daylight; on the possibility of fixing the result so as to protect it from further action of light, and, lastly, on the production of a correct colour reproduction. In the following article I will endeavour to discuss the present possibilities of these three factors from the standpoint of our present knowledge of the alteration of dyes in light.

### Rapid Bleaching.

The degree to which a very fugitive dye may be used depends altogether on the possibility of rendering it sufficiently permanent on the conclusion of the printing process, which point is dealt with in a later paragraph. Notable improvements have been made in this respect of late, so that dyes of a high degree of sensitiveness may be used. Still, this sensitiveness is by no means sufficient, and requires to be artificially increased. For this there are three chief methods:—

(*a*) Advantage may be taken of the important factor that, on exposure of the dye, products containing a greater proportion of oxygen (dye peroxide) are produced, and these, in the case of very many dyes, differ in colour from the original dye, and are relatively permanent. These dye peroxides are readily destroyed by suitable means, so that we have in them the possibility of a development of the printed pictures. Moreover, these dye peroxides can be artificially made and used as the raw material for the preparation of the sensitive colour film. There would seem to be a process in this case such as goes on in the ripening of gelatine emulsion plates.

A second change, which the dyes undergo in light prior to their final decomposition, may be likewise rendered of service. The dyes take up hydroxyl groups, many otherwise insoluble dyes thereby becoming soluble in water containing an alkali, such as soda. In such a development process as this there is the advantage of bringing up the picture in a bath and of removing from the film the parts of the dye affected by light. Other solvents might, of course, be employed according to the chemical nature of the dye. But just as in ordinary photography, where the amateur worker is the object of so much care, attempts will run in the direction of discovering a process which is as simple as possible in use, and one which requires only the most ordinary chemicals.

As in these cases the primary change of the dye by light—frequently quite unrecognisable to the eye—is employed, it follows that such processes will have the advantage of requiring very short times of exposure.

(*b*) Many dyes admit of being combined with other bodies forming compounds which are colourless, or show other distinctive properties, such as greater solubility. This form of chemical combination is termed "condensation," and such condensation reactions are readily promoted by light. The choice of suitable bodies depends upon the nature of the dye and the possibility of readily removing the substance from the film during the fixing process.

The action of anethol, so frequently used as a "sensitiser," should be attributed to condensation in this way, anethol being, moreover, a well-known carrier of oxygen. This brings us to:—

(*c*) Bodies which themselves take up oxygen much more greedily than the dye on exposure to light, and have the power of giving up this oxygen to the dye, decomposing the latter. Many bodies are known to possess this property, and the latest patent of Dr. Smith includes among them the substance thiosinamine.

Lastly, there is a series of substances which indirectly hasten the bleach-out process by influencing the somewhat complicated autoxidation process. Chemical considerations of a somewhat complex order would require to be entered into in explaining the mode of action of these bodies, and, therefore, I must be content to name one or two examples, namely, borax, glucose, and glycerine. In general, in the preparation of a practicable bleach-out paper, the introduction of separate substances is best avoided, since the bleaching action, rapid or slow, depends absolutely on the simultaneous action of all the factors in the case; it is well known that anethol can enhance the fastness to light of dyes under certain conditions.

### Fixation.

The proper fixation of the colour prints should be regarded as the most vital point in the bleach-out process. After-treatment with copper sulphate and the use of more complicated methods have both failed to produce prints which are really permanent. As copper sulphate, however, enormously increases the permanence of the dyes in many cases, it may be assumed that the dyes in question were not suitable for this treatment, or that the vehicle of the dyes obstructed the reaction. Further, there is the great drawback to copper sulphate that, in many cases, it appreciably alters the colour of the dye.

In fixing we require to remove the dye altered by light and afterwards to render the unaltered dye practically fast alike by suitable treatment. The removal of the altered dye requires to be done according to the alteration produced and the nature of the product formed. It will prove of advantage if a change merely in the solubility suffices to effect a separation of the exposed and unexposed parts of the dye. We need not concern ourselves as to whether the altered dye still possesses the character of the colouring matter, or whether it has been completely altered in constitution, or whether the resulting products are coloured or colourless—the chief thing is that the products should possess solubility different from that of the original dye.

A second possible method, though probably awkward in practice, would be to convert the exposed dye, by suitable treatment, into inactive and colourless products. Granted that there are great difficulties in the way of doing this satisfactorily: the colour tone and transparency of the unaltered dyes would be strongly affected by the white products. Removal of the products of exposure must, therefore, be regarded as an essential in every bleach-out method. The activity of the products of exposure in a chemical sense is well shown by some ot the latest results of Professor Kummell. By means of these products leuco bases of dyes (that is, reduced dyes) were re-oxidised.

As regards the removal of the altered dye and the fixing of the unaltered dye in one and the same bath, there would seem to be no theoretical objection to such a process, though experiment will show whether it can be carried out in practice.

### Printing.

We now come to the important and delicate operation of printing in the sun or by diffused daylight, and of obtaining a correct reproduction of colours. These two questions are intimately connected, and we may well treat of them together. In default of a knowledge of certain fundamental principles, an inventor can easily pursue a useless course, and the greater number of the mistakes made of late years are due simply to ignorance of these principles. This may be seen from a study of the many processes which have been recommended, and of the patents which have been taken out. In order to explain the fundamental laws on which the process is based, we should first look at the "law of absorption," on which the bleach-out process is based; but as this question has already been treated frequently, and at considerable length, I think it may be assumed to be sufficiently known. The practice of the bleach-out process has shown that things are not so simple as might be supposed from the law of absorption, and many anomalies are met with; there are, in fact, so many things which cannot be understood that in the end the worker may easily doubt the truth of the Draper law.

The reason of these apparent variations will be understood if regard be paid to the following:—Apart from a question of colour, we may disinguish between three classes of colouring matters: (*a*) Colouring matters which absorb chiefly rays of short wave-length, red, green, and blue, and are sensitive to these rays; (*b*) colouring matters which absorb chiefly rays of short wave-length, blue and ultra-violet; and (*c*) colouring matters which absorb almost equally rays of small and great wave-length.

Dr. Kurt Gebhard.

*(To be continued.)*

## MAKING ANAGLYPHS BY THE AUTOCHROME PROCESS.

(A Note communicated to the French Photographic Society.)

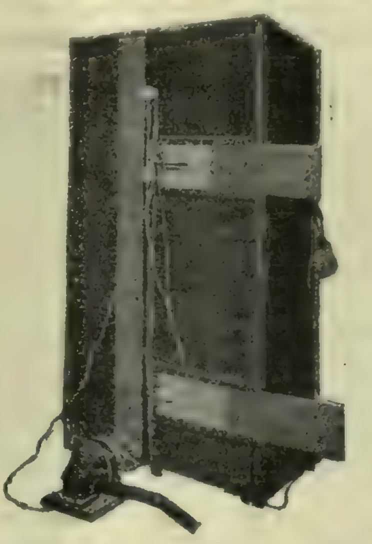
It is well known that the appearance of relief may be obtained (either by direct observation or by projection) by superimposing, on the same surface, a pair of stereoscopic impressions formed in pigmentary colours which are complementary to each other and by examining these superimposed images with a kind of two-colour lorgnette, the glasses in which cut out, for each eye, the image which it should not observe and allow the other image to be seen.[1] The method of preparing these anaglyphs, as they are called, which has hitherto been somewhat long and complicated, is reduced to a high degree of simplicity by the use of the Autochrome plate. Any screen-plate, in fact, supplies us with a most convenient means of superimposing two images in complementary colours. After having placed his apparatus facing the subject, in order to take a colour photograph in the usual way, the photographer moves it along a base parallel to the plane of the subject a distance of 3.25 cm. towards the left, then slightly pointing the lens towards the right in order to obtain the same subject on the plate. The subject having been once focussed, a few register marks are pencilled on the ground glass, and the lens being provided with a red screen, the first exposure is made. The apparatus is afterwards moved towards the right a distance of 6.5 cm., the normal separation of the eyes, and is then pointed towards the left, so as to cause the principal lines of the subject to coincide with the register marks. The same plate is exposed again, this time under a blue-green screen. The slide-past sets of filters, sold by certain houses, or readily improvised by the photographer himself, allow of the two exposures being made in rapid succession.

After development, and the customary treatment, two images are obtained overlapping each other slightly on the plate. On examining them with a pair of spectacles, formed by a red glass for the left eye and a blue-green glass for the right eye, a monochromatic image in relief is seen. It is very difficult to prepare screens exactly complementary and to obtain two exposures so balanced that, in the final result, one obtains pure black and white. Almost always there is a residual prevailing tint, but still I have found that when using the red-orange and green screens, commonly employed in trichromatic photography, the yellowish result obtained is by no means offensive to the eye. In preparing duplicates of these screens it will be found convenient to use the normal yellow compensating light-filter of MM. Lumière when working by daylight, and the screen prepared for "Perchlora" paper when employing this very convenient means of flashlight.

Leon Gimpel.

## A PROFESSIONAL AUTOCHROME STUDIO.

Although the Autochrome plate may now be said to be in established use for many commercial purposes of applied photography, its regular use for portrait work gains ground only with comparative slowness, doubtless in consequence of the fact that a colour transparency is a somewhat awkward thing for the owner to keep and show to his, or her, friends. Another reason has hitherto been the difficulty of obtaining sufficiently rapid exposures in the studio, and within the last year or two photographers, especially those in America and on the Continent, have resorted to the use of magnesium flashlight for this work. In the current number of the "Photo-Gazette" a short account is given of an establishment which has recently been opened in Paris, in the neighbourhood of the Rue Montmartre, by M. Gervais Courtellement, well known as the maker of a large series of Autochromes of subjects in the Near East. The new establishment includes a reception-room, which takes the form of an exhibition of Autochrome transparencies of portrait and landscape subjects of all sizes, from quarter-plate to 15 x 7 inches. From this exhibition gallery the visitor passes into the studio, which is designed exclusively for the use of flashlight. The installation for this latter is shown in the accompanying drawing, from which it is seen that it serves the double purpose of catching the magnesium fumes and diffusing the light. The back surface is formed of shutters, which are pushed back in order to introduce the charges of powder into cups placed within the apparatus, so as to give an efficient distribution of light and connected together, so that all



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[1] See the patent of M. Ducos du Hauron of September 17, 1895. "Bull. Soc. Fr. Phot," 2nd series, vol. xii., 1896, p. 473.

of them may be electrically fired. The front surface of the chamber forms a part of the wall of the studio, and consists of a semi-transparent fabric, which produces a soft illumination. An electric fan provides the means of drawing the products of combustion away as fast as they are formed. Suitable reflectors are used, just as in an ordinary studio, electric lamps being employed in focussing the subject.

The studio communicates with dark-rooms fitted with the most modern arrangements for the development of the Autochromes. Here also is installed a special apparatus devised by M. Gervais Courtellement for the duplication of the original Autochrome transparencies; his process allows of a number of duplicates being prepared.

Close to the reception-room is a projection theatre, seating 250 people. Here, upon a ten-foot screen, a constant series of Autochrome exhibitions is given by means of a bi-unial lantern fitted with arc lamps of 35 amperes. The complete arrangement of the theatre is designed for the representation of Autochrome colour projection at its best.

## Correspondence.

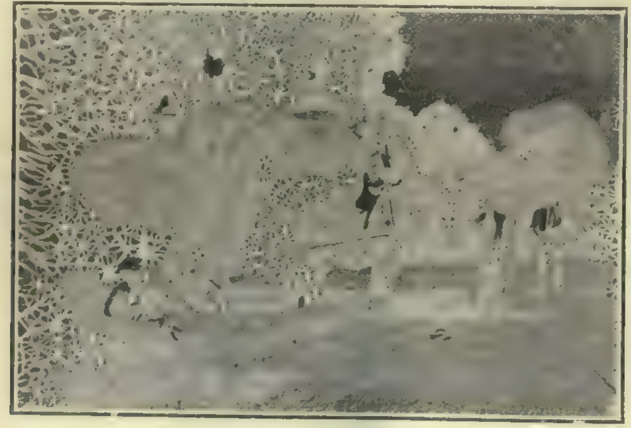
*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

### A CURIOUS CASE OF FRILLING WITH AUTOCHROMES.

To the Editors.

Gentlemen,—I enclose two plates and prints from two spoiled Autochromes, which, after two years' practice, are quite new to me as specimens of a mischief which has only slightly troubled me so far—frilling, if it is that. Plates of two supplies obtained at three months' interval this year suddenly behaved like this, and have stopped all work, of course. Lumière attributes them to over-great variation of temperature in the liquids and water used, and the photographer with whom I deal has successfully developed a companion plate to one which also is frilled. The plague comes on very rapidly after the first half minute of the final washing in every case, which was with water of same temperature as all the rest, being from bottles or jars which have stood hours side by side in the cellar dark-room, temperature averaging 61 deg., with only two or three degrees' difference above or below that.



You will observe the marked effect of the colour of the object on the result. The dull leggings of two men, and greens of trees, and the ends of the plate, but not the sides, are affected. The hay cart, its red wheels and shaft, reds and white of clothing and complexions, chestnut horse, dry grass field, are unaffected, and so in the other specimen, colour has a decided influence; the lady's skirt in this case is blue.

I shall be glad if you can throw any light on this. I used no chrome alum or other precautions against frilling. But is this what is known as frilling?—Yours faithfully,

July 29, 1911. W. J. Herschel.

[We think that the effects described by Sir W. Herschel are undoubtedly due to frilling, though it is a type of frilling that we have not met before. We reproduce a contact print made from one of the Autochromes to show the effect. This is, of course, a negative effect, the white star-like forms being black in the original, and obviously consisting of puckered-up film. It appears to us that it is a case of violent frilling that has been arrested very suddenly by the operator removing the plate from the solution. If left a moment longer the whole film would probably have left the plate. It is curious that the effect should apparently be confined to certain colours. Blues and pinks, browns, and bright greens appear to be exempt, while the worst effects seem to be in the dark shades. Possibly the frilling begins where there is the most silver deposit. The hot weather is, no doubt, the primary cause, and to prevent a repetition of the trouble we would suggest the use of formalin.—Eds. "B.J. Colour Supplement."]

## News and Notes.

A New Lecture.—Mr. H. Essenhigh Corke, F.R.P.S., of the Studio, Sevenoaks, announces that he has prepared a new lecture, entitled "Another Ramble Amongst Wild Flowers," illustrated with over 100 slides in direct natural colour photography. Mr. Corke's success as an Autochrome worker has been evidenced in previous lectures, as well as at numerous exhibitions, and those desirous of securing the above new lecture should apply to him at once for terms and vacant dates.

Developing Autochromes.—Autochrome plates (writes C. Willard Evans in "Camera Craft") may be developed in a tank, using the regular tank formula, reversing solution as given by the makers of the plates, and then re-developing in the original tank solution first used. I have used with most gratifying results the following formula :—

| | |
|---|---|
| Erogen | 55 grs. |
| Sodium sulphite (dry) | 80 grs. |
| Sodium carbonate (dry) | 80 grs. |
| Water | 40 ozs. |

Add about forty drops of a 10 per cent. solution of potassium bromide. The above requires twenty minutes at a temperature between 65 and 70 degrees. For two and one-half minutes developing in a tray, in the dark, I use :—

| | |
|---|---|
| Erogen | 50 grs. |
| Sodium sulphite (dry) | 300 grs. |
| Potassium bromide | 20 grs. |
| Ammonia (16 U.S.P.) | 100 minims. |
| Water | 10 ozs. |

In my hands, the above seems to give more latitude in the exposure than does the developer recommended by the makers of the plates.

Colour Prints.—The following announcement, under the heading, "Printing in Natural Colours—at Last," appears among the advertisements in our contemporary, "American Photography":—"The advertiser has invented the method for making any number of photographic prints, directly from negative, in natural colours. The process is, briefly, as follows:—One exposure of one dry plate and simple development; one exposure of printing paper, to be purchased from manufacturing company to be organised; simple development of paper, which may be in daylight. The plate process is almost as easy as ordinary negative making; and the printing process is less troublesome than printing and toning printing-out paper. All work now used in black and white photography, including portraiture, landscapes, scientific work, and copying, is suited to colour printing, the colours fully as natural as those in colour transparencies, which, so far, have not been reproducible. A modification of this process from same negatives suits chromo-engraving and chromo-lithography, and another modification suits enlarging and reduction in colours.

"Capital is required by the inventor for manufacturing and marketing the materials, which must be bought from manufacturer. Inventor will assign his several inventions to a corporation to be formed on any fair and moderate terms. The materials to be made do not deteriorate, are light and compact, and even at comparatively small prices, will pay a large profit over cost of production."

No. 57. VOL. V. SEPTEMBER 1, 1911.

THE BRITISH JOURNAL OF PHOTOGRAPHY
MONTHLY SUPPLEMENT
ON
Colour Photography.

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# IMPROVEMENTS IN THE MAKING OF REPRODUCED ENLARGEMENTS FROM SCREEN-PLATE TRANSPARENCIES.

(A Note in the "Photo-Revue.")

In a communication which I made to the French Photographic Society in June, 1908, I showed some reproductions on Autochrome plates of transparencies made on these plates. These reproductions, although they were not perfect, had been obtained by means of a triple-extension camera using ordinary daylight with a suitable screen. On the same occasion I showed a very bad enlargement (of two diameters) made in the same way and showing such degradation of colour and coarseness of grain as to prompt me to make the remark: "the best results are naturally obtained by reducing a larger transparency; as regards enlargement, it would be readily understood that it is impracticable to obtain interesting results in consequence of the considerable weakening of the colours and of the exaggerated grain."

In 1909 the periodical "Vulgarisation Scientifique" organised a competition in which a first prize of 1,000 francs was offered to the author of the best process, patented or otherwise, for obtaining duplicates of colour transparencies on other screen-plates. In taking part in this competition I adhered to the principle of using a triple-extension camera, but gave up the use of daylight, using instead artificial light for the sake of its much greater constancy. The results obtained were greatly superior to those made in 1908, and those interested in this question may be referred to the details of the method which have appeared in "Photo-Revue," of January 23 and February 4, 1910, in which M. A. Villain and myself have described the working methods respectively employed by us.*

At this time I confined myself to making reductions, or reproductions on the same scale, without attempting enlarging, but quite recently I have applied the same method to the production of enlarged copies.

A first enlargement to two diameters gave me very satisfactory results; the colours were almost as bright as those in the original, and the structure of the starch grain was not at all pronounced.

The idea then occurred to me of further diminishing the coarseness of grain, and at the same time securing greater transparency by taking advantage of other screen-plates supplied for colour photography.

My first experiments were made in enlarging an Autochrome on Omnicolore and Dioptichrome plates. As in these plates we are not troubled by the clumps of starch grains, they were found to supply, at enlargements of three diameters, pictures which were very even in texture and highly transparent. Enlargement having proved successful, reproduction same size should, *a fortiori*, give yet better results, and my first trials, which I am continuing at the time of writing, have confirmed this view. The mechanical screen of the two later plates combines readily with the starch grain of the Autochrome, and gives a copy possessing a new description of structure.

It is only in the case of the Autochrome that one can reproduce a transparency on a plate of like nature. In the case of the plates of mechanical structure diffraction fringes are produced when one seeks to use one plate for the reproduction of a transparency upon another, and this difficulty is experienced both in the camera and when working by contact. But if it is impossible actually to reproduce one Omnicolore on another, or one Dioptichrome on another, these two commercial plates may be employed with great advantage in reproducing Omnicolore transparencies on Dioptichrome plates and *vice versa*, since the makers of the Omnicolore have adopted an angle of screen-ruling of 45 deg. to the edges of the plate.

Screen-plates of a given make might likewise be used for copying purposes if the manufacturers would issue two different series, one with the screen structure parallel, and a second with the screen forming an angle of 45 deg. with the sides of the plate. One series would be used for making originals and the other for copies.

For the present, however, the following are the different combinations which may be employed in making copies either by reduction, same size, or enlargement:—

> Autochromes may be reproduced on Autochromes, Omnicolores, and Dioptichromes.

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* "Colour Photography" Supplement, April 1, 1910, and October 7, 1910, p. 75.

Omnicolores can be copied on Autochromes and Dioptichromes.

Dioptichromes can be copied on Autochromes and Omnicolores.

It is scarcely necessary to add that the compensating light-filter would vary with each combination, since it requires to be adapted, not only to the particular light-source employed, but also to the screen-filters and to the emulsions with which the plates are coated.

Leon Gimpel.

# THEORETICAL NOTES ON THE BLEACH-OUT PROCESS.

## II.

The different way in which colouring matters behave towards light allows us to diagnose the causes of a great number of failures and to choose from the colouring matters those which are most suitable for the purpose in view; for it is easy to understand that a dye will not be affected by rays which it cannot absorb.

I would further emphasise the fact that this classification of colouring matters according to their absorption power has nothing to do with the actual colour of the substances, nor with their sensitiveness to light, for a colouring matter of class *a*, for example, may be extremely sensitive when exposed to the action of rays of great wave-length, whilst it will not be affected by blue and violet rays. This is in opposition to the general view, according to which blue and violet rays will be the most active; practice shows that this is not always the case.

The difference of absorption power and the variation of sensitiveness according to the colour of the light which acts upon the dye depend entirely on the chemical constitution of the colouring matter. It is therefore necessary to know beforehand the chemical constitution of a substance in order to use it in the bleach-out process, since the constitution of a colouring matter influences not only the physical absorption of the light, but is also responsible, in a chemical way, for the change which the dye undergoes in light. Two examples may be cited as a guide to the classification indicated above. A yellow colouring matter belonging to class *b* will not undergo alteration under the red parts of the negative from which a print is being taken. As a result, therefore, in the print therefrom, we shall have it left in the red and yellow portions of the negative—that is to say, orange instead of red. A red dye belonging to class *a* will behave in a quite analogous manner: it will not bleach under the blue and violet parts of the original, so that in these portions the copy will be redder than the original. The colouring matters belonging to class *c* are alone utilisable for the bleach-out process, since they alone fulfil the conditions that the rays of the same colour are alone without action on a dye, and that in a mixture of three dyes the two others of different colour are destroyed.

The conditions are analogous for printing in the sun and by diffused daylight; colouring matters belonging to class *b* bleach only very slowly, or not at all, by diffused light, according as their absorption band corresponds to a more or less advanced portion of the spectrum in the blue, violet, or ultra-violet.

Thus, in order to avoid the necessity of printing only in the sun, recourse requires to be had to colouring matters of class *c*. In order that the colouring matters should be of service in the bleach-out process, they should not belong solely to class *c*, but it is nevertheless necessary that the elements which absorb the light should be capable of readily entering into reaction with oxygen, either directly or indirectly. We are able to divide the dyes which answer to this condition into two groups: (1) colouring matters which are readily destroyed by oxidation, and (2) colouring matters which react rapidly in presence of oxygen (forming peroxides of dyes), and which, therefore, frequently assume a different tint, but bleach afterwards very slowly.

Dyes of this second group have hitherto been accorded little importance in the bleach-out process, but this, as we shall see from what follows, is a greatly mistaken view.

In all the attempts which have been made to obtain a practicable bleach-out paper dyes belonging to the first group have been used, and with what success all those who have had the opportunity of seeing prints on bleach-out paper are the best judges. It should be recognised that these papers—the "Uto" paper of Dr. Smith, for example—have nevertheless given results, and one cannot expect better ones as long as one adheres to the result of bleaching only in judging of the intensity of the change produced by the action of light. The reason of this is as follows:—All those who have been concerned in a practical way with the bleach-out process have noticed that a blue dye, exposed under a scale of colours, bleaches more rapidly under a blue glass than under a yellow or red glass. This bleaching of the dye in the course of prolonged exposure under blue glass is perfectly clear, for an ordinary blue glass allows a very considerable quantity of "white" light to pass, but why should it not bleach, or why should it bleach only very slowly, under a red or yellow glass if it fulfils the conditions named above as regards absorption? In the first reaction which takes place with oxygen in presence of light there are formed, as we have already stated, peroxides of the dyes. These peroxides are formed in accordance with the law of absorption, principally under the influence of rays complementary in colour to that of the dye. Under this illumination the peroxides of the dyes are usually stable, but blue and violet light readily decompose them, and, at the same time, destroy the dye. These are questions of common experience in dyeing. In the bleach-out process, on the other hand, the action of rays complementary to the colour of the dye has only to be taken into account. As we cannot in this case count on the action of violet rays, it is necessary to destroy, by a suitable chemical treatment, the peroxide of the dye which is formed by the action of the complementary rays. If we repeat in this way the experiment mentioned above—that is to say, if we print for a time sufficiently short as to produce no noticeable bleaching, and if we afterwards develop by the aid of a suitable solution—the blue dye, which has been exposed under red and yellow glasses, is destroyed, whilst there is no change in the parts which have been exposed under the blue glass. We have referred above to this possibility of developing copies obtained by the bleach-out method.

We should here note that the value of researches on the bleaching of dyes, that is to say, those made from the point of view of the bleach-out method, is entirely fallacious when exposure is done, without the interposition of a coloured screen, by the light of an arc lamp rich in violet and ultra-violet rays. For the bleach-out process, on the other hand, what is most important to note is the modification which a dye undergoes under the influence of rays of colour complementary to itself.

When we examine the change which dyes undergo under the influence of light a striking analogy is noticed in that which occurs in the gelatino-bromide process. In one case, as in the other, there is produced a change which is imperceptible to the eye, but which can be recognised by the application of chemical reagents which show the change that has taken place.

As regards the choice of dyes and the substratum, if the strict observation of the points named above constitutes an essential condition of the practicability of a bleach-out process, it is of no less importance to pay regard, in the choice of dyes, to some other factors, the principal of which is the manner in which dyes behave towards one another. Obviously, it is not possible to use dyes which exert such action upon one another as leads to the formation of a precipitate, to modification of the sensitiveness to light, etc.; the choice of dyes likewise varies according as one wishes to follow one or other of the methods which have been indicated above, and the choice will be different in the two cases. The substratum should fulfil the following conditions:—(1) It should not form any "lake" with the dye. (2) It should retain, in a dry atmosphere, a sufficient amount of moisture: this moisture, in most cases, exerts an enormous influence on the change which the dyes undergo when exposed to light. (3) The dye, after exposure, should be readily removable from the substratum. (4) The substratum should allow of the developing and fixing solutions readily penetrating it, and should not offer any obstacle to the reaction of these solutions with the dyes. Among the various substrata, or vehicles, for the dyes, gelatine and agar-agar stand in this respect first.

When using dyes which have a tendency to pass from the substratum into the fibre of the paper, it becomes necessary to prevent this "migration" by applying an insulating film.

From what has been said, it is easy to understand the difficulties and complications which are involved in a process of such apparent simplicity as the bleach-out method, but it is to be hoped that our actual knowledge of the changes which dyes undergo in light will contribute to progress being made in this method of colour reproduction. DR. KURT GEBHARD.

# New Books.

A PORTUGUESE MANUAL OF COLOUR PHOTOGRAPHY.—We have received what we believe to be the first handbook of colour photography issued in the Portuguese language. The author, B. dos Santos Leitao, deals chiefly with the trichromatic processes of three-colour negative-making and printing, and assigns a leading place to pinatype as the means of preparing colour prints. The manual is issued under the title, "Manual Practice de Photographia a Cores Sobre Papel," at the price of 500 reis.

# Correspondence.

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*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

## A STRANGE CASE OF FRILLING WITH AUTOCHROMES.

To the Editors.

Gentlemen,—I should be pleased if I can be of any service to any-one troubled with Autochromes frilling or really blistering, as described by Sir W. Herschel.

I do not think the varying temperatures of solutions has anything to do with this class of frilling, as I got the same defects in cool weather, even after filling the sink with cold water, putting in all the bottles of solutions with trays and measures, leaving these overnight, and rising early next morning to develop. If the blisters did not start during second development they were certain to come on almost immediately after commencing final washing. They first appeared as tiny pimples, which quickly enlarged, and if washing continued the whole of the film would leave the glass.

Several boxes of fresh plates went one after another, although previously I had had no difficulty in this respect. I had almost despaired of ever overcoming the trouble, and was on the point of giving up Autochrome work, when hearing that a gentleman a few miles away worked these, I went over and had a talk with him as to the way he manipulated them. The outcome of it all was that I concluded that I must have a piece of flannel over the nose of the water tap to keep rust back, and also the C solution must be thrown away and a fresh lot made up carefully, seeing that all the permanganate was thoroughly dissolved before adding the acid. The gentleman advised me to use it at half the strength given in Lumière's instructions, which I did, and since then I have never had the slightest trouble with this blistering.

I do not now even know what caused it. It may be the particles of rust getting embedded in the film, then the C solution oxidising the iron and making inroads for water under the film. Or it may be the particles of permanganate, if care is not taken to thoroughly dissolve this. Also decomposition of the permanganate due to age might have something to do with it.

Messrs. Lumière recommend the permanganate being dissolved in half the amount of water and the acid put into the other half and keeping in separate bottles, and mixing equal quantities of each when required.

However, with these matters attended to, the trouble vanished, for which I was truly thankful. I shall be pleased to answer any further inquiry, and hope I have been of any little assistance.—Yours faithfully, GEO. L. AIREY.

Overdale, Fern Hill, Kendal.
August 4, 1911.

To the Editors.

Gentlemen,—I see in this week's "Journal" a letter in reference to frilling of Autochromes. As I have had a certain amount of experience in Autochrome work, have made something like 300, and some in 12in. x 7in. size, you can undoubtedly take Messrs. Lumière's explanation of our great variations of temperature as about correct. Everything may be up to proper temperature before development, but the trouble is during this extremely hot weather. The temperature gets up very fast in the dark room in the first development. At the finish of first development the temperature has risen something like to 70 and over, therefore by using the reversing solution at proper temperature that goes up slightly, and then, the development still being over the normal temperature, and, finally, the washing water may still be at about 60 to 65. I had the same failure last summer, and lost four half plates through developing in the extreme heat of the day, and, goodness knows, it has been a slightly different heat this year. The remedy is to develop early in the morning or rather late in evening, on days when there is a good cool breeze blowing. Since I took this precaution I have never had the failures as spoken of in the "Journal." I never use formalin or alum.—Yours faithfully, W. MARSHALL.

August 4, 1911.

P.S.—There is nothing in what is said about different deposits of silver. Why it is gone into this starlike form is when the Autochrome worker found that the trouble was coming he evidently stopped washing quickly and put up to dry.

[We do not agree with Mr. Marshall's postscript because, as a matter of fact, the frilling has only started where the greatest deposit exists. The suggestion of varying temperature also seems to be put out of court by the details given by Sir William Herschel in his letter. On the whole, Mr. Airey's explanation seems to be the more feasible, especially as we also have had cause to realise the necessity of avoiding grit in either the water or the reversing solution.—EDS. "B. J. Colour Supplement."]

To the Editors.

Gentlemen,—Referring to the case of Autochrome frilling illustrated in the current number of the "B.J.," it may interest you to know my experience of this same phenomenon. I have, unfortunately, had quite a number of Autochromes spoilt by this same defect. The last batch of plates that I developed I lost three out of five, one being a very fine sunset, which was quite perfect up to the final washing, when almost at the moment the water touched the film it became reticulated all over, and immediately left the glass, and this in spite of the fact that an alum bath had been used and the plate had been dried after reversal.

This effect is undoubtedly due to one or both of two causes, namely, the temperature and the softness of the water. Here in Birmingham we have Welsh water, which is very soft, and is liable to cause frilling, even at low temperatures, but when it is over 65 deg. Fah., which it has frequently been during this summer, it is almost impossible to prevent frilling, and in my case the trouble was exaggerated by the fact that the water came from a storage cistern in the roof, and was close on 70 deg. Fahr. For some time now I have made a practice of drying after reversal and at normal temperature. This seems to be a cure, especially if amidol is used for a second development instead of quinomet, but at the temperatures mentioned above I find the only way I can save them is to use an alum bath after every operation, and after the second development to place the plate direct into the alum solution before washing.—Yours faithfully, E. A. Biermann.

63 and 64, Ludgate Hill, Birmingham.

To the Editors.

Gentlemen,—With reference to Sir W. Herschel's case of Autochrome frilling, I have had several such cases, and, as far as I can judge, they were due either to plates having been kept too long, or to developer used for second development. I have developed Autochromes with solutions at 70 deg. to 75 deg. F. without frilling occurring; but the silver deposit was so soft that it was impossible to wipe the surface with a swab of wet cotton-wool.—Yours faithfully, Chas. E. Franck.

Shropshire Maltings, Shrewsbury.
August 7, 1911.

To the Editors.

Gentlemen,—We must thank you for bringing the nuisance of these Autochrome frillings under discussion. I will call them "puckerings" at present, because it is their appearance as pin points all about the plate, and not at the edges only, that constitutes the problem.

Your Kendal correspondent (G. L. Airey) correctly describes them as pimples; that is how they catch the eye, very soon after beginning the last wash, while frilling is spreading rapidly from the edges of the plate; and he is probably correct also in calling them blisters, though when dried their appearance under the microscope is more like puckerings, with a spiral tendency, pressed flat.

I have searched for evidence under the microscope of puncturation of the sensitive film, such as we do find of the grain film, where the well-known bright green spots occur. I can say with some confidence that the pimples do not originate in any actual breach of the film. Nor can I detect any sign of intrusive particles, such as rust of iron.* The pimples spring up very small and high, and, in drying, the film overfolds itself spirally. It looks much more like imbibition of water by the gelatine (if not actual transudation) than like rupture of any kind. I find no remnants of intrusive particles. Undissolved permanganate particles (we know the little imps!) can hardly be allowed a hearing after such simultaneous experiences; and I think this argument must also be held to apply to iron spots, though there is, of course, a connection between them and hot weather. Mains cut off for a few hours do foster rust, but in all my cases the washing water used had been standing in a stone jar long enough for subsidence.

Mr. Franck's suggestion that the plates were too old applies to my first failures, but not to later ones with plates good to September. A neighbour here tells me the same.

Mr. Marshall's objection to your general inference that the pimples appear where deposit is heavy, is that the plates were promptly dried. That is true, but the fact remains that they do start as you say, where deposits are heavy, and while wet. Their starting cause is the problem. As far as the evidence goes at present, I must admit that the great heat we have experienced is the only outstanding fact common to all the failures. I will ask you not to press my own data on that point rigidly. Mr. Marshall does give reasons which I have often recognised in the dark-room, and which are quite consistent with the data I gave. If the film is at a "critical stage" of softness, anywhere between 67 deg., say, and 70 deg., I would not answer for it that my precautions excluded risk. My room is small, a cool cellar; but the outer cellar often ranged to 70 deg., and dishes and baths were always moved into it for final development, and there washed in water from the dark-room jars. Variations due to such causes may be a more delicate matter than I supposed. If so, I hope Messrs. Lumière will be more explicit in their instructions. If it is a case of bad plates I hope they will say so.

There remains, after all, the intensely interesting question about the connection between local colour and the eruption of the rash. I enclose a drawing to illustrate it, as seen through a fair microscope, which shows definite small specks of silver* in the centres of clear transparent grains. I could draw other figures in which the better greens of shrubbery are exempt from attack, while the bluer patches are pimpled, the delimitation being just as decisive as here. I could draw, also, pale neutral areas, the seats of eruptions, in larger areas of dark shadows under eaves, where no pale could possibly be lawful. The meaning of this is, I think, that the puckerings and foldings of the film overlying one another (I cannot show it in my crude drawing, but I think you can follow me) have collected the bulk of the neighbouring film into their folds, which, you will have observed, are exceedingly black at their knots, and of varying blackness in their rays. This in-gathering is due, I think, to the mere foldings of the film as it dries. It looks as if the plague spot had actually dragged in the film and its contents towards itself, leaving the film so thin around it as to be almost free from particles of silver. This may go far to explain why the plague spots are always nuclei in a patch paler than the area outside it. But it does not touch the real problem, which is, why does the plague attack dark colours and spare light ones, all skies, all whites, many monochrome reds and blues?

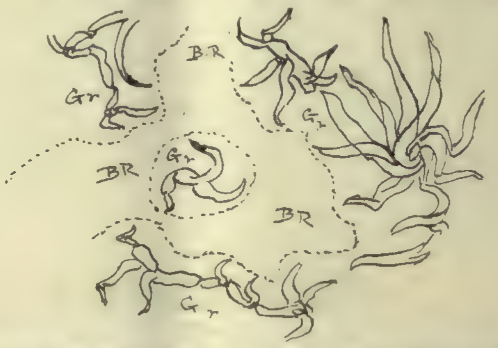

Fig. 1. showing delimitation of puckerings by the Blue-Red (mainly Blue) areas. The Gr areas (Green with a few red grains) are not to be mistaken for the familiar all-bright green spots due to punctures penetrating the grain stratum.

I incline to think that, taking it to be true that in hot weather the plague attacks areas where the deposit, after reversal, is large, and spares those in which it is small, we must suppose that the presence of atoms of metallic silver facilitates the passage of water through such an exceedingly thin film of gelatine as we have on our Autochrome plates, without actual rupture; the first effect being an actual upheaval, not swelling only, of the film, with the dragging effects above described, and the formation of star-like forms of deposit in drying. Mr. Marshall's remark about the prompt stoppage of the process will be very apt to this position.

A neighbour has just shown me puckered plates of this kind which had been treated with chrome alum as preventive; the result, however, being that the whole film (a quarter-plate) floated off, spread out to nearly double its area!

I have only to add that I have satisfied myself that the plague is confined to the sensitive film. The grains are quite unaffected. I much regret that want of appliances and other reasons make it impossible for me to run the mischief down with certainty, as I could wish to do. W. J. Herschel.

Warfield,
August 21, 1911.

Erratum.—In the article on the "Bleach-out Process," page 51 of the August issue of the "Colour Photography" Supplement, an error of translation occurred. In the last paragraph, the sentence commencing (a) should read:—Colouring matters which absorb chiefly rays of great wave-length (red—blue-green).

---

* I was very ready to accept the iron-rust theory as we had been suffering from iron in the tap water.

* I hear that these specks can be otherwise explained; but there they are.

No. 58 VOL. V. OCTOBER 6, 1911.

# THE BRITISH JOURNAL OF PHOTOGRAPHY

MONTHLY SUPPLEMENT

ON

# Colour Photography.

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# MAKING THE BEST OF UNDER-EXPOSED AUTOCHROMES.

[While strongly advocating the use of an exposure meter and of any other means to obtain correct exposure of Autochrome plates, Herr Ferdinand Leiber, in the current issue of "Photographische Rundschau," describes the following process as one which he has found of advantage in practice when dealing with Autochrome plates which have been greatly under-exposed.—EDS. "Colour Photography" Supplement.]

Two developing baths are prepared. For these a developer is chosen in which all detail comes up almost immediately when the solution is flowed over the plate, the latter then gradually gaining density. Thus, the choice will be made among such developers as metol or paramidophenol (rodinal). Into the first dish a weak developer, made up without bromide, is placed, for example, rodinal diluted with 50 times its volume of water. The second dish contains a strong preparation of the same developer, containing also a considerable proportion of bromide, for example, rodinal 1 part, water 5 parts, to each 100 ccs. of which are added 25 drops of 10 per cent. potass bromide solution. The under-exposed plate is allowed to remain in the first developer only so long as the worker is able to notice a steady progress in the development of the shadow portions. The developer is then thrown away, the plate thoroughly rinsed and placed in a dish of water. Whilst thus lying under water the plate is exposed to the light obtained by burning from 1 to 3 ordinary Swedish wood matches, at a distance of from 8 to 16 inches away. The plate is now placed in the second (strong) developer, in which, when looking down upon it, it completely darkens, but when examined by transmitted light shows indications of a positive image. The plate is allowed to remain in the second developer until the image is distinctly visible from the glass side. It is then fixed and reduced in a Farmer's solution consisting of 100 ccs., 1:4 hypo solution mixed with 5 ccs. of 10 per cent. potass ferricyanide solution. This latter acts almost exclusively on the bright parts of the positive, and thus clears up the transparency. After washing in the usual way the plate is dried and finally intensified with mercury. From this positive, in which all possible detail will have been obtained, a negative may be made by contact or in the camera, and is likewise cleared by means of Farmer's reducer or mercury intensification, or by a combination of the two. The process, it will be seen, is a somewhat troublesome one, but, employed with care and after some experience, allows of results being obtained which would be impossible by the ordinary process of development.

The principle of the method may be stated as follows:—When treating the plate with the weak developer a negative is obtained, the silver deposit of which rests entirely on the surface of the film. On exposure of the plate to light the under-layers of the plate are most strongly acted upon where there is least protective silver deposit, that is to say, in the portions representing the shadows of the original, whilst in the parts representing the high-lights of the original less light can penetrate, and therefore the chemical effect on the film below is less. As a result, on the second development, there results a positive which is much stronger in contrast than the negative first developed in consequence of the much more active development. The first negative image still remains on the plate, but is so slight in comparison with the positive that it forms only a veil over the high-lights of the latter, and, on application of the Farmer's reducer, is almost entirely removed, whilst the positive lying below remains almost unaffected. The results which the process allows chiefly depend upon the capacity of the positive image for chemical treatment by reduction, intensification, etc., and though the process cannot claim to yield results comparable with those of correct exposure, yet it can frequently be used in cases when, before the plates are actually developed, it is found that great error has been made on the side of under-exposure.

FERDINAND LEIBER.

# THE CHOICE AND PREPARATION OF COMPENSATING LIGHT-FILTERS FOR THE AUTOCHROME PLATE.

(A Paper in "La Photographie des Couleurs.")

LIGHT-FILTERS of the kind which are the subject of the present paper consist, as a rule, of a film of gelatine coloured with one or more aniline dyes, and absorbing a certain portion of the rays which fall upon them. By means of the spectro-photometer we can determine the degree of transparency of the colour film for rays of a given wave-length. The spectro-photometer, as many readers of these lines will be aware, differs from an ordinary spectroscope in the fact that its slit (collimator) is divided lengthways into two separate slits, with the result that two separate spectra from the same light-source can be observed simultaneously. Before commencing a series of measurements a sheet, or plate, of the dyed gelatine is placed in front of the lower slit of the apparatus. The upper slit is covered with a corresponding layer of gelatine, but without the dyes, in order to allow for the absorption of the gelatine itself. The measurement of the different intensities is made by increasing the width of the slit of one of the collimators: the reading of the intensities is expressed in terms of the thread of the micrometric screw, or of the width of the slit. If, for example, the width of the lower slit, that with the coloured gelatine, is $m$ mm, whilst in order to obtain the same intensity of spectra it becomes necessary to make the width of the upper slit $p$ mm, it is evident that the intensity of the rays of $m$ is reduced by the coloured glass to the intensity $p$, since the intensities of the two spectra are proportional to the width of the slits.

The ratio of the intensity of the light transmitted by the film to that of the incident light is herewith the "transparency" ($t$) of the coloured firm.

$$t = \frac{p}{m}$$

For example, if for a certain part of the spectrum we have m = .5 mm, and p = .2 mm, the "transparency" of the coloured film towards these rays will be—

$$t = \frac{.2}{.5} = .4$$

that is to say, only 40 per cent. of the incident light is transmitted. If we have a film of coloured gelatine containing a given quantity of dye per square metre, we can find its transparency for certain rays

$$t = \frac{1}{n}$$

If we superimpose several films of this coloured gelatine, each fresh film will reduce the light transmitted by the previous film $\frac{1}{n}$, that is to say, two films will reduce the intensity to $\frac{1}{n^2}$ three films to $\frac{1}{n^3}$, and so on, or with $z$ films the transparency will be, $t = \frac{1}{n^3}$. Taking the logarithms of each side of this equation, we have—

$$\log t = z \log n$$

or

$$2 = \frac{\log^t}{\log_n} = \frac{\log^t}{\log \frac{1}{n}}$$

By means of this equation we can find the number of films (each of transparency $1/n$), which require to be used to a form of film of transparency $t$.

The quantity $\frac{1}{n}$ of the film can be chosen at will; as a rule, $\frac{1}{n}$ is made equal to $\frac{1}{10}$. The equation then becomes

$$z = \log t$$

For the construction of absorption curves these quantities are set out on ordinates at points corresponding to a straight line on which is a scale of wave-lengths. In order that these curves shall represent the visual impression, the scale should be so chosen for the quantity $z = \log t$, so that the height of the ordinate $z$ of a film of transparency $t = 1/10$ is practically equal to a sixteenth of the distance between the rays C and G of the solar spectrum on the axis of the abscissæ.

This apparatus must be used only for experiments in the visible parts of the spectrum. For the violet rays, which are of extremely small visual intensity, such measurements are very difficult, whilst in the case of the ultra-violet rays they cannot be made at all. In this case we have recourse to the spectrograph, that is to say, we photograph the spectra of a given source of light with and without the coloured film in front of the slit, and determine the quantities $z = \log t$ for the two cases by means of any convenient density-measuring instrument. Drawing $z_2$ determined for the spectrum photographed through the coloured film from the quantity $z$, found for the spectrum photographed directly, we obtained the quantity $z$ representing the absorption of the dye. But as the laws of densities in photographic plates are not perfectly known, this process can only give results which are approximate and always open to suspicion.[1] The quantities found by one or the other process, and determining the degree of transparency of the coloured film, apply equally in the case of the prismatic and the diffraction spectrum. The coloured film absorbing, for example, one-half of the red rays up to the wave length 600 to 610, will reduce the intensity of this zone in the two spectra to one-half, that is to say, $t$ in both cases will be ½.

The screens employed for photography are not of very deep tint, and hence the reason for taking account of the effect of coloured gelatine. Baron von Hübl, for example, takes .1 and .8 gm. of dye for each square metre of light-filter. Superimposing these films of gelatine he obtains screens containing .2, .4, and .8 gm. of dye per square metre. We have prepared films containing .025 and .1 gm. of dye per square metre, and by superimposing these on one another have prepared screens containing .12, .175, .2, .225, etc., gm. of dye per square metre.[2] We will explain in a later paragraph the method of preparing the gelatine films containing a given quantity of dye.

### Yellow Light-Filter for the Autochrome Plate.

Daylight, white as it is to our eye, is extremely variable spectroscopically. The spectrograph shows us a great difference between the direct light of the sun and that diffused by a clouded, or unclouded, sky. The colour effect of objects illuminated by daylight varies, however, in comparatively small degrees. The three-colour screen of the Autochrome plate, in conjunction with the light-filter of MM. Lumière, gives results which are satisfactory in practice whatever the quality of the daylight. Since the colour-sensation experienced by the eye is largely subjective, the colours of the Autochrome appear to us, in the majority of cases, perfectly correct.

---

[1] Spectro-photometers are actually constructed for the visual examination of ultra-violet rays by means of a fluorescent screen. The dispersing prism in this case is one of quartz, but the apparatus is not very convenient in use.

[2] The figures inscribed above the curves in the figures herewith show the quantity of dye per square metre of screen.

When the sun is at the zenith the ray of light perpendicular to the earth loses 9 per cent. of its red rays and 49 per cent. of the violet rays. As the sun falls to an altitude of 35 to 40 degrees the thickness of the atmosphere is greater and the absorption becomes 15 per cent. in the case of the red, and 75 per cent. for the violet. A little before sunset the light loses, in traversing the atmosphere, almost 100 per cent. of violet and 45 of red. The light-filter prepared by MM. Lumière is evidently designed for use in average light, and hence it is possible to prepare new filters more particularly adapted for a given description of light. At the end of this article we give formulæ for a filter superior to that of Lumière for direct sunlight, and especially for landscape photography.

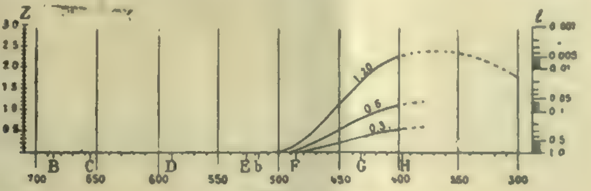

Fig. 1.

Filter Yellow K.

The curve of absorption of the Lumière filter, according to the measurements made in the spectro-photometer, is shown in Fig. 8. A slight and even veil covers the whole extent of the spectrum, reducing its transparency very slightly. This is the absorption of the glasses and the gelatine itself; in order to obtain the absorption of the dyes we should subtract these absorptions of glass and gelatine, which is done in the dotted line shown in the figure. For obtaining absorption, such as that shown in the diagram, the most varied dyes may be employed. We can take, for example, a combination of pheno-saffranine and tartrazine. In comparing the absorption curves of these dyes (according to the height of the ordinates *z*) with the curve of the screen, we see that it is necessary to use the first dye to the extent of .017 gm. and the second of .2 gm. per square metre of filter. As tartrazine only partially absorbs ultra-violet rays we add to it a certain quantity of aesculine, about 4 gms. per square metre.

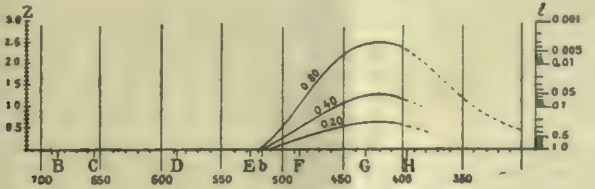

Fig. 2.

Tartrazine.

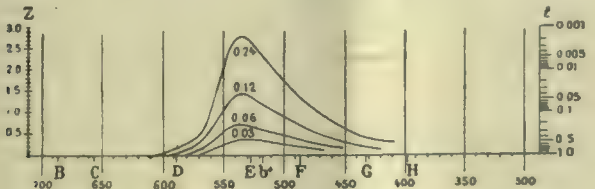

Fig. 3.

Pheno-saffranine.

The same absorption curve may be obtained by taking, for example, rapid filter yellow .6 gm. per square metre and adding to it, in place of the pheno-saffranine (which is not a very permanent dye) a more stable colouring matter, such as rouge solide D (echt rot D) to the extent of .07 per square metre. We thus have two quite different formulæ:

1.—Tartrazine .2 + pheno-saffranine .017 + aesculine 4.

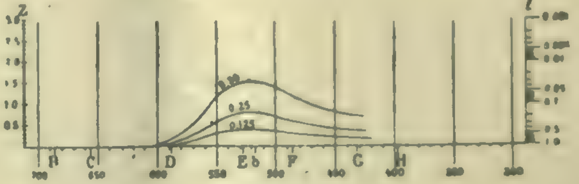

Fig. 4.

Ponceau, cryst.

II.—Rapid filter yellow K .6 + rouge solide D .07.

In practice it is found that these two screens give equally satisfactory results.

The two examples explain the method which should be followed in designing new formulæ for screens. It is possible to calculate with sufficient accuracy the necessary quantities of the different dyes, but the formula should invariably be prepared and tested by photographing suitable subjects. A general recommendation is to make a series of tests by photographing on an Autochrome plate a scale of grey neutral tones. We found, however, that this procedure is unnecessary: the Autochromes are intended for reproducing all the colours of nature and not preferably neutral tints. As the screens are to be used for photographing colours it is more natural and agreeable to make the test by photographing a coloured subject, such as foliage, or flowers.

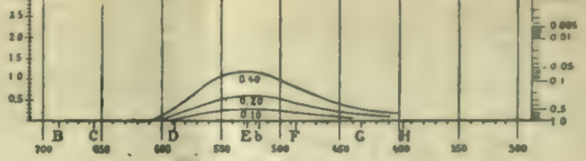

Fig. 5.

Solid Red.

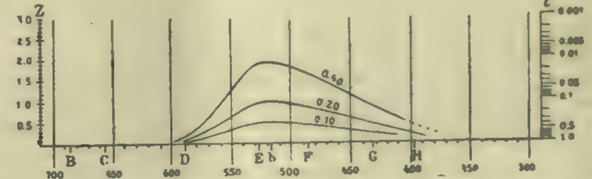

Fig. 6.

Filter Red I.

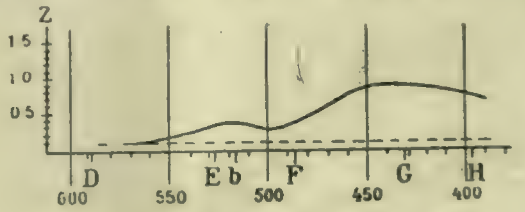

Fig. 8.

Lumière Filter (the Author).

Alexandre Priléjaeff.

(*To be continued.*)

## A NOTE ON MAKING PHOTO-MICROGRAPHS OF COLOUR SCREEN-PLATES.

In a recent issue of "Photographische Rundschau" Herr H. Hinterberger publishes the following notes on the making of photo-micrographs of colour screen-plates, under conditions which shall ensure the tone-correct reproduction of the colours of the elements.

In making photo-micrographs of the very small structure of a colour screen-plate, it is necessary not only to obtain correct reproduction of the form, but also differentiation of the colours: each colour must be reproduced in a different tone value. This can be done in various ways. For example, assuming always that we are working by electric arc light, we may use one of the "Chromo-Isolar" plates without any light-filter, and so obtain, in our final positive print, the orange portions of the screen as dark patches, the green units in medium density, and the blue-violet as very bright, since the "Chromo-Isolar" plate possesses small sensitiveness to orange, whilst the blue-sensitiveness, when no filter is used, is considerably greater than that of green.

If, however, we use a panchromatic plate, such as that of Lumière, in conjunction with the Zeiss green filter of 4 mm. thickness employed in photo-micrography, we then obtain the green as very light, the red as dark, and the violet as black. Other variations may be obtained by the use of the light-filters customarily employed in landscape photography; in this case it frequently happens that two of the colours are reproduced of the same density, whilst only the third is obtained lighter or darker.

Thus, in working by one or other of the two first-mentioned methods, we have obtained a differentiation of the colours without, however, having reproduced the colours of the screen-plate in their correct monochrome values; whilst by indiscriminate use of the light-filters employed in landscape photography we have not even obtained the requisite differentiation.

The desired end, therefore, is to obtain differentiation of the three colours in correct monochrome values, and these cannot be obtained by the above methods. There is not a great degree of difficulty in the selection of a plate; we require one of the orthochromatic variety, which shows sufficient sensitiveness to orange in comparison with its sensitiveness to green. This being the case, we then have to consider at present the action of the blue-violet and reducing to the requisite degree the action of the green in relation to the orange. The whole crux of the matter, therefore, rests on the selection of a filter. This latter is best prepared for photo-micrographic work by the use of colour solutions, which can be held in the customary glass cells and so conveniently introduced into the optical system. These liquid light-filters may be conveniently prepared of different degrees of depth, and the absorption of the light thus undertaken to a nicety. My first experiments were carried out with the so-called "Colour" plate, possessing considerable sensitiveness to orange, and using aurantia solution as the light-filter. The cold saturated solution of aurantia in water, however, cuts out too much green, thereby reducing the action of the green and blue-violet almost equally, whilst orange acts almost like white light. On mixing a saturated solution with an equal part of water it still lets through too much blue and violet. The best result was obtained by using a mixture of two parts of the saturated solution with one part of water; yet this likewise left a considerable reduction of the blue-violet and a slight weakening of the green to be effected.

I next turned to the dyes of the Hoechst factory, from which I was advised to select for my specific purpose the H naphthol-orange. This dye has proved to answer excellently for the purpose. In making up the solution an error was committed in using ordinary tap water for the purpose, a milky precipitate being produced by the lime in the water. Also, this dye should not be used too concentrated, since it then forms an almost monochromatic filter, reducing the effect of the other colours too strongly. The concentrated solution should be diluted with about three parts of water, using a cell of 7 mm. internal thickness.

The dye has also the same defect as aurantia—namely, when in strong concentration of reducing the green too strongly, and in dilute solution of cutting out insufficient of the blue-violet. My efforts were, therefore, directed, first, to cut out the blue-violet efficiently, and for this purpose I employed another dye—namely, the rapid-filter yellow of the Hoechst works—the absorption by which of the blue-violet and ultra-violet rays is well known. The first experiment with a very strong solution gave a negative in which the blue-violet parts were almost completely glass clear, the orange and green incorrect in tone, since, in the positive, the green was brighter than the orange. A little consideration led me to employ a combination of naphthol orange with rapid-filter yellow, and I have used this mixture with the most satisfactory results in making photo-micrographs of the new German Farben films. The solutions used were as follows:—

Cell I.

| | |
|---|---|
| Naphthol orange-saturated solution made in distilled water at ordinary temperature | 1 part. |
| Distilled water | 16 parts. |

Cell II.

| | |
|---|---|
| Rapid-filter yellow | 1 part. |
| Distilled water | 10 parts. |

Although these results, in consequence of their quite special application to photo-micrographic exposures, of the above-named colour screen will perhaps only interest a few workers, yet the combination of dyes, which has here been found best, may also prove of service on other occasions. Thus possibly in preparing monochrome reproductions of exposures on Autochrome, Dufay, and other screen-plates such a filter as this may be of service, since such reproductions, on the ground of expense, are frequently preferable to those in colour on the sensitive screen-plates.

H. Hinterberger.

# New Books.

"Farbenphotographie mit Farbrasterplatten." By Dr. Mebes. Bunzlau: L. Fernbach.

In this volume, which is a re-edition and very thorough revision of a work on the same subject issued about two years ago, the author deals in the most orderly and comprehensive manner with the production of colour prints and transparencies by the screen-plate method. It appeals to the comparatively small class of reader who is interested in the methods of manufacturing colour screen-plates and in the theory of their use, and also to the much larger circle of workers to whom the practical methods of working the various screen-plates on the market are of prime interest. Dr. Mebes has very well arranged his text so that the reader of the latter class can obtain the information he seeks without the necessity of studying the technical details involved in the commercial production of the plates and without burdening his mind with the debatable matters of historical priority in the invention of particular forms of screen-plates. The table of contents very clearly indicates the chapters in which questions of manufacture and those of practical manipulation are respectively dealt with. In the chapters devoted to the historical development of screen-plate methods, Dr. Mebes shows himself an omnivorous reader of the literature of his subject, and perhaps the only duty which, as an historian, he does not fully discharge, is a sufficient indication of the actual success achieved in practice by the methods which he describes from patent specifications and other sources. The reader who in future years may study his pages will probably be led to form an erroneous view of the relative practicability of the screen-plate methods of the past few years.

In the chapters which deal with practical points in the working of screen-plates, the author quotes copiously from well-known Autochrome and other workers as regards the lighting of the dark-room, the selection of apparatus, the choice of formulæ for compensating light-filters, and as to methods of calculating exposure. His habit of giving a reference to the original source of information is one which greatly enhances the value of his work. He deals at length with methods of development, both of the Autochrome and other plates, and includes a most useful chapter in the form of a list of the commonly occurring failures with remedies or preventives therefor. Expedients for the Autochrome worker when on tour occupy another chapter, whilst methods of viewing screen-plate transparencies and projecting them to the best advantage are the subjects of the two succeeding sections. Stereoscopic photography on screen-plates, the use of the plates in photo-micrography, and the preparation of reproductions of the transparencies on other plates and on paper conclude this most comprehensive handbook.

No. [illegible]. Vol. V. November 3, 1911.

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ON

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# THE CHOICE AND PREPARATION OF COMPENSATING LIGHT-FILTERS FOR THE AUTOCHROME PLATE.

(A Paper in "La Photographie des Couleurs.")

## II.

Following the issue of the Autochrome plates many authors have suggested formulæ for light-filters. Baron von Hübl, in a handbook on the Autochrome process, states that he has succeeded in preparing a good filter by colouring a gelatine plate with filter yellow K with the addition of a small quantity of the dye "Scharlach rot, blue tint." Almost the same formula is adopted by Dr. König, of the Hoechst works, who recommends the filter yellow K with the addition of "kristall ponceau."[3] A more precise formula has been given by Dr. Hauberisser, in the "Chemiker Zeitung," of 1908. He proposes to colour the gelatine-coated glasses in a solution of 9 parts of filter yellow K and 1 part of filter red.[4] The intensity of the staining is determined by observation with the eye. This process is very convenient, but it does not give constant results. It may be used, however, in order to determine the relative quantities of red and yellow dyes. These proportions can vary considerably, and on this point it may be of interest to quote the results of von Hübl's experiments, as set forth in the following table :—

| — | Solution of gelatine 1 : 15 | Solution of tartrazine 1 : 500. | Solution of pheno-saffranine 1 : 7000. | Solution of aesculine[5] 2 : 100. |
|---|---|---|---|---|
| Normal filter ... ... ... | 40 ccs. | 10 ccs. | 10 ccs. | 20 ccs. |
| Filter for Autochromes of rose tint ... ... ... ... ... | 40 ,, | 10 ,, | 13 ,, | 20 ,, |
| Filter for Autochromes of greenish tint ... ... ... ... | 40 ,, | 10 ,, | 7 ,, | 20 ,, |
| Filter for Autochromes of bluish tint ... ... ... ... ... | 40 ,, | 8 ,, | 10 ,, | 20 ,, |

The coloured solution is flowed on to flat plates, which are accurately levelled in the proportion of 8 ccs. per square decimetre of surface. For the reproduction of subjects of great contrast a little more should be taken of the solution, say 9 ccs., giving a deeper screen. From the table it will be seen that for 1 part of the red dye one may take from 11 to 20 parts of the yellow dye.[6] If a screen which is not exactly correct be used certain colours will be modified.

If the quantity of red be increased in a screen, as for example in the "rose-tint" formula, by taking, say, 13 ccs. of the phenosaffranine solution in place of 10 ccs., we obtain colour plates in which the tones tend towards red, suggesting the rich golden hues which many objects obtain in direct sunlight a little before the hour of sunset and when the atmosphere is largely charged with dust. The same results may be obtained by somewhat modifying the yellow screen of of MM. Lumière. For this it is only necessary to cement on to this screen, by means of Canada balsam, a gelatine-coated glass, very feebly dyed with a solution of a red colouring matter, such as kristall ponceau, filter red, rose Bengal, etc. Recently von Hübl has himself stated that the above formulæ were not sufficiently practical, and he recommends a mixture of filter yellow K and rouge solide D (echt rot D), these two dyes being highly permanent. The formula stands thus.[7]

| | |
|---|---|
| Filter yellow, 1 : 100 | 6 ccs. |
| Rouge solide D, 1 : 1000 | 7 ccs. |
| Gelatine, 8 : 100 | 57 ccs. |

The coloured gelatine may be coated on to flat glass plates in the proportion of 7 ccs. per square decimetre. In this screen we then have .6 gm. filter yellow and .07 gm. rough solide per square metre. By varying the quantities of the two dyes the results may be modified at will.

---

[3] According to our experiments 10 parts of filter yellow K should be used for from 1 to 2 parts of ponceau cryst. Fairly good results are obtained since filter yellow K absorbs the blue-violet and ultra-violet.

[4] This combination has given us good results ; therefore, according to our experiments, but little red should be used, about 1 part to 12 parts of yellow. These figures are only approximate.

[5] Dissolve, immediately before use, ·4 gm. aesculine in 20 ccs. water, adding a few drops of ammonia. This solution rapidly oxidises, becoming brown. It should be used always freshly made.

[6] We have not been successful in preparing perfect screens from Baron von Hubl's formula.

[7] This formula has been previously published by Dr. Winter, a colleague of Baron von Hübl, but containing a clerical error.

M. Thovert has published a formula for screens which is very suitable for Autochrome plates.

| | |
|---|---|
| Gelatine solution, 5 per cent. | 24 ccs. |
| Filter yellow K, 1:100 | 4 ccs. |
| Erythrosine, 1:100 | 3 to 4 ccs. |

This solution is used in the proportion of 5 ccs. per square decimetre. Thus, in this, we get practically .68 gm. filter yellow K per square metre of screen, and 1 part of erythrosine to 30 parts of the yellow, a proportion which is probably not sufficient. We have not, however, verified M. Thovert's formula.

The screen which we call "normal" is equivalent, as regards results, to the Lumière filter. While we have so far considered it as an ideal screen, it is not sufficient in all cases. Frequently one would wish to have a deeper screen absorbing more of the blue. Such a screen is particularly necessary for objects of great contrast. When using the Lumière filter one cannot always obtain detail in the foliage while retaining clouds. The use of a deeper screen is indicated in such cases as this. One can prepare it by flowing a little more of the dyed gelatine solution on to the same area of glass. A deep screen of this kind allows of greater departures from the correct exposure. We have in mind particularly over-exposure, since it absorbs a greater part of the blue rays. As may be seen from its curve of absorption, the Lumière filter shows a minimum of absorption from the rays *b* to F of the spectrum (blue-green rays). By increasing the absorption in this region one can considerably improve the reproduction of colours, as shown by an English photographer, Mr. Colin Bennett. None of the dyes mentioned increase the absorption between the rays *b* and F. Mr. Bennett recommends for the preparation of the screens the metanile yellow of Grübler, which has a strong absorption in this part of the spectrum. He has not given the exact formula for a filter for the Autochrome plate. Experiments which we have made with this dye[8] have shown us that it is possible to prepare very good screens with it. It may be combined with metanile yellow, or with several red dyes, such as eosine, rose Bengal, and erythrosine, etc. For the preparation of our screens we used a mixture of metanile yellow and rose Bengal.

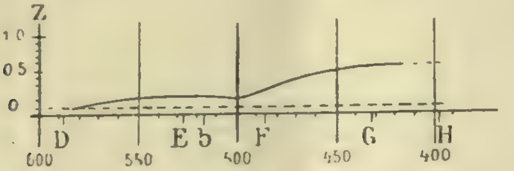

Fig. 7.

Lumière Filter (Von Hübl).

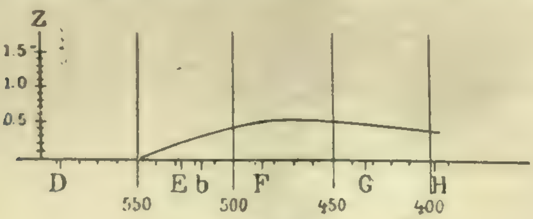

Fig. 9

Aurantia.

| | |
|---|---|
| Water | 75 ccs. |
| Metanile yellow, 1:100 | 20 ccs. |
| Rose Bengal, 1:100 | 5 to 6 ccs. |

The 1 per cent. solution of metanile yellow gives, when the temperature falls a little below 15 to 20 C, a considerable precipitate, but this is easily dissolved by warming the solution a little—with the hand is sufficient. The filters prepared with the bath mentioned above are considerably transparent for the ultra-violet, and give Autochromes of pronounced bluish tinge. This defect can be avoided by cementing to the finished screens a light yellow filter of pot glass, as sold in commerce, one, for example, which is to be used for orthochromatic work at 1½ to 2 times. In place of this glass one may equally employ a gelatine coated plate very slightly stained in a solution of filter yellow K, or an aesculine screen.

The metanile yellow screen give an excellent colour reproduction, improving the rendering of the greens which are of greater brilliance and freshness. If it is desired to prepare filters more exactly, we may coat flat glass plates with a film of gelatine containing .36 to .4 gm. of metanile yellow and add to .12 gm. of rose Bengal for each square metre of surface. To this must be added for the absorption of the ultra-violet, 4 gms. of aesculine per square metre. The formula is thus as follows:—

| | |
|---|---|
| Gelatine solution 15 per cent. | 40 ccs. |
| Metanile yellow, 1:200 solution | 9 to 10 ccs. |
| Rose Bengal, 1:1,000 solution | 10 to 12 ccs. |
| Aesculine solution, 1:50 (with a few drops of ammonia) | 20 ccs. |

The dyed gelatine solution is applied to glass plates in the proportion of 8 ccs. per square decimetre. The yellow is not very permanent in the light, but its defect in this respect may be considerably removed by cementing to the screen a cover glass with Canada balsam.

Alexandre Prilèjaeff,

(*To be continued.*)

◆

## A NEW UTO PAPER.

Under the name of Utocolor, the Société Utocolor, of La Garonne-Colombes, Paris, has just placed upon the market a quite new variety of bleach-out paper, manufactured by Dr. J. H. Smith. The paper is much more rapid than the old "Uto," is free from the anethol smell, and is presumably prepared by means of the thiosinamine sensitizer patented by Dr. Smith. Its quality of rendering the scale of gradation in an Autochrome or other screen-plate transparency is also very much greater than that of the old paper. We reprint below the instructions for the use of the paper, from which it will be seen that the time of exposure for a screen-plate transparency has been cut down to about two hours in bright sunshine.

Our own trials have been limited to one or two exposures in London October light, which, though at times bright sun, was not, we fear, the intense illumination which is required for satisfactory results on the "Utocolor" paper.

Exposing from an Autochrome, the colour print, though tonally a very good copy of the transparency, was in a much more sombre key. With litho colour lantern-slides as originals we obtained very much brighter results, the exposures in this case being about an hour. The paper is evidently a considerable advance on the old Uto, and given a thin, brilliant screen-plate transparency, is capable of giving copies on paper which fairly represent the colours of the original.

Utocolor paper must be kept in a dry place and not exposed to great heat. If possible, it should be preserved in the original packing; under these conditions the paper keeps well for twelve months at least.

Although colour-screen positives, as Autochrome, Omnicolore, Dioptichrome, and Thames plates, are the most important subjects for printing, a large number of other subjects are available, such as three-colour glass and film positives, hand-coloured lantern-slides, transparent paper and glass paintings, window transparencies, Glacier prints, coloured plans and drawings of architects and engineers upon tracing paper. Highly coloured pictures, lithographs, etc., upon ordinary paper, if not too thick, may be rendered transparent by rubbing in with oil at the back and then printed from.

---

[8] We have used the metanile yellow of the Badische Works. The dye which we have been able to procure was not chemically pure, it was a dye of average quality. The rose Bengal was that of the Agfa Co.

Pressed flowers and leaves, butterflies and other highly coloured objects which are easily pressed flat upon glass, may also be printed from with advantage upon "Utocolor" paper.

### PRINTING FROM COLOUR-SCREEN PLATES.

Colour-screen plates must be exposed and treated according to the instructions of the respective manufacturers. All coloured pictures having a proportion of grey mixed with their colours are naturally less brilliant in colour when viewed by reflected light (upon paper, etc.) than when viewed as transparencies. On this account positives with strong and brilliant colours are more suitable to print from than those with soft and delicate colour tints, as the paper prints always lose some of the colour intensity of the original.

The plates should not exhibit too great contrasts of light and shade, otherwise, as in ordinary black and white photography, the lighter parts of the plate will be printed out long before the darker portions are sufficiently printed. It is well on this account to take the precaution before exposing the plate of having the subject of the photograph as evenly illuminated as possible.

### RETOUCHING THE COLOUR-PLATE.

The grey screen in the colour-plate has always the tendency to reduce the brilliancy of the colours; it is on this account of advantage in many cases to increase the brilliancy of the positive by retouching the colours, and this is especially the case with large monotone colour areas (e.g., blue sky). This retouching corresponds exactly to the retouching in ordinary black and white photography, only in this case it refers almost exclusively to increasing the intensity of individual colour areas.

This retouching may easily be done by any amateur. As the colours are already given by the plate it is only necessary to brush over the parts of the plate where the colours are too weak in the corresponding tone until sufficiently deep in colour.

The Utocolor Company supplies suitable dye solutions which are specially selected for this purpose, and cannot be replaced by other colours. These dye solutions may be mixed together in various proportions in order to obtain intermediate shades of colour. The dyes should be applied with a fine sable brush to the thoroughly dried emulsion surface of the plate before the plate is varnished.

### VARNISHING THE PLATE.

After the plate (with the retouching dye, if this has been applied) has become *thoroughly* dry, it is varnished with special "Utocolor" varnish. This is poured slowly over the plate until the whole surface is covered and drained off at one of the corners. It is very essential that the varnish should dry rapidly, otherwise it will absorb moisture from the air, and, penetrating the emulsion film, destroy the screen dyes. In winter and in damp weather the danger of this happening is greatest, and it is necessary at such times to dry the varnished plates in a warm room or before a fire or stove. Too much heat must, on the other hand, be avoided, because in the case of the Autochrome plate the screen film would melt and a black and white positive result. It is better also to take the precaution of warming the plate slightly, in order to get rid of the last traces of moisture before applying the varnish.

It is necessary to state that "Utocolor" varnish must be exclusively used for this purpose, as the ordinary varnishes used for these plates soften when printing in the sun and adhere to the surface of the "Utocolor" paper. In case the plate has already been varnished with one of these commercial varnishes, it must be placed for five or ten minutes in ordinary benzole to remove the varnish, and then after thoroughly drying "Utocolor" varnish must be applied as described above.

### PRINTING FROM THE POSITIVES.

In general the printing process with "Utocolor" paper is the same as that of all ordinary daylight printing-out papers. The plate is laid in the printing frame film side up as usual, and the "Utocolor" paper is laid upon it with the black sensitive surface downwards; the printing frame is then closed and placed out in daylight. The printing should be done in strong daylight; for a normal positive it requires about two hours in sunlight, or correspondingly longer in diffused light. The best results are obtained under white clouds; unfortunately this kind of illumination seldom lasts long enough. Very good results are obtained when the printing is commenced in good diffused light and continued for several hours, then finished in sunlight for about one hour.

In printing in strong sunlight there is great danger of the plate becoming over-heated and the colours being destroyed, a black and white positive resulting. The printing must therefore be carefully looked after and the plate not exposed longer than a quarter of an hour at a time to mid-summer sun. In order to absorb the heat rays, it is well to use a printing frame with a sheet of plate glass 10 to 15 millimetres thick. This thick plate glass serves also the purpose of absorbing largely the injurious ultra-violet rays of the sun. When the plate has become too hot, the printing frame should be placed in the shade to cool down, and this may be hastened by the application of a wet sponge or such like device.

In damp weather, or if the paper has been kept in a damp place, it is advisable to warm the sensitive paper over a gas flame or fire before placing it on the positive, otherwise the paper may stick to the plate during printing and tear away a portion of the surface when taking the print off.

If the surface of the plate feels damp or sticky, it is well to warm the positive also before printing in damp weather.

As a further precaution, a thin celluloid film may be inserted between the surface of the plate and the paper.

### LIGHT-FILTERS FOR PRINTING.

In order to compensate for the variations in the quality of daylight, light-filters must be used and adjusted to the character of the light employed for printing. The Utocolor Company is placing on the market two different light-filters for this purpose, marked G. and M. G. Both of these filters serve to absorb the injurious ultra-violet rays and are employed as follows:—

G. when printing under strong diffused light, or in weak sunlight.

M. G. in strong sunlight.

In very strong sunlight, and especially in southern climates it may be necessary to employ both G. and M. G. simultaneously.

The matt glass in the M. G. filter serves to diffuse the sun's rays.

In very weak light it is not necessary to use a light-filter. It is not advisable, however, to print in such light, or if it cannot be avoided, then it is preferable at least to wait for sunlight in order to finish the printing under the corresponding filter.

The filters are placed above the printing-frame, so that the light must first pass through them before reaching the plate and the paper.

The adjustment of the filters depends, as already stated, upon circumstances; it is impossible to give instructions for each individual case; after a little practice one will soon learn to judge the quality of the light and the most suitable filter to use.

The prints must be examined from time to time, and as a general indication it may be mentioned that should the print exhibit a reddish tinge it is a sign that the green filter employed is too weak, should the print show, however, a green tinge, it is a sign that the filter employed is too strong. In the same way plates which exhibit a reddish or greenish shade may be corrected while printing.

The print is finished when is corresponds to the original plate. In case the contrast between light and shade has been too great, it stands to reason that the reproduction of one part of the picture will suffer, just as in ordinary black and white photography, the light parts of the subject being finished before the dark parts have been printed through. In this case, the lighter parts may be masked at the finish, but it is better, if possible, to avoid too great contrasts by providing an even illumination for the subject when it is being photographed.

### FIXING THE PRINTS.

This fixing process is absolutely different from that employed in black and white photography, and on no account may the ordinary fixing-baths be used for the purpose in question.

The prints are first washed for five minutes in three changes of water, then laid in Utocolor fixing-bath A for fifteen minutes, the dish being rocked all the time. The prints are then well rinsed for three minutes, and laid in Utocolor fixing-bath B for seven minutes with constant rocking of the dish as before. Then the prints are rinsed for a few seconds under the tap, but not washed again, and finally hung up to dry.

For a quarter-plate 50 ccs. of each bath is sufficient, for half-plate 100 ccs., and for whole-plate 200 ccs. It is preferable to throw away the fixing-bath after using once, or it may be used at most twice over in immediate succession.

Utocolor paper may be rendered glossy by squeegeeing on to glass or ferrotype plates just as any other gelatine paper, and it may be retouched with the usual colours employed for other gelatine photographs.

### KEEPING THE PRINTS.

The fixing is good but not quite perfect; still, the prints may be placed in a room if only weakly illuminated for a long time without suffering, and in albums they may be kept for an unlimited time. It is an advantage to mount the prints upon black or dark coloured cardboard.

Last night, Thursday, November 2, Dr. Smith was to have lectured on the new paper at the London and Provincial Photographic Association, Gardenia Restaurant, 6, Catherine Street, W.C., and during the next few days he will visit the chief towns in England and Scotland demonstrating the process. His London address at the time these lines appear is First Avenue Hotel, High Holborn, W.C.

## Correspondence.

*** *Correspondents should never write on both sides of the paper. No notice is taken of communications unless the names and addresses of the writers are given.*

*** *We do not undertake responsibility for the opinions expressed by our correspondents.*

### FRILLING OF AUTOCHROMES.

To the Editors.

Gentlemen,—If you can find space for this letter, I should like to state that I feel certain the cause of Autochromes puckering is (with new plates) due to using a second developer containing alkali. Since my letter appearing in the "B.J." for September 1, my brother has met with similar trouble, using quinomet to develop and redevelop with. Acting on my advice he now uses Rodinal or Amidol, with plenty of sulphite, and frilling does not occur. The letter of Mr. E. A. Biermann also, I think, bears out my contention. The last time I found that puckering was starting I was using metol-hydroquinone to redevelop, and stopped it by the application of sulphite.—Yours faithfully, CHAS. E. FRANCK.

Shropshire Maltings, Shrewsbury.
October 26, 1911.

## News and Notes.

AUTOCHROME LIGHT-FILTERS.—In the article by M. A. Priléjaeff, translated in the "Colour Photography" Supplement for October, the expression log $t=z$ log $n$ should read log $t=-z$ log $n$, and in the subsequent equations where the first portion includes $z$, the second part should be negative.

COLOUR PHOTOGRAPHY OF MARS.—In No. 42 of the "Mitteilungen der Nikolai-Hauptsternwarte zu Pulkowo," M. Tikhoff describes some results he has secured by taking photographs of Mars through coloured screens. These screens transmitted light of wave-lengths 690-655 $\mu\mu$ (red), 680-600 $\mu\mu$ (red and orange), 620-545 $\mu\mu$ (orange and yellow), and 550-495 $\mu\mu$ (green), respectively, and were used in conjunction with the 30-inch equatorial telescope. Taken at the focus, the images of Mars were about 1.5 mm. diameter.

Excellent photographs of Mars were secured, and a comparison of those taken with the red and with the green filters shows some remarkable differences. For example, on the "red" photographs the "continents" (Hellas, Elysium, Ausonia, etc.) are very bright, much brighter than the south polar cap; the latter is the most intense feature on the "green" photographs.

The seas are very dark on the "red" plates and greyish on the "green"; the canals (such as Xanthus, Scamander, Cerberus, etc.) are best seen on the "red" and "orange-red" photographs, their colour apparently resembling that of the seas.

The study of the polar cap led to the conclusion that it was of a greenish colour rather than white, and this suggested ice rather than snow, so experiments on the absorption spectrum of ice was carried out. These, and photographic experiments on sand, snow, and ice made by M. Kalitine, confirmed the conclusion that during August 4-30, 1909, the south polar cap of Mars exhibited the optical properties of ice rather than of snow.—"Nature."

## Answers to Correspondents.

DUFAY COLOUR PLATES.—I recently brought back from Switzerland a number of Dufay "Dioptichrome" plates, which I have since developed. The greater number were very dense, owing, I think, to under-development, and I judged that it would be best first to reduce and then to intensify them, as I had previously done with good results in the case of Autochromes. I reduced them with Farmer's reducer to a state in which they were decidedly too weak, but so far all went well. I then began to intensify with the "Autochrome" intensifier (nitrate of silver and pyro) and in two cases arrived at an almost perfect result. But as soon as the plates were put into the acid fixing bath came the most tantalising of all my photographic experiences. In one case the image went altogether, except the mere ghost of it, still to be discovered on the plate. In the second case a good deal remains, but the picture is quite spoilt. Both were scenes which I may never, perhaps, be able to take again. 1. Can these images by any means—physical development or otherwise—be restored? 2. What is the cause? I can only suppose that as in each case the reduction was very considerable, a lower surface of the film—not punctuated by the second development—was laid bare, and at once acted upon by the hypo. The second development lasted, I should say, two or three minutes, which I have always found ample for Autochromes; but the "Dioptichrome" film is evidently much thicker. 3. How should I proceed in the case of the plates which I have reduced but not yet intensified? Will their future safety be secured if they are submitted to a further "second development," or should I intensify by means of a mercury solution, as the makers of the "Dioptichrome" suggest? 4. I have a number of "Dioptichrome" plates which I was on the point of varnishing, but I noticed in your columns some time ago a warning that varnish is apt to turn yellow with age. Is this danger real enough to make it wise to avoid varnishing altogether?—J. M. J.

1. We doubt if any restoration is possible, but perhaps further intensification will improve matters slightly. 2 and 3. Your suggested explanation seems hardly likely in view of the fact that the Farmer reducer which removed the silver would also attack any undeveloped salts. A third development after the silver intensifier would be likely to produce stains, so we suggest that you had better either adopt mercurial intensification or else omit the final fixing. The most probable cause of the trouble seems to be insufficient intensification. You would be wise to experiment on some plates of no consequence before proceeding further. 4. We should use celluloid, dissolved in amyl acetate, for the varnish. Yellowing is not then likely to take place.

No. 60. VOL. V. DECEMBER 1, 1911.

THE BRITISH JOURNAL OF PHOTOGRAPHY

MONTHLY SUPPLEMENT

ON

Colour Photography.

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# ON THE USE OF REFLECTING BACKING CARDS IN AUTOCHROME EXPOSURES.

[In the following paper read before the French Photographic Society, M. L. Benoist describes test measurements made with the object of obtaining definite information as to the effect of a white or metallic surface backing card for the Autochrome plate as regards any injurious effect on the definition of colour rendering and, at the same time, in respect to the reduction in exposure which can be made by the aid of such reflecting backing.—Eds. "B.J."]

In a previous paper I have shown that the effect of light upon the Autochrome plate, as also upon other screen-plates, may be appreciably intensified by replacing the customary black backing card by one having a reflecting surface, such as that of a polished metal plate or of a highly glossy paper. The black surface absorbs the portion of light which passes through the plate without acting upon it: the reflecting surface, on the other hand, gives back this proportion of the light to the plate. In order that the sharpness of the image and the purity of the colours should not suffer, it is evident, as I have already pointed out, that in this return of the light there should not occur the effect of the rays passing through any given colour grain acting on the grain of another colour—that is to say, the reflecting surface should be in contact with the sensitive film. This method has since been put to the test by other makers, who have confirmed the increase in light-effect obtained, or, in other words, the decrease of the exposure.

It has, however, been asked whether under these conditions the return of the light is not accompanied by some degree of diffusion resulting in a depreciation of the transparency of the results.[1] I have, therefore, made tests in as precise a way as possible in order to ascertain with certainty the existence, or otherwise, of any such diffusion, and, if it exists, of determining its limits.

The first method of this control consists in the use of a test-object composed of two transparent plates laid side by side and of complementary colours, for example, one red and the other green. This test-object is photographed on a plate with one half of which the usual black card is used, whilst in the case of the other half a reflecting backing of glazed white paper is interposed between the backing card and the plate. All appreciable diffusion would thus be rendered visible in consequence of the rays reaching the backing from the red portion of the test-object being diffused on to the part of the plate representing the green portion of the test-object. There would thus be produced by this and the analogous diffusion of green to red a central band of greater or less width and more or less completely free from colour. Actual experiment showed that the two parts of the test-object, when obtained in the Autochrome reproduction, showed a perfectly defined and sharp line where the black and reflecting backings joined. When examined under a lens not the least alteration in the colours, nor any appreciable diffusion, could be seen.

The second method was of a still finer nature. It consisted in the use of a line test-object formed by parallel lines alternately black and white, and all of the same width. On the photograph obtained, any diffusion would be shown by an encroachment of the white lines on the black, and, as a result, the broadening of the former at the expense of the latter. This process will permit, moreover, of determining the limit of the diffusion. If we gradually reduce the width of the lines forming the image of the test-object, at the point at which this width approximates to the dimension of any diffusion produced, the white lines will completely encroach on the black, and these latter will disappear, becoming merged in the white, and producing an almost uniform grey tone.

It may be observed, however, that such effect will always be produced, even in the absence of any diffusion, when working with an image of the test-object of a certain degree of fineness—that is, when this fineness reaches the limit of the resolving power possessed by the optical properties of the lens, and by the grain of the photographic plate. In order that the diffusion due to the reflecting screen should be appreciable—that is to say, prejudicial—it is necessary that the effect produced should be greater than this unavoidable degree of diffusion.

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[1] See the note by M. G. Henry, November 18, 1910, and M. Le Comte de Dalmas, February 17, 1911. M. Charboseau, at the meeting of the Society, July 17, 1908, had also tried using the white card next to the sensitive film without observing any diffusion or fog. He, however, stated that he could find no reduction in the exposure, an observation which is explained by the feeble reflecting power of a *matt* white card.

I used a series of line test-objects, the scale or degree of fineness of which (that is the width of the white or black line) ranged from 2 mm. up to .15 mm. These test-objects were photographed to the scale of 1-10th, their images thus representing degrees of fineness from .2 to .015 mm., as set forth in the following table:—

| Test-object No. | Degree of fineness of image. | Test-object No. | Degree of fineness of image. |
|---|---|---|---|
| 1 | 0.2 | 8 | 0.028 |
| 2 | 0.1 | 9 | 0.023 |
| 3 | 0.05 | 10 | 0.021 |
| 4 | 0.064 | 11 | 0.019 |
| 5 | 0.047 | 12 | 0.017 |
| 6 | 0.037 | 13 | 0.015 |
| 7 | 0.030 | | |

All the test exposures were made on plates one half of which was provided with a white reflecting backing, and the other half with the black card, the image of the test-object running at right-angles across the line of separation, so that the most minute difference of sharpness produced by the white screen would be emphasised.

It was found from the series of negatives thus obtained on Autochrome plates, by examination either with the eye, by projection with a lens, or even with the microscope, that the sharpness and width of the lines was absolutely the same on both parts of the plate up to the eighth test-object—that is to say, to .028 or 1-36th of a millimetre.

Beyond this a slight difference in sharpness, visible only with a strong lens, commences to appear, but at the same time on both parts of the plate the sharpness commences to diminish in consequence of the visible grain of the plate, and from the tenth test-object of .021 mm. the sharpness, even when seen by the lens, has disappeared on one side as much as the other. In other words, we have reached the limit of the resolving power of the Autochrome plate.

I have measured in the microscope the diameter of the coloured grains with the following results:—

Finest grain, .0080 mm.
Medium grains, .0105 mm.
Coarsest grains, .0132 mm.
Average, .0106 mm.

The coarser grains being more numerous than the finer, we may assume that the average is, say, .012.

Now, in order to produce sharply—that is to say, in black and white lines drawn in black and white—it is obviously necessary that the width of each line image should contain, on the average, three coloured grains, since white is the result of the mixture of three primary colours. With only two grains one might, at a pinch, get a line which was nearly white, but not perfectly so. Thus, the resolving power of the Autochrome plate may be put between .036 and .024—that is to say, between 1-36th and 1-40th of a millimetre. This, it will be noticed, is well within the dimensions corresponding with the reproduction recorded above.[2]

Thus it is found that the diffusion to which a reflecting backing of white paper or polished metal can give rise is absolutely negligible, since it produces diffusion of sharpness not greater than that which already results from the grain of the Autochrome plate, namely, about 1-30th to 1-40th of a millimetre.

This important point once settled, it remains to compare the intensifying properties of the various reflecting backings which could be used, and to determine, in the case of the best, its exact value in reducing exposure. I, therefore, used in twos and threes on the same plates, backings formed by sheets of white glazed paper, yellow glazed paper, and metal-coated paper, prepared with copper, silver, gold, tin, and aluminium, all the metals being in the polished state, with the exception of the aluminium, which I could only obtain matt. It was found that white glazed paper gives the greatest reflecting action; the metallic papers, though extremely brilliant, were distinctly inferior to it; whilst in the case of the matt aluminium this inferiority was pronounced. As regards the silver surface, it was anticipated that this metal, in consequence of its exceptional transparence to the refrangible rays, should give, in the case of these rays, which are the most active photographically, a considerable loss in reflecting power.

As regards the exact amount of the increase due to the use of the reflecting backing, I employed the following method of testing:—Two Autochrome plates, taken from the same box, were laid, one against the black card, the other against glazed white paper, and two exposures made with these two plates on the same subject immediately after each other in a good, constant light, but with different exposures. The two plates were developed together and treated throughout in the same baths, manipulating one plate in each hand. If the two images obtained were identical, it is evident that the amounts of light which they had received were exactly in inverse ratio to the time of exposure. If they were not identical, one saw which was the most strongly exposed, and thus obtained an indication to repeat the experiment with other exposures. In the case of the first series exposed, a view of the Luxembourg Palace, the times of the first pair were as follows:—

| | |
|---|---|
| Black card, exposure | 9 seconds |
| White paper, exposure | 6.2 seconds |

or a ratio of 1.45.

In this case the plate provided with the white backing was seen to have been more fully exposed than the other.

In the case of the second pair the times were as follows:—

| | |
|---|---|
| Black card, exposure | 5 seconds |
| White paper, exposure | 3 seconds |

or a ratio of 1.66.

Here the plate provided with the black card appears a little more exposed than that with the white, the ratio of exposure being thus a little below 66 : 100.

In the case of the third pair the exposures were:—

| | |
|---|---|
| Black card, exposure | 9.2 seconds |
| White paper, exposure | 5.8 seconds |

This is a ratio of 1.59, and the results were seen to be identical. It may, therefore, be said that the ratio of exposure is from near 59 : 100, or, in round numbers, 60 : 100.

Thus it may be taken as proved that the use of a glazed white paper as the backing in place of the customary black card is without the drawback of producing diffusion, or any reduction in the sharpness of the image produced. Nor does it lead to any degradation of the brilliancy of the colour rendering, whilst it allows of an increase in the light effect certainly greater than 50 per cent., and very nearly equal to 60 per cent. The method, therefore, allows of exposures being reduced a good third—that is to say, other things being equal, an exposure of 10 seconds in place of one of 16 seconds, which is a considerable advantage in practical work.[3]

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[2] The same experiment made with a colour screen-plate gave as the limit of visible diffusion, both with a black and white card, the value ·1 mm The colour element of this plate has a diameter of ·060. Its resolving power should thus not be greater than 12, and the experiment is thus seen to be in agreement with the conclusions reached in the case of the Autochrome plate.

The white glazed paper which I have used is sold under this name by all paper merchants. It is simply laid between the black card and the sensitive film, if necessary, folding it over the back of the card, so as to prevent its slipping about. The paper, having a gelatine coating, should obviously not be allowed to come into contact with water or damp subjects.[4]

L. Benoist.

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[3] It is scarcely necessary to say that, as it increases the incident illumination by ⅓, the white reflecting screen likewise increases to the same degree any excess of exposure. It is this which has no doubt led to the assumption that it is a cause of diffusion fog.

[4] There is no necessity to keep the white paper in darkness for a long time before use. I have made particular experiments on this point by exposing it to strong light for five minutes immediately before use, and have found that no visible fog was produced on the Autochrome plate.

# THE KRAYN NEW COLOUR-SCREEN FILM PROCESS.

[Particulars of the screen films manufactured in Germany under the name of Deutsche Farben-films have already been given in past numbers of the "Supplement." In the current issue of "Camera Craft," our San Francisco contemporary, which devotes special attention to colour photography, Mr. H. E. Blackburn publishes the following notes on the films and deals with the methods of preparing colour prints from them.—Eds., "Colour Photography" Supplement.]

Although following the Autochrome and other screen-plate processes, a colour film that promises many advantages over the glass plate has been placed on the market by the Neue Photographische Gesellschaft, of Berlin, Germany. In its manufacture, sheet celluloid, such as is used for ordinary roll film, is coated with gelatine, and upon that is printed a series of lines in oily ink. The gelatine spaces intervening are dyed up in a red bath that takes to the gelatine only between the ink lines, forming red lines, and these lines in red are fixed so that the subsequent colours will not mix with them by subjecting the red-dyed film to a bath of ferric chloride. After drying, the lines in fatty ink are removed with a benzole swab. This red-line screen is next given a second series of lines in fatty ink, spaced exactly like the first, but ruled at right angles to the first. The film is again stained in a dye bath, this time blue, and as before, fixed, the fatty ink lines removed and the film dried. The third, or green, dye bath is allowed to stain up the spaces left by the removal of the last series of oily ink lines, and when dry, the film is ready for a panchromatic emulsion. This applied, in the usual manner, the film is ready for use in a film pack or, if desired, in an ordinary plate holder. The exposure, as in the Autochrome and like processes, is made through the film or from the back, with a proper filter, in the form of a glass filter kit, just in front of the film. In other words, the image-forming rays pass, after leaving the lens, first through the filter kit, then through the celluloid film, next through the ruled coloured layer of gelatine, reaching the panchromatic emulsion last.

The exposed film is developed and fixed in the ordinary way; and, when dry, can be printed upon another film having the same ruling in colours, but coated with a positive emulsion instead of the panchromatic one. Upon development of this positive, the colours all appear by transmitted light as in other screen-plate processes, but, in this process, any number of positives in colours can be produced from the original negative, and positives on paper are made possible, as will be explained further along in the working directions.

Upon opening a package of the Krayn Colour Films, in the dark of course, one corner will be found cut off in order to locate the screen side of the film. This corner must be placed in the glass filter kit so as to come against the cut corner of the filter. The kit and film are then placed in the holder and it is ready for exposure. The focussing screen must be reversed in the camera back in order to bring its ground surface in the same plane as the film, making allowance in that way for the thickness of the glass carrier.

The exposure should be fifty times that given an ordinary plate, without filter, under the same conditions. Sunshine and subjects containing strong contrasts of colour or of black and white should be avoided. One should try to gauge the exposure for the half-shades, not the shadows. The exposed films are developed in the dark, using a soft working developer. After two minutes' immersion, one can turn up the red light. Development should not take over three minutes or a liability to fog will be found. If results are not satisfactory, no attempt to doctor, intensify, or reduce should be made. Another exposure should be tried. Fixing is done in an ordinary acid hypo bath, followed by washing and finally a five per cent. glycerine bath before hanging up to dry.

To make the positive, this negative film and the unexposed positive film are placed in the yellow filter-holder kit so that all three cut corners come together, and exposed as for a contact lantern slide, through the yellow filter. Develop, fix, and wash the same as the first or negative film, following with the glycerine bath. The result will be a beautiful transparency in colours.

To obtain prints upon paper, from these positives, it is only necessary to fix out six ordinary unexposed dry plates in a twenty per cent. hypo bath, using no hardener, wash them well, and then dye up two in each of the following baths:—

| | |
|---|---|
| Hoechst No. 1 Filter Red | 1 gramme |
| Hot water | 100 cubic centimetres |

When cool, filter, and immerse plates three hours.

| | |
|---|---|
| Hoechst No. 1 Filter Green | 1 gramme |
| Hot water | 100 cubic centimetres |

When cool, filter, and immerse plates two hours.

| | |
|---|---|
| Crystal violet | 9 grammes |
| Acetic acid | 1 cubic centimetre |
| Water | 100 cubic centimetres |

Filter, and immerse plates one-half hour. The colours may be obtained of Victor Koech and Company, 122, Hudson Street, New York.

These plates are to be used as filters to obtain three colour-selecting negatives from the screen film positive. From the dye baths the plates are drained, dried, and then bound up in pairs with ordinary binding tape. The red filter, the two red-stained plates bound together, is placed in a printing frame, then the screen film positive, and lastly, in the dark, an unexposed panchromatic plate. Exposure is made to a lamp, the plate developed in the dark, using a soft working developer, fixed and washed, and then marked red negative plate. The same is done with the green filter and film, using an orthochromatic plate, developing as for orthochromatic plates, and marked green negative plate. With the blue filter and film, an ordinary plate is used, developed accordingly, and marked blue negative plate. This gives a set of trichromatic negatives suitable for prints on paper.

To those who are familiar with the double transfer carbon process, the trichrome tissue supplied by the Neue Photographische Gesellschaft, Berlin, Germany, will appeal strongly. The proper colours are used; they are very transparent, and of the most lasting quality. In addition, the difficulties have been greatly minimised by the introduction of a spirit sensitiser and a stripping solution. All the former troubles of securing good adhesion and register have been removed. The only precaution necessary is to buy the tissue in rolls and cut it oneself so that each sheet is the same way of the paper. So doing, the expansion and contraction of the support during manipulation will be the same in all three and no difficulty will be experienced in securing absolutely perfect registration when they are superimposed. In the old method there was great difficulty in securing good adhesion, but talced plates and stripping solution now take the place of the tricky gelatine or collodion solutions.

Personally, I work the process as follows:—Ten ounces of clean, selected crystals of bichromate of potassium are placed in a stone jug containing two hundred ounces of hot water. This makes a five per cent. stock solution that keeps well. To eight ounces of this stock solution are added two ounces of water, two ounces of acetone, and then, while stirring slowly add enough liquid ammonia to just turn the orange colour yellow. This is a rather weak sensitiser, but the negatives are thin. Filter, and it is ready for sensitising the tissue. The tissue has been cut as advised, a tray of the proper size contains the bath, and good lamplight is being used, the tissue not being sensitive until dry. A sheet of the yellow tissue is placed in the solution and turned over and over to see that no bubbles collect on its surface. When it becomes limp and starts to curl in the opposite direction, it is taken out and squeegeed on to a sheet of ferrotype plate, and set in the dark to dry. If there is a good circulation of dry air, it will strip and be ready to print in about two hours. In my own practice, I darken the room and use the attic stairway, there being a good draught there.

This sensitised yellow tissue is printed under the blue filter negative until it shows a good image, then transferred to a pan of cool water and proceeded with as ordinarily. It is kept turning until limp, and when it starts to curl in the opposite direction, it is removed and placed, coated side downward, on one of the dry, talced ground-glasses. As the adhesion is a matter of vacuum only, no time need be allowed, and it is placed at once in a tray of water as warm as the hand can bear. As soon as the colour starts to ooze out around the edges the paper support is gently peeled free from the glass. Rubbing or pouring water on the print in order to bring out unexposed parts must not be resorted to or gradation will be destroyed. Rocking the tray only is permissible. When no more colour will come away the print on the glass plate is rinsed and set up to dry.

The desired number of yellow prints being made, a bath is made up by adding a grain of fluoride of soda to each ounce of water, and in this is placed a sheet of heavy single transfer paper. When the gelatine-coated surface becomes slimy, it is ready to be placed upon the yellow print and squeegeed into contact. The yellow print has, in the meanwhile, been given a bath of six drops of sulphuric acid to the ounce of water, a strength that will have no ill-effect on either the print or the hands. When dry, one corner is raised with the point of a knife blade and the paper stripped from the ground-glass support. If the glass was properly talced, the print will be found adhering perfectly to the paper.

The desired number of sheets are next cut from the red roll, seeing, as in the case of the yellow tissue, that all are cut in the same direction, printed under the green negative plate, and proceeded with in the same way as for the yellow print, except that the yellow print itself on the paper support is placed in the fluoride bath until slimy, when it is placed in register on the acid-bathed red print, squeegeed, dried, and stripped. The making of the blue prints follows the same procedure. In all three, owing to the transparency of the tissue, depth of printing can be judged by examining the visible image as printing proceeds. Stripping the blue print completes the process except for a good washing, after which the print is ready for mounting.

As the reader has no doubt observed, this description of the process of producing finished trichromatic prints does not, in any way, suggest complexity or difficulties not easily overcome. Taking it all in all, it seems an ideal process for the production of colour prints on paper from screen-plate or screen-film negatives.

H. E. Blackburn.

## LIGHT-FILTERS FOR AUTOCHROME FLASHLIGHT EXPOSURES.

(A Note in Eder's "Jahrbuch.")

As is well known, Autochrome exposures by flash-light require a special light-filter in order to secure correct colour rendering. The light-filters which yield satisfactory results when exposing by daylight are not satisfactory for flashlight work, as their absorption powers are too strict.

The author has carried out a series of experiments, on the suggestion of Dr. J. M. Eder, in the preparation of a light-filter which would be suitable for use with the very actinic magnesium flash-powder, which is prepared by mixing one part of anhydrous thorium nitrate with two parts of magnesium powder.

The author started from a formula for daylight exposures given to him by Dr. E. Konig, of Hoechst. This yields excellent results, and does not seem so far to have been published. It is as follows:—

To 100 ccs. of 6 per cent. gelatine solution, add

| | |
|---|---|
| Rapid filter yellow K, 1 : 200 | 12 ccs. |
| Kristall ponceau, 1 : 800 | 4 ccs. |
| Water | 4 ccs. |

This dyed gelatine solution is filtered and used in the proportion of 7 ccs. per 100 sq. cm. of surface. Two flat glass plates coated in this manner are cemented together to form the light-filter. A suitable cement is Canada balsam dissolved in chloroform.

This light-filter, as just mentioned, though excellent for daylight work, is not the best for flashlight exposures. The following modification made by the author has given excellent results in flashlight exposures.

To 100 ccs. 6 per cent. gelatine solution add:—

| | |
|---|---|
| Rapid filter yellow, 1 : 200 | 15 ccs. |
| Kristall ponceau, 1 : 800 | 4 ccs. |
| Water | 4 ccs. |

The dyed solution is filtered as before, coated on glass again in the same proportion, and cemented to a plain cover glass with Canada balsam.

F. Novak.

# News and Notes.

Dr. Mees.—Quite the most intimate and interesting account of the personality behind the scientific control of the Wratten dry-plate factory appears in the current issue of the "Process Engravers' Monthly." The interviewer had occasion to be shown "a weird and fearsome book entitled 'Investigations on the Theory of the Photographic Processes.' I looked it over; beheld its symbolised formulations, which confront one not in single spies but in battalions, and I closed the book, or the nightmare, in the spirit of something more than Christian resignation, sighing, 'Agree with thine adversary quickly, whiles thou art in the way with him.'"

Colour Portraiture at the Dover Street Studios.—Writing to the "Process Engravers' Monthly," Mr. Hamburger, of the Dover Street Studios, gives some brief particulars of the process named by him the "Polychromide," which is used for preparing paper colour prints from life. He writes:—"The Polychromide system, which has been perfected by us, does not depend at all upon collotype, or any similar process for paper reproductions in natural colour. The process consists of the following features, which are now perfected and in practical working:—First, a powerful artificial light which enables us to get exposures in 1-100 of a sec. Second, a camera which makes four colour negatives at one exposure ready for the blockmaker or for our own direct printing, which is done, in the case of small orders for private customers, on bromide paper, by a process (patent for which has just been filed) which depends upon the chemical change of the silver salts into the colour required."

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